

# Oracle® Communications

## Cloud Native Core, Service Communication Proxy User Guide



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ORACLE®

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# Contents

|        |                                                                                   |    |
|--------|-----------------------------------------------------------------------------------|----|
| 1      | Introduction                                                                      |    |
| 1.1    | References                                                                        | 3  |
| 2      | Service Communication Proxy Architecture                                          |    |
| 2.1    | 5G SBI Message Processing and Trigger Points                                      | 3  |
| 3      | Service Communication Proxy Features                                              |    |
| 3.1    | NFProfile Processing Enhancements                                                 | 1  |
| 3.2    | Message Feed Enhancements                                                         | 3  |
| 3.3    | Support for cnDBTier APIs in CNC Console                                          | 6  |
| 3.4    | NRF Configuration Using DNS SRV Resolution                                        | 7  |
| 3.5    | SCP Response Timeout Extension                                                    | 9  |
| 3.6    | Overload Control Based on the Overload Control Information Header                 | 10 |
| 3.7    | Custom Header Support at SCP                                                      | 13 |
| 3.8    | Support for HTTPS                                                                 | 14 |
| 3.8.1  | TLS Certificate Configuration Enhancement                                         | 16 |
| 3.8.2  | Support for Automated Certificate Lifecycle Management                            | 17 |
| 3.9    | Routing Options Enhancement to Control SCP Routing Features                       | 18 |
| 3.10   | Enhanced NF Status Processing                                                     | 19 |
| 3.11   | Support for Default Notification Message Routing                                  | 20 |
| 3.11.1 | Default Notification Routing Behavior at SCP                                      | 21 |
| 3.12   | Location Header for Host Mismatch                                                 | 56 |
| 3.13   | Support for the Client Credentials Assertion Header                               | 57 |
| 3.14   | Support for 5G SBI Message Correlation using the 3gpp-Sbi-Correlation-Info Header | 58 |
| 3.15   | Support for Kubernetes Resources                                                  | 59 |
| 3.15.1 | Dual Stack Support                                                                | 59 |
| 3.15.2 | Network Policies                                                                  | 59 |
| 3.15.3 | Pod Disruption Budget                                                             | 60 |
| 3.15.4 | SCP Microservices and Probes                                                      | 60 |
| 3.16   | SCP Health Check API                                                              | 69 |
| 3.17   | Verbose Logging for SCP                                                           | 72 |
| 3.18   | Support for OAuth2.0                                                              | 76 |

|          |                                                                                     |     |
|----------|-------------------------------------------------------------------------------------|-----|
| 3.19     | Pod Overload Control                                                                | 80  |
| 3.20     | Routing Support for NEF Services                                                    | 81  |
| 3.21     | Host Preference for Egress Message Requests                                         | 82  |
| 3.22     | Enhanced 5G SBI Message Failure Handling                                            | 84  |
| 3.23     | Extension of HTTP Status Code List for Rerouting                                    | 86  |
| 3.24     | Load Balancing                                                                      | 87  |
| 3.25     | 5G SBI Message Routing                                                              | 88  |
| 3.25.1   | 5G SBI Notification Requests processing                                             | 91  |
| 3.25.2   | 5G SBI Service Requests Processing                                                  | 95  |
| 3.26     | 5G SBI Message Mediation Support                                                    | 98  |
| 3.26.1   | Mediation Rules Configuration                                                       | 100 |
| 3.26.2   | Mediation Rule Configuration Enhancement                                            | 106 |
| 3.26.2.1 | Mediation Rule Migration Process                                                    | 106 |
| 3.27     | Message Priority Assignment and Override                                            | 112 |
| 3.28     | Outlier Detection                                                                   | 113 |
| 3.29     | Circuit Breaking                                                                    | 114 |
| 3.30     | Canary Release                                                                      | 115 |
| 3.31     | Static Configuration of NF Profiles                                                 | 116 |
| 3.32     | Preventive Audit on Last NF Instance                                                | 117 |
| 3.33     | Rate Limiting                                                                       | 118 |
| 3.33.1   | Local Rate Limit Feature                                                            | 118 |
| 3.33.2   | Global Rate Limit Feature                                                           | 119 |
| 3.33.3   | Ingress Rate Limiting                                                               | 121 |
| 3.33.4   | Egress Rate Limiting                                                                | 123 |
| 3.33.4.1 | Global Egress Rate Limiting                                                         | 125 |
| 3.33.5   | Egress and Ingress Key Combinations                                                 | 127 |
| 3.34     | Support for Multus Container Network Interface                                      | 128 |
| 3.35     | Support for Model C Indirect 5G SBI Communication                                   | 130 |
| 3.36     | Multiple SCP Deployment in the Same Kubernetes Cluster                              | 132 |
| 3.37     | Support for SCP Triplet Deployment                                                  | 133 |
| 3.38     | Alternate Routing based on the DNS SRV Records                                      | 134 |
| 3.39     | Support for Multiple Signaling Service IPs                                          | 136 |
| 3.40     | Egress Congestion Control Support at SCP                                            | 137 |
| 3.41     | Support for Model D Indirect 5G SBI Communication with Delegated Discovery          | 139 |
| 3.42     | Support for 5G SBI Roaming                                                          | 141 |
| 3.43     | Routing Options Enhancements for Next Hop SCP and Notification or Callback Messages | 144 |
| 3.44     | Support for Alternate Routing Using Static Configuration                            | 147 |
| 3.45     | Support for Thread Watchdog                                                         | 147 |
| 3.46     | Observability Enhancements for SCP Inter-microservice Connectivity                  | 148 |
| 3.47     | Load Control based on the Load Control Information Header                           | 149 |
| 3.48     | Support for Three-site Georedundancy                                                | 150 |

## 4 Configuring Service Communication Proxy using the CNC Console

---

|          |                                                                               |    |
|----------|-------------------------------------------------------------------------------|----|
| 4.1      | Support for Multiclustert Deployment                                          | 1  |
| 4.2      | CNC Console Interface                                                         | 1  |
| 4.2.1    | Configuring SCP Features                                                      | 3  |
| 4.2.1.1  | Configuring Enhanced NF Status Processing                                     | 4  |
| 4.2.1.2  | Configuring Global Egress Rate Limiting                                       | 4  |
| 4.2.1.3  | Configuring Support for 5G SBI Roaming                                        | 5  |
| 4.2.1.4  | Configuring Mediation                                                         | 6  |
| 4.2.1.5  | Configuring Model D Indirect 5G SBI Communication feature                     | 6  |
| 4.2.1.6  | Configuring SCP User Agent Info                                               | 7  |
| 4.2.1.7  | Configuring Message Feed                                                      | 8  |
| 4.2.1.8  | Configuring Load Control Information (LCI)                                    | 8  |
| 4.2.1.9  | Configuring Host Preference for Egress Message Requests                       | 10 |
| 4.2.1.10 | Configuring CCA Header Validation                                             | 11 |
| 4.2.1.11 | Configuring Location Header Update for Host Mismatch                          | 13 |
| 4.2.1.12 | Configuring Support for OAuth2.0                                              | 14 |
| 4.2.1.13 | Configuring SCP Health Check API                                              | 16 |
| 4.2.1.14 | NRF Configuration using DNS SRV Resolution                                    | 18 |
| 4.2.1.15 | Configuring Overload Control Based on the Overload Control Information Header | 19 |
| 4.2.1.16 | Configuring Enhanced NFProfile Processing                                     | 22 |
| 4.2.2    | Configuring OCI                                                               | 22 |
| 4.2.3    | Configuring OCI Threshold Levels                                              | 23 |
| 4.2.4    | Viewing cnDBTier APIs in CNC Console                                          | 24 |
| 4.2.5    | Configuring NRF SRV                                                           | 27 |
| 4.2.5.1  | Mapping NFInstanceId and ServiceInstanceId                                    | 29 |
| 4.2.6    | Configuring NRF                                                               | 30 |
| 4.2.7    | Configuring Upgrade and Rollback Event                                        | 31 |
| 4.2.8    | OAuth2.0 Configurations                                                       | 31 |
| 4.2.8.1  | Configuring Access Token Granularity                                          | 31 |
| 4.2.8.2  | Configuring OAuth2.0 Local PLMN Required                                      | 33 |
| 4.2.9    | Configuring Error Profile                                                     | 34 |
| 4.2.10   | Configuring Canary Release                                                    | 35 |
| 4.2.11   | Configuring Global Options                                                    | 37 |
| 4.2.12   | Configuring Mediation                                                         | 39 |
| 4.2.12.1 | Configuring Routing Options for Mediation                                     | 41 |
| 4.2.12.2 | Configuring Mediation Rules                                                   | 43 |
| 4.2.13   | Configuring NF Rule Profile                                                   | 45 |
| 4.2.14   | Configuring Routing Options                                                   | 49 |

|          |                                                     |    |
|----------|-----------------------------------------------------|----|
| 4.2.15   | Configuring SCP Profile                             | 51 |
| 4.2.16   | Configuring Service Groups Parameters               | 53 |
| 4.2.17   | Configuring Topology Source Info                    | 53 |
| 4.2.18   | Fetching Routing Rules                              | 54 |
| 4.2.19   | Configuring Ingress Rate Limiting                   | 56 |
| 4.2.20   | Configuring Egress Rate Limiting                    | 56 |
| 4.2.21   | Configuring Server Header                           | 57 |
| 4.2.22   | Configuring Pod Overload Control Policies           | 58 |
| 4.2.23   | Configuring SBI Message Priority                    | 59 |
| 4.2.24   | Configuring DNS SRV based Alternate Routing         | 60 |
| 4.2.24.1 | Configuring Routing Modes                           | 61 |
| 4.2.24.2 | Configuring the Default TTL Value                   | 61 |
| 4.2.24.3 | Configuring Alternate NF Group                      | 62 |
| 4.2.24.4 | Configuring Refresh DNS SRV Data                    | 63 |
| 4.2.25   | Configuring SBI Message Priority and Error Profiles | 63 |
| 4.2.26   | Configuring the nextHopSCP Routing Option           | 65 |
| 4.2.27   | Configuring SEPP Inter PLMN Routing                 | 67 |
| 4.2.28   | Configuring Route Groups                            | 69 |
| 4.2.29   | Configuring Ingress Rate Limiter Consumer Info      | 70 |
| 4.2.30   | Configuring SCP Services                            | 72 |
| 4.2.31   | Configuring Outlier Detection                       | 75 |
| 4.2.32   | Configuring Traffic Feed                            | 76 |
| 4.2.33   | Congestion Control Configurations                   | 76 |
| 4.2.34   | Routing Options Configurations                      | 78 |
| 4.2.35   | Routing Config Set                                  | 78 |
| 4.2.36   | Circuit Breaking Configurations                     | 79 |
| 4.2.37   | Viewing SCP Feature Status                          | 80 |

## 5 Metrics

---

|       |                       |     |
|-------|-----------------------|-----|
| 5.1   | Dimension Description | 1   |
| 5.1.1 | SCP Metrics           | 4   |
| 5.1.2 | Mediation Metrics     | 100 |

## 6 Alerts

---

|       |                                  |   |
|-------|----------------------------------|---|
| 6.1   | System level alerts              | 1 |
| 6.1.1 | SCPNotificationPodMemoryUsage    | 1 |
| 6.1.2 | SCPWorkerPodMemoryUsage          | 2 |
| 6.1.3 | SCPInstanceDown                  | 3 |
| 6.2   | Application level alerts         | 3 |
| 6.2.1 | SCPCcaFeatureEnabledWithoutHttps | 3 |

|        |                                                  |    |
|--------|--------------------------------------------------|----|
| 6.2.2  | SCPIngressTrafficRateAboveMinorThreshold         | 4  |
| 6.2.3  | SCPIngressTrafficRateAboveMajorThreshold         | 4  |
| 6.2.4  | SCPIngressTrafficRateAboveCriticalThreshold      | 5  |
| 6.2.5  | SCPRoutingFailedForProducer                      | 5  |
| 6.2.6  | SCPAuditErrorResponse                            | 6  |
| 6.2.7  | SCPAuditEmptyNFArrayResponse                     | 7  |
| 6.2.8  | DuplicateLocalityFoundInForeignNF                | 8  |
| 6.2.9  | ForeignNFLocalityNotServed                       | 8  |
| 6.2.10 | UnknownLocalityFoundInForeignNF                  | 9  |
| 6.2.11 | SCPUpstreamResponseTimeout                       | 9  |
| 6.2.12 | SCPSingleNfInstanceAvailableForNFType            | 10 |
| 6.2.13 | SCPNoNfInstanceForNFType                         | 11 |
| 6.2.14 | SCPIngressTrafficRateExceededConfiguredLimit     | 11 |
| 6.2.15 | SCPIngressTrafficRoutedWithoutRateLimitTreatment | 12 |
| 6.2.16 | SCPEgressTrafficRateExceededConfiguredLimit      | 13 |
| 6.2.17 | SCPEgressTrafficRoutedWithoutRateLimitTreatment  | 13 |
| 6.2.18 | SCPNotificatoinRejectTopologySourceLocal         | 14 |
| 6.2.19 | SCPNotificationProcessingFailureForNF            | 14 |
| 6.2.20 | SCPSubscriptionFailureForNFType                  | 16 |
| 6.2.21 | SCPReSubscriptionFailureForNFType                | 18 |
| 6.2.22 | SCPNrRegistrationFailureForRegionOrSetId         | 18 |
| 6.2.23 | SCPNrHeartbeatFailureForRegionOrSetId            | 20 |
| 6.2.24 | SCPDBOperationFailure                            | 20 |
| 6.2.25 | SCPGeneratedErrorsResponseForNFService           | 21 |
| 6.2.26 | SCPCircuitBreakingAppliedForNF                   | 21 |
| 6.2.27 | SCPUpgradeStarted                                | 22 |
| 6.2.28 | SCPUpgradeFailed                                 | 22 |
| 6.2.29 | SCPUpgradeSuccessful                             | 23 |
| 6.2.30 | SCPRollbackStarted                               | 23 |
| 6.2.31 | SCPRollbackFailed                                | 23 |
| 6.2.32 | SCPRollbackSuccessful                            | 24 |
| 6.2.33 | ScpWorkerPodCpuUtilizationAboveWarnThreshold     | 25 |
| 6.2.34 | ScpWorkerPodCpuUtilizationAboveMinorThreshold    | 25 |
| 6.2.35 | ScpWorkerPodCpuUtilizationAboveMajorThreshold    | 26 |
| 6.2.36 | ScpWorkerPodCpuUtilizationAboveCriticalThreshold | 27 |
| 6.2.37 | SCPUnhealthyPeerSCPDetected                      | 27 |
| 6.2.38 | SCPDnsSrvQueryFailure                            | 28 |
| 6.2.39 | SCPProducerOverloadThrottled                     | 29 |
| 6.2.40 | SCPProducerOverloadAlternateRouted               | 29 |
| 6.2.41 | SCPSeppNotConfigured                             | 30 |
| 6.2.42 | SCPSeppRoutingFailed                             | 31 |
| 6.2.43 | SCPWorkerSSLCertificateExpire                    | 31 |

|        |                                                             |    |
|--------|-------------------------------------------------------------|----|
| 6.2.44 | SCPWorkerHTTPSConnectionFailure                             | 32 |
| 6.2.45 | SCPGlobalEgressRLRemoteParticipantConnectivityFailure       | 33 |
| 6.2.46 | SCPGlobalEgressRLRemoteParticipantWithDuplicateNFInstanceId | 33 |
| 6.2.47 | SCPMediationConnectivityFailure                             | 34 |
| 6.2.48 | SCPNotificationQueuesUtilizationAboveMinorThreshold         | 35 |
| 6.2.49 | SCPNotificationQueuesUtilizationAboveMajorThreshold         | 36 |
| 6.2.50 | SCPNotificationQueuesUtilizationAboveCriticalThreshold      | 37 |
| 6.2.51 | SCPNrProxyQueuesUtilizationAboveMinorThreshold              | 37 |
| 6.2.52 | SCPNrProxyQueuesUtilizationAboveMajorThreshold              | 38 |
| 6.2.53 | SCPNrProxyQueuesUtilizationAboveCriticalThreshold           | 39 |
| 6.2.54 | SCPWorkerQueuesUtilizationAboveMinorThreshold               | 39 |
| 6.2.55 | SCPWorkerQueuesUtilizationAboveMajorThreshold               | 40 |
| 6.2.56 | SCPWorkerQueuesUtilizationAboveCriticalThreshold            | 41 |
| 6.2.57 | SCPCacheQueuesUtilizationAboveMinorThreshold                | 41 |
| 6.2.58 | SCPCacheQueuesUtilizationAboveMajorThreshold                | 42 |
| 6.2.59 | SCPCacheQueuesUtilizationAboveCriticalThreshold             | 43 |
| 6.2.60 | SCPLoadManagerQueuesUtilizationAboveMinorThreshold          | 43 |
| 6.2.61 | SCPLoadManagerQueuesUtilizationAboveMajorThreshold          | 44 |
| 6.2.62 | SCPLoadManagerQueuesUtilizationAboveCriticalThreshold       | 45 |
| 6.2.63 | SCPProducerNfSetUnhealthy                                   | 45 |
| 6.2.64 | SCPPeerSeppUnhealthy                                        | 46 |
| 6.2.65 | SCPMicroServiceUnreachable                                  | 47 |
| 6.2.66 | SCPTrafficFeedSendFailed                                    | 48 |
| 6.2.67 | SCPTrafficFeedKafkaClusterUnhealthy                         | 48 |
| 6.2.68 | SCPTrafficFeedPartitionUnhealthy                            | 49 |
| 6.2.69 | SCPServiceMeshFailure                                       | 49 |
| 6.2.70 | SCPHealthCheckFailedForPeerSCP                              | 50 |
| 6.2.71 | SCPHealthCheckFailed                                        | 50 |
| 6.2.72 | ScpWorkerPodPendingTransUtilizationAboveMinorThreshold      | 51 |
| 6.2.73 | ScpWorkerPodPendingTransUtilizationAboveMajorThreshold      | 51 |
| 6.2.74 | ScpWorkerPodPendingTransUtilizationAboveCriticalThreshold   | 52 |
| 6.2.75 | ScpWorkerPodPendingTransUtilizationAboveWarnThreshold       | 53 |
| 6.2.76 | ScpWorkerPodResourceUtilizationAboveMinorThreshold          | 53 |
| 6.2.77 | ScpWorkerPodResourceUtilizationAboveMajorThreshold          | 54 |
| 6.2.78 | ScpWorkerPodResourceUtilizationAboveWarnThreshold           | 54 |
| 6.2.79 | ScpWorkerPodResourceUtilizationAboveCriticalThreshold       | 55 |
| 6.2.80 | SCPDNSSRVNRFMigrationTaskFailure                            | 55 |
| 6.2.81 | SCPDNSSRVNRFNonMigrationTaskFailure                         | 56 |
| 6.2.82 | SCPDNSSRVNRFDuplicateTargetDetected                         | 57 |
| 6.2.83 | SCPHighResponseTimeFromProducer                             | 57 |
| 6.2.84 | SCPCGroupVersionDetectionFailed                             | 58 |
| 6.2.85 | SCPCPUUsageFileReadFailed                                   | 58 |



|        |                                                                                 |    |
|--------|---------------------------------------------------------------------------------|----|
| 6.2.86 | SCPIgnoreUnknownService                                                         | 59 |
| 6.3    | Configuring Alerts                                                              | 59 |
| 6.3.1  | Applying Alerts Rule to CNE without Prometheus Operator                         | 59 |
| 6.3.2  | Applying Alerts Rule to CNE with Prometheus Operator                            | 61 |
| 6.3.3  | Configuring Service Communication Proxy Alert using the SCPAlertrules.yaml file | 62 |
| 6.3.4  | Configuring Alert Manager for SNMP Notifier                                     | 63 |

## 7 KPIs and Traces

---

|       |                            |   |
|-------|----------------------------|---|
| 7.1   | Key Performance Indicators | 1 |
| 7.1.1 | Platform KPIs              | 1 |
| 7.1.2 | Application KPIs           | 2 |
| 7.1.3 | Feature KPIs               | 5 |

## 8 Traces

---

## 9 SCP Interactions with NRF

---

## 10 Supported NF Types

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## 11 Supported 3GPP Headers

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# Acronyms

The following table provides information about the acronyms and the terminology used in the document.

**Table    Acronyms**

| Acronym     | Description                                                                                                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 3GPP        | 3rd Generation Partnership Project                                                                                                       |
| 5GC         | 5G Core Network                                                                                                                          |
| 5GS         | 5G System                                                                                                                                |
| AF          | Application Function                                                                                                                     |
| API         | Application Programming Interface                                                                                                        |
| AUSF        | Authentication Server Function                                                                                                           |
| CCA         | Client Credentials Assertion, 3gpp-Sbi-Client-Credentials header is defined by 3GPP. The header contains a client credentials assertion. |
| CNC Console | Oracle Communications Cloud Native Configuration Console                                                                                 |
| CNE         | Oracle Communications Cloud Native Core, Cloud Native Environment                                                                        |
| CNI         | Container Network Interface                                                                                                              |
| CRD         | Custom Resource Definition                                                                                                               |
| DNS         | Domain Name System                                                                                                                       |
| FQDN        | Fully Qualified Domain Name                                                                                                              |
| GPSI        | Generic Public Subscription Identifier                                                                                                   |
| HPLMN       | Home Public Land Mobile Network                                                                                                          |
| HR          | Home Routing                                                                                                                             |
| HTTP        | Hypertext Transfer Protocol                                                                                                              |
| HTTPS       | Hypertext Transfer Protocol Secure                                                                                                       |
| IMSI        | International Mobile Subscriber Identity                                                                                                 |
| IWF         | InterWorking and Mediation Function                                                                                                      |
| K8s         | Kubernetes                                                                                                                               |
| LBO         | Local Breakout                                                                                                                           |
| MCC         | Mobile Country Code                                                                                                                      |
| MNC         | Mobile Network Code                                                                                                                      |
| MSISDN      | Mobile Station International Subscriber Directory Number                                                                                 |
| NAD         | Network Attachment Definition                                                                                                            |
| NF          | Network Function                                                                                                                         |
| NRF         | Oracle Communications Cloud Native Core, Network Repository Function                                                                     |
| OAM         | Operations, Administration, and Maintenance                                                                                              |
| OCCM        | Oracle Communications Cloud Native Core, Certificate Management                                                                          |
| OCNADD      | Oracle Communications Network Analytics Data Director                                                                                    |
| PLMN        | Public Land Mobile Network                                                                                                               |
| QoS         | Quality of Service                                                                                                                       |
| SBA         | Service Based Architecture                                                                                                               |

Table (Cont.) Acronyms

| Acronym | Description                                                                           |
|---------|---------------------------------------------------------------------------------------|
| SBI     | Service Based Interface                                                               |
| SCP     | Oracle Communications Cloud Native Core, Service Communication Proxy                  |
| SCPC    | Service Communication Proxy Control                                                   |
| SEPP    | Oracle Communications Cloud Native Core, Security Edge Protection Proxy               |
| SMF     | Session Management Function                                                           |
| SPN     | Service Proto Name                                                                    |
| SSL     | Secure Sockets Layer                                                                  |
| SUPI    | Subscription Permanent Identifier                                                     |
| SRV     | Service                                                                               |
| TLS     | Transport Layer Security                                                              |
| UDR     | Oracle Communications Cloud Native Core, Unified Data Repository                      |
| UDSF    | Unstructured Data Storage Function                                                    |
| URI     | Uniform Resource Identifier                                                           |
| UDM     | Unified Data Management                                                               |
| VPLMN   | Visited Public Land Mobile Network                                                    |
| XFCC    | x-forwarded-client-cert is a proxy header that indicates TLS certificate information. |
| LCI     | Load Control Information                                                              |
| LC-H    | Load Control based on LCI Header                                                      |
| OCI     | Overload Control Information                                                          |
| OLC-H   | Overload Control based on OCI Header                                                  |

# What's New in This Guide

This section introduces the documentation updates for release 23.4.x.

## Release 23.4.4 - F87575-07, October 2024

There are no updates made to this document.

## Release 23.4.3 - F87575-06, July 2024

There are no updates made to this document.

## Release 23.4.2 - F87575-05, April 2024

There are no updates made to this document.

## Release 23.4.1 - F87575-04, February 2024

- The following changes are made as part of the NFProfile Processing enhancements:
  - Added the description of the feature in the [NFProfile Processing Enhancements](#) section.
  - Added the [Configuring Enhanced NFProfile Processing](#) section to enable or disable the feature.
  - Updated the [Metrics](#) section with the following changes:
    - \* Added the `ocscp_ignore_unknown_service_total` metric to know the total number of unknown services ignored in the NF profile.
    - \* Renamed the `ocscp_success_processed_nf_notification_total` metric to `ocscp_notification_nf_profile_processing_success_total`.
    - \* Renamed the `ocscp_failure_processed_nf_notification_total` metric to `ocscp_notification_nf_profile_processing_failure_total`.
  - Added the [SCPIgnoreUnknownService](#) alert in the [Alerts](#) section.
- The following changes are made as part of the Message Feed enhancements:
  - Updated the description of the Message Feed feature with new enhancements in the [Message Feed Enhancements](#) section.
  - Updated the [Metrics](#) section with the following changes:
    - \* Renamed the `ocscp_metric_trafficfeed_total` metric to `ocscp_metric_trafficfeed_attempted_total`.
    - \* Added two new dimensions to `ocscp_metric_trafficfeed_failed_total` and `ocscp_metric_trafficfeed_not_attempted_total` metrics: `kafka_broker_id` and `kafka_partition_id`.
    - \* Added the following new metrics:
      - \* `ocscp_metric_trafficfeed_partition_unhealthy`
      - \* `ocscp_metric_trafficfeed_success_total`
      - \* `ocscp_metric_trafficfeed_cluster_unhealthy`
  - Renamed the `SCPTrafficFeedFailed` alert to [SCPTrafficFeedSendFailed](#).
  - Added the following alerts:

- \* [SCPTrafficFeedPartitionUnhealthy](#)
- \* [SCPTrafficFeedKafkaClusterUnhealthy](#)

#### Release 23.4.0 - F87575-02, February 2024

- Updated the [Supported NF Types](#) section with a note to specify that the nscp-5g-sbi-proxy service is supported only in the Release 15 deployment model.

#### Release 23.4.0 - F87575-01, December 2023

- Updated the following metrics in the [SCP Metrics](#) section:
  - ocscp\_configuration\_dnssrv\_nrf\_invalid\_data
  - ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_failure\_count\_total
  - ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_success\_count\_total
  - ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_failure
  - ocscp\_configuration\_dnssrv\_nrf\_migration\_task\_failure
  - ocscp\_configuration\_dnssrv\_nrf\_duplicate\_target\_detected
- Updated the description of 3gpp-Sbi-Producer-Id and 3gpp-Sbi-Target-apiRoot headers in the [Supported 3GPP Headers](#) section.
- Added upgrade and rollback events information in the [Configuring Upgrade and Rollback Event](#) section.
- Updated the ocscp\_worker\_http\_req\_host\_type\_total metric with a note as a part of the Host Preference for Egress Message Requests feature.
- Added the [Support for Automated Certificate Lifecycle Management](#) section to describe automated certificate management using OCCM.
- The following changes are made as part of the NRF Configuration using DNS SRV Resolution feature:
  - Added information about querying the DNS server to locate the target NRF FQDNS in the [NRF Configuration Using DNS SRV Resolution](#) section.
  - Added the [Configuring NRF SRV](#) section to configure NRF using DNS SRV Resolution.
  - Updated [Configuring SCP Features](#) to enable the NRF Configuration using DNS SRV Resolution feature.
  - Added the following metrics in the [SCP Metrics](#) section:
    - \* ocscp\_configuration\_dnssrv\_nrf\_invalid\_data
    - \* ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_failure\_count\_total
    - \* ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_success\_count\_total
    - \* ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_failure
    - \* ocscp\_configuration\_dnssrv\_nrf\_migration\_task\_failure
    - \* ocscp\_configuration\_dnssrv\_nrf\_duplicate\_target\_detected
  - Added the following alerts in the [Alerts](#) section:
    - \* [SCPDNSSRVNRFMigrationTaskFailure](#)
    - \* [SCPDNSSRVNRFNonMigrationTaskFailure](#)
    - \* [SCPDNSSRVNRFDuplicateTargetDetected](#)

- The following changes are made as part of the Support for cnDBTier APIs in CNC Console feature.
  - Added information about cnDBTier APIs support in the [Support for cnDBTier APIs in CNC Console](#) section.
  - Added the [Viewing cnDBTier APIs in CNC Console](#) section to view the status of cnDBTier clusters and georeplication status on the CNC Console.
- The following changes are made as part of the SCP Response Timeout Extension feature:
  - Added information about response timeout extension in the [SCP Response Timeout Extension](#) section.
  - Updated the following metrics in the [SCP Metrics](#) section:
    - \* ocscp\_metric\_upstream\_service\_time\_total
    - \* ocscp\_metric\_request\_processing\_time\_total
    - \* ocscp\_metric\_response\_processing\_time\_total
  - Added the [SCPHighResponseTimeFromProducer](#) in the the Alerts section.
- Added the [Custom Header Support at SCP](#) feature to optimize the 5G core traffic.
- Updated the attributes of the ocscp\_metric\_ssl\_certificate\_expire\_total metric and the [SCPWorkerSSLCertificateExpire](#) alert in [Metrics](#) and alert sections, respectively.
- The following changes are made as part of the 5G SBI Message Mediation Support feature:
  - Added information about mediation rules and their configuration in the [Mediation Rule Configuration Enhancement](#) section.
  - Added the migration of rules from the existing configuration map to the database procedure in the [Mediation Rule Migration Process](#) section.
  - Added the [Configuring Mediation Rules](#) section to configure the mediation rule.
- The following changes are made as part of the Overload Control Based on the Overload Control Information Header feature:
  - Added information about the 3gpp-Sbi-Oci header to convey overload control information to NFs in the [Overload Control Based on the Overload Control Information Header](#) section.
  - Added the [Configuring OCI Threshold Levels](#) section to retrieve, modify, and remove OCI threshold configuration data.
  - Added the [Configuring OCI](#) section to retrieve, modify, and remove OCI configuration data.
  - Updated the [Configuring SCP Features](#) section to enable the Overload Control Information (OCI) feature.
  - Added the following metrics in the [SCP Metrics](#) section:
    - \* ocscp\_worker\_peer\_oci\_conveyance\_total
    - \* ocscp\_worker\_oci\_conveyance\_total
    - \* ocscp\_worker\_oci\_enforced\_total
    - \* ocscp\_worker\_rx\_unsupported\_oci\_scope\_total
    - \* ocscp\_metric\_nf\_oci\_rx\_total
- Added the [SCP Microservices and Probes](#) section to describe the importance of Kubernetes probes in monitoring and managing the health of SCP application.

- 
- Added the "Load Balancing Support for Delegated Discovery" section as an enhancement to the Support for Model D feature in the [Support for Model D Indirect 5G SBI Communication with Delegated Discovery](#) section.
  - Added information about georedundancy in the [Support for Three-site Georedundancy](#) section.
  - Added the following alerts as part of the Pod Overload Control feature:
    - [SCPCPUUsageFileReadFailed](#)
    - [SCPGroupVersionDetectionFailed](#)
  - Updated the dimensions of the following metrics in the [SCP Metrics](#) section:
    - `ocscp_audit_2xx_empty_nf_array`
    - `ocscp_audit_error_response`



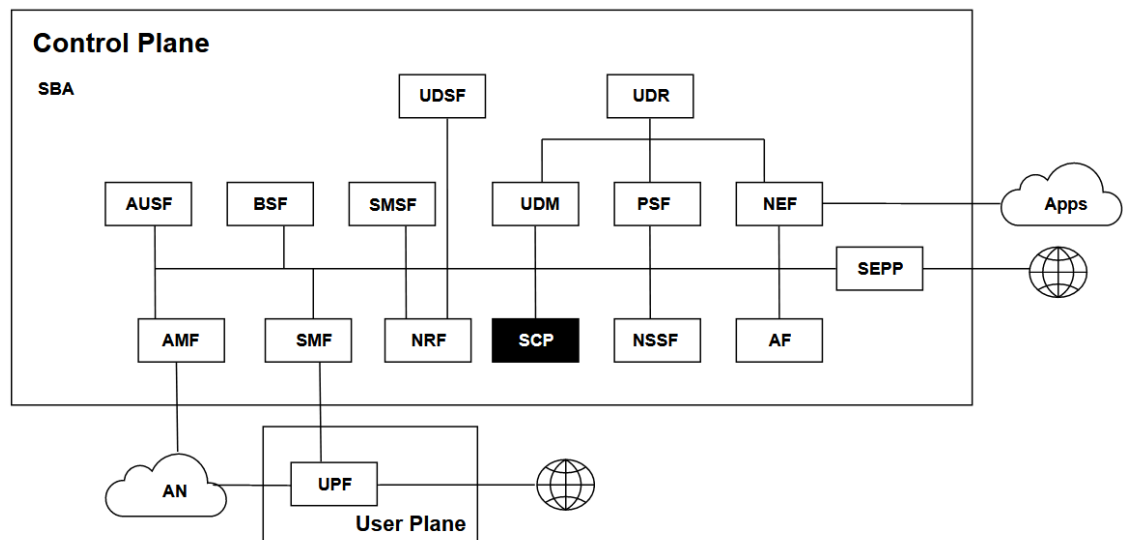
# 1

## Introduction

This document provides information about how to use Oracle Communications Cloud Native Core, Service Communication Proxy (SCP) in the cloud native 5G core network.

SCP is a 3GPP-defined network entity that works as an HTTP/HTTPS proxy in the 5G SBA control plane. 5G NFs communicate indirectly via the SCP in the indirect communication models.

**Figure 1-1 Service Based Architecture(SBA) for 5G Core**



The core network in 5G follows a service-based architecture, where network functions provide services that can be utilized using REST APIs by other functions. This allows the adoption of web-scale technologies and software that are used by different organizations in the telecommunications network.

SCP provides the following functionalities in the 5G core:

- **Routing/Selection:** Routing rules, refresh cache, and handle application failures and redirects.
  - **Dynamic Discovery:** The 5G topology is learned from Network Repository Function (NRF) and routing rules are created automatically based on the learned NF profiles.
  - **Static Configuration:** SCP allows the configuration of NF profiles.
- **Load Balancing:** Load balancing based on NF set, priority, and capacity published in the NF profile.
- **NF Subscription:** Subscription for all NF types to learn the network topology.
- **Circuit Breaking:** Pro-active method to detect the degraded producer NF instances in the network. Implemented on a per FQDN basis when outstanding transactions exceed a configurable value.

- **Message Priority:** Message Priority assignment and override based on the 3GPP-SBI-Message-Priority header.
- **Congestion Control:** Congestion control for producer NF instances based on their published NF load.
- **Overload Control:** Avoids SCP failures by providing overload control for SCP-worker pods based on CPU usage. Uniform load balancing and routing strategy across the network and protects the pod from overload related to various system resources.

### SCP Availability

Oracle Communications Cloud Native Core, Service Communication Proxy (SCP) availability depends on many factors. SCP applications are designed to achieve 99.999% availability according to the applicable Telecommunications Industry Association TL9000 standards with the following deployment requirements:

- Deploy on a Cloud Native Environment with at least 99.999% availability.
- Deploy with  $n + k$  (up to 2) application redundancy, where  $k$  is greater than or equal to one.
- Maintain production software within  $n-3$  software releases, where  $n$  is the current general availability release.
- Apply bug fixes, critical patches, and configuration recommendations provided by Oracle promptly.
- Maintain fault recovery procedures external to the applications for the reconstruction of lost or altered files, data, programs, or Cloud Native environment.
- Install, configure, operate, and maintain SCP as per Oracle's applicable installation, operation, administration, and maintenance specifications.
- Maintain an active support contract and provide access to the deployed SCP and your personnel to assist Oracle in addressing any outage.

#### Note

The performance and capacity of the SCP system may vary based on the call model, feature or interface configuration, network conditions, and underlying CNE and hardware environment.

SCP availability is measured for each calendar year and is calculated as follows:

**Table 1-1 Measuring SCP Availability**

| Availability                        | Description                                                                                                                                 |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Planned Product Availability</b> | (Product available time in each month) less ( <b>Excluded Time</b> (defined below) in each month).                                          |
| <b>Actual Product Availability</b>  | (Planned Product Availability) less (any Unscheduled Outage)                                                                                |
| <b>Product Availability Level</b>   | (Actual Product Availability across all Production instances divided by Planned Product Availability across all Production instances) x 100 |

**Note**

**Excluded Time** means:

- Scheduled maintenance time.
- Lack of power or backhaul connectivity, except to the extent that such lack of backhaul connectivity was caused directly by the CNC NF.
- Hardware failure.
- Issues arising out of configuration errors or omissions.
- Failures caused by third-party equipment or software not provided by Oracle.
- Occurrence of any event under Force Majeure.
- Any time associated with failure to maintain the recommended architecture and redundancy model requirements above.

## 1.1 References

- *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*
- *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*
- *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*
- *Oracle Communications Cloud Native Core, Automated Test Suite Guide*
- *Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide*
- *Oracle Communications Cloud Native Core, Network Repository Function User Guide*
- *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*
- *Oracle Communications Cloud Native Core, Cloud Native Environment User Guide*
- *Oracle Communications Network Analytics Data Director User Guide*
- *Oracle Communications Cloud Native Core, Certificate Management Installation, Upgrade, and Fault Recovery Guide*
- *Oracle Communications Cloud Native Core, Certificate Management User Guide*
- <https://github.com/k8snetworkplumbingwg/multus-cni>.

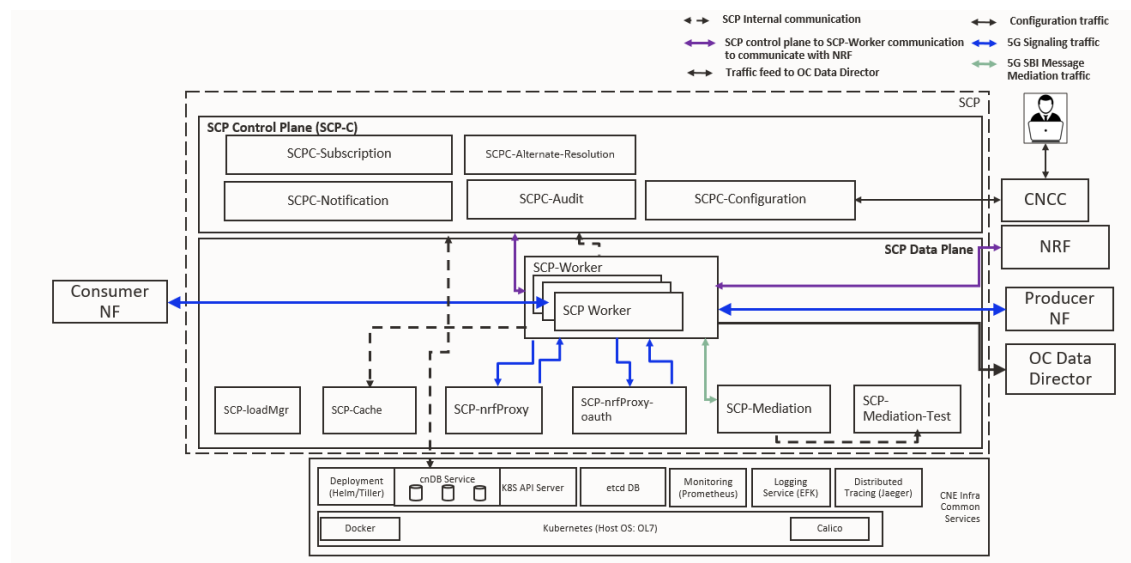
# 2

## Service Communication Proxy Architecture

This section explains the Oracle Communications Cloud Native Core, Service Communication Proxy (SCP) system architecture.

SCP is a decentralized solution composed of control plane and data plane. This solution is deployed with 5G Network Functions (NFs) for providing routing control, resiliency, and observability to the core network.

**Figure 2-1 Service Communication Proxy Architecture**



The SCP solution is deployed either as a default outbound proxy to NF instances or as a router model, where SCP is configured as HTTP2 outbound proxy at each NF in cloud native environments.

### SCP Microservices

The list of SCP microservices is as follows:

**Table 2-1 SCP Microservices**

| Microservices     | Description                                                                                                                                                                                                                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCPC-Notification | It configures routing rules as per 5G NF topology information obtained from NRF, or as result of audit. It tracks the 5G NF topology for any change and updates in the route rules or configuration. It translates the topology into low-level SCP-Worker configuration and provides the configuration to the Worker when requested. |

Table 2-1 (Cont.) SCP Microservices

| Microservices             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCPC-Audit                | It performs periodic audit with NRF to synchronize the 5G NF topology information and updates routing rules through notifications if required.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| SCPC-Configuration        | It provides an interface for SCP configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| SCPC-Subscription         | It performs NRF management and NRF discovery service operation for SCP registration and subscription for NF change notification.                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| SCPC-Alternate-Resolution | It finds an alternate NF service by performing DNS SRV queries with the DNS server and receives the DNS SRV responses. <ul style="list-style-type: none"> <li>Refreshes DNS SRV records to get update in DNS SRV records.</li> <li>Provides DNS SRV records to scp-worker when required.</li> </ul>                                                                                                                                                                                                                                                                                       |
| SCP-Worker                | It receives 5G signaling traffic and controls communication and routing among 5G NFs and services. <ul style="list-style-type: none"> <li>5G NF selection for routing and rerouting across available 5G NFs</li> <li>Endpoint selection based on NF profile information registered with NRF</li> <li>Congestion control and traffic throttling using Ingress and Egress</li> <li>Load balancing and overload control</li> <li>5G SBI message priority assignment</li> <li>5G SBI Mediation</li> <li>5G Observability data</li> </ul>                                                      |
| SCP-NrfProxy              | It operates as an intermediate proxy between SCP-Worker and NRF for NF Discovery service requests originated by SCP. <ul style="list-style-type: none"> <li>It stores NF Discovery responses received from NRF through SCP-Worker.</li> <li>It receives NF Discovery requests, along with query parameters from SCP-Worker, and forwards the created NF Discover requests to NRF through SCP-Worker. After receiving the NF Discovery responses from NRF through SCP-Worker, the nrfproxy service sends the response to SCP-Worker and stores the response for subsequent use.</li> </ul> |
| SCP-Cache                 | It maintains the present status of ingress and egress traffic rate limiting and serves to the SCP-Worker microservice by storing the keys of rate limiting when required.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| SCP-Mediation             | It allows the modification of 5G SBI message content such as HTTP2 header values or JSON message body or the both, based on user-defined mediation rule sets to solve any inter-op issues. It applies user configured message mediation policy rules on ingress 5G SBI messages to execute message mediation transformation.                                                                                                                                                                                                                                                              |
| SCP-Mediation-Test        | It enables to test the user configured message mediation policy test rules on ingress 5G SBI messages without actual execution on messages and mediation transformation.                                                                                                                                                                                                                                                                                                                                                                                                                  |

Table 2-1 (Cont.) SCP Microservices

| Microservices      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCP-LoadManager    | It manages the load and overload control information of peer NFs and SCPs on its own. It determines the latest load information from NRF or the LCI header using timestamp and shares the updated information with SCP-Worker pods using distributed cache. SCP-Worker pods process the received LCI information, update the routing rules, and use it for 5G SBI request routing and selection.                                                                                                                                |
| SCP-NrfProxy-Oauth | It is an intermediary proxy between SCP-Worker and NRF for processing OAuth2.0 access token service requests. It caches the OAuth2.0 access token received from NRF through SCP-Worker. It receives the OAuth2.0 access token request from SCP-Worker and forwards the created OAuth2.0 access token service request to NRF through SCP-Worker. After receiving the OAuth2.0 access token response from NRF through SCP-Worker, SCP-nrfProxy-Oauth sends the response to SCP-Worker and caches the response for subsequent use. |

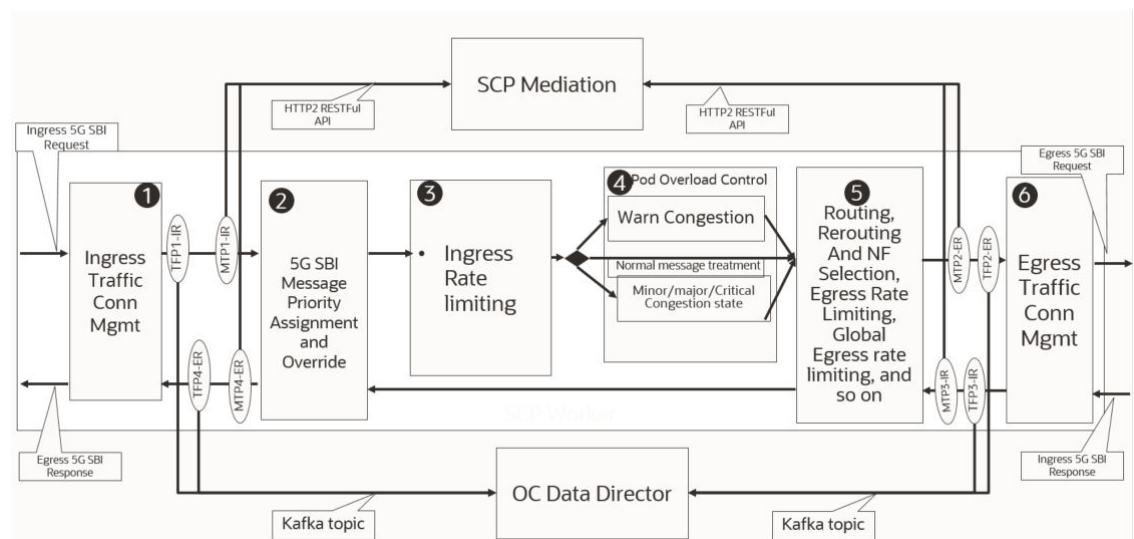
### Ingress and Egress Gateway Traffic Management

For more information about Ingress and Egress Gateway Traffic Management, see *Oracle Communications Cloud Native Core, Cloud Native Environment User Guide*.

## 2.1 5G SBI Message Processing and Trigger Points

The following image represents how SCP processes ingress 5G SBI message requests from consumer NFs.

Figure 2-2 5G SBI Message Processing and Trigger Points



# 3

## Service Communication Proxy Features

This chapter describes the features of Oracle Communications Cloud Native Core, Service Communication Proxy (SCP).

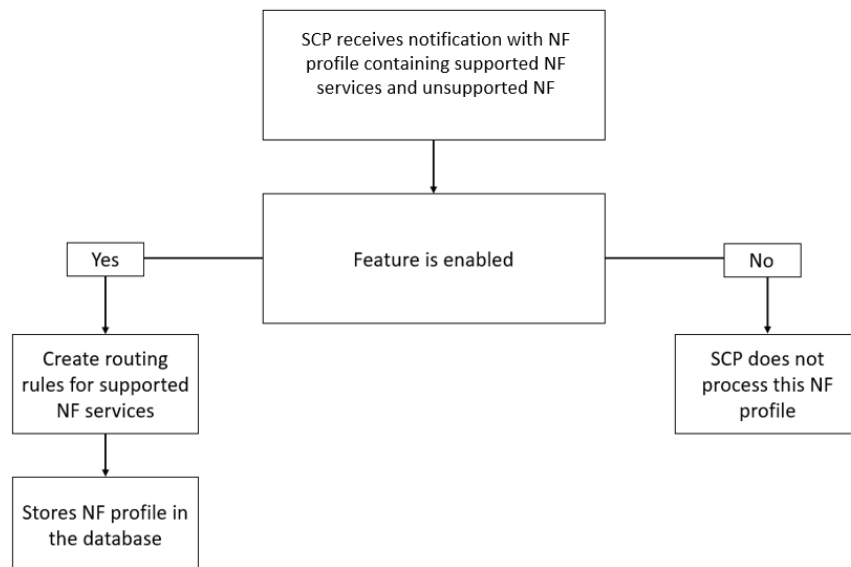
### Note

The performance and capacity of the SCP system may vary based on the call model, feature or interface configuration, network conditions, and underlying CNE and hardware environment.

### 3.1 NFProfile Processing Enhancements

In the previous releases, SCP did not support custom NF services. When SCP receives a notification from NRF about an NF profile that has 3GPP-defined supported NF services along with custom, unknown, or unsupported NF services, it will reject the whole NF profile. Therefore, routing rules were not generated for 3GPP-defined supported NF services when a custom, unknown, or unsupported NF service was present in the NF profile.

With this enhancement, whenever SCP receives a notification regarding an NF profile that includes 3GPP-defined supported NF services, custom, unknown, or unsupported NF services, SCP ignores the presence of custom, unknown, or unsupported NF services within the NF profile. Routing rules are generated by SCP for 3GPP-defined SCP supported NF services that are present in the NF profile. Consequently, SCP enhanced the process of handling NF profiles by streamlining the routing process and ensuring efficient and reliable communication between NFs.

**Figure 3-1 Call Flow of NFProfile Processing**

1. SCP receives a notification with an NF profile including 3GPP-defined supported NF services, custom, unknown, or unsupported NF services.
2. If the feature is enabled, then SCP creates routing rules for the 3GPP-defined supported NF services and ignores the custom, unknown, or unsupported NF services present in the NF profile.
3. SCP stores the NF profile in the database.
4. If the feature is disabled, then SCP does not process that NF profile and no routing rules will be created for that NF profile.  
This call flow ensures that SCP appropriately handles notifications and routing rules procedures with supported NF services while disregarding unsupported services.

## Managing NFProfile Processing Enhancements

### Enable

You can enable this feature by setting the **ignore\_unknown\_nfservice** parameter to true. For more information, see [Configuring Enhanced NFProfile Processing](#)

### Configure

You can enable this feature using the CNC Console or REST API.

- **Configure using CNC Console:** For more information about CNC Console configurations, see [Configuring Enhanced NFProfile Processing](#).
- **Configure using REST API:** For information about REST API configurations, see "Configuring SCP Features" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

- Added the `ocscp_ignore_unknown_service_total` metric in the [SCP Metrics](#) section.
- Added the [SCPIgnoreUnknownService](#) in the [Alerts](#) section.



## Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.2 Message Feed Enhancements

The Message Feed feature allows copying of both request and response messages routed through SCP toward Oracle Communications Network Analytics Data Director (OCNADD) based on the configuration at SCP. Along with request and response messages, metadata, as described in [Table 3-1](#), is also sent to OCNADD.

The Message Copy feature provides SSL and SASL as a security mechanism for encryption and authentication. SSL can be configured for encryption, and it also serves as two way authentication between the scp-worker and the Kafka broker. SASL can be configured to achieve authentication of connections to brokers from scp-worker. Configuration of both SSL and SASL can be done on SCP with secret creation and specifying them under the ddSslConfiguration and ddSaslConfiguration sections of the SCP deployment file.

From SCP 23.4.1, SCP is enhanced to select Kafka partitions based on the kafkaPartitionSelectionLogic REST API configuration that provides the following methods to distribute the messages:

- RoundRobin: All the messages are distributed across all the available partitions in a round-robin order.
- KeyBased: Messages with the same correlation-id are routed to the same partition. This ensures the same transaction messages are routed to the same partition.  
For more information about kafkaPartitionSelectionLogic, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

OCNADD aggregates the data for monitoring and analytical purposes. For more information about OCNADD, see *Oracle Communications Network Analytics Data Director User Guide*.

The following table describes metadata sent to OCNADD:

**Table 3-1 Metadata Table**

| Metadata       | Description                                                                                                                             |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| correlation-id | Identifies transactions such as ingress downstream request, all corresponding upstream requests and responses, and downstream response. |
| consumer-id    | Indicates the 5G NF instance ID of the originator NF, which is retrieved from the User-Agent header in the received request message.    |
| producer-id    | Indicates the 5G NF instance ID of the destination NF.                                                                                  |
| consumer-fqdn  | Indicates FQDN of the originator NF, which is retrieved from the User-Agent header in the received request message.                     |
| producer-fqdn  | Indicates FQDN of the destination NF.                                                                                                   |
| hop-by-hop-id  | Uniquely identifies a request-response pairs within a transaction.                                                                      |

Table 3-1 (Cont.) Metadata Table

| Metadata          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| reroute-cause     | <p>Indicates the reroute cause.<br/>It contains one of the following parameters:</p> <ul style="list-style-type: none"> <li>• Circuit breaking: Indicates that a message is an alternate attempt due to circuit breaking functionality at SCP.</li> <li>• Outlier detection: Indicates that a message is an alternate attempt due to outlier detection functionality at SCP.</li> <li>• Egress-rate-limit: Indicates that a message is an alternate attempt due to egress rate limiting functionality at SCP</li> <li>• producer-nf-congestion: Indicates that a message is an alternate attempt due to producer NF congestion</li> <li>• Error received</li> <li>• Timeout</li> <li>• Not Applicable</li> </ul> |
| timestamp         | Indicates timestamp (in nanoseconds) when message is received or forwarded by SCP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| message-direction | <p>Indicates whether a message is an ingress message sent to SCP or an egress message forwarded by SCP.<br/>It can be indicated by putting the following traffic feed trigger point name:</p> <ul style="list-style-type: none"> <li>• RxRequest</li> <li>• TxRequest</li> <li>• RxResponse</li> <li>• TxResponse</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                     |
| feed-source       | <p>Indicates the source of this traffic feed.<br/>This contains the key-value of different identity of the node sending the traffic feed.</p> <ul style="list-style-type: none"> <li>• Feed-source</li> <li>• nf-type = SCP</li> <li>• nf-fqdn = SCP's FQDN</li> <li>• nf-instance-id = SCP's NF instance id</li> <li>• pod-instance-id = SCP-worker's pod instance id</li> </ul>                                                                                                                                                                                                                                                                                                                                |

Sample traffic feed generated by SCP:

```
{
  "version": "1.0.0",
  "metadata-list": {
    "correlation-id": "19645510-4698-4303-84f9-41c5414822e0",
    "consumer-id": "26740918-e9cd-0205-aada-71a76214d33c",
    "consumer-fqdn": "udm121.oracle.com",
    "producer-fqdn": "udm1svc.default.svc.cluster.local",
    "hop-by-hop-id": "1",
    "reroute-cause": "ErrorReceived",
    "timestamp": "1659959278583551367",
    "message-direction": "RESPONSE_EGRESS",
    "feed-source": {
      "nf-type": "SCP",
      "nf-fqdn": "ocscp-scp-worker.scpsvc.svc.cluster.local",
      "nf-instance-id": "6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e",
      "pod-instance-id": "ocscp-scp-worker-65df786b4d-qv7hs"
    }
  }
},
```

```

"header-list": {
  "server": [
    "SCP-ocscp-scp-worker.scpsvc.svc.cluster.local"
  ],
  "content-type": [
    "application/problem+json"
  ]
},
"5g-sbi-message": "{\"title\":\"Service
Unavailable\", \"status\":\"503\", \"detail\":\"Service Unavailable:: Service
Unavailable\"}"
}

```

## Managing Message Copy

### Enable

By default, this feature is disabled. To enable this feature, you must complete the configuration as described in the following configuration section.

### Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about CNC Console configurations, see [Configuring SCP Features](#) and [Configuring Traffic Feed](#).
- **Configure using REST API:** For information about configuring REST APIs, see "Configuring SCP Features", "Configuring Traffic Feed Data Director", and "Configuring Traffic Feed Trigger Point Config" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

The following metrics are added in the [Metrics](#) section:

- ocscp\_metric\_trafficfeed\_attempted\_total
- ocscp\_metric\_trafficfeed\_failed\_total
- ocscp\_metric\_trafficfeed\_not\_attempted\_total
- ocscp\_metric\_trafficfeed\_partition\_unhealthy
- ocscp\_metric\_trafficfeed\_success\_total
- ocscp\_metric\_trafficfeed\_cluster\_unhealthy

The following alerts are added in the [Alerts](#) section:

- [SCPTrafficFeedSendFailed](#)
- [SCPTrafficFeedPartitionUnhealthy](#)
- [SCPTrafficFeedKafkaClusterUnhealthy](#)

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.

2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.3 Support for cnDBTier APIs in CNC Console

With the implementation of this feature, cnDBTier APIs are integrated into the CNC Console, and SCP users can view specific cnDBTier APIs, such as checking the cnDBTier version, status of cnDBTier clusters, and georeplication status on the CNC Console.

The following cnDBTier APIs are read only and can be viewed in CNC Console:

- **Backup List:** This API displays the details of stored backups, such as the ID and size of the backup.
- **cnDBTier version:** This API displays the cnDBTier version.
- **Database Statistics Report:** This API displays the number of available database.
- **Geo Replication Status:**
  - **Real Time Overall Replication Status:** This API displays the overall replication status in multisite deployments. For example, in a four-site deployment, it provides the replication status between the following sites: site1-site2, site1-site3, site1-site4, site2-site3, site2-site4, and site2-site1. This is applicable for all other sites.
  - **Site Specific Real Time Replication Status:** This API displays the site-specific replication status.
- **HeartBeat Status:** This API displays the connectivity status between the local site and the remote site name to which SCP is connected.
- **Local Cluster Status:** This API displays the status of the local cluster.
- **On-Demand Backup:** This API displays the status of initiated on-demand backups.

### Managing cnDBTier APIs at CNC Console

#### Enable

This feature is enabled automatically when cnDBTier is configured as an instance during the CNC Console deployment. For more information about integrating cnDBTier APIs in CNC Console, see *Oracle Communications Cloud Native Core, cnDBTier User Guide*.

#### Configure

You can view cmDBTier APIs at CNC Console in the [Viewing cnDBTier APIs in CNC Console](#) section.

#### Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.4 NRF Configuration Using DNS SRV Resolution

Currently, SCP supports the static configuration (helm configuration) of NRF profiles from the `custom-values.yaml` file and uses them for registration, subscription, discovery, and audit.

With the introduction of this feature, SCP supports the configuration (RESTful) of NRF Service (SRV) FQDN at SCP. SCP uses this Domain Name System Service (DNS) SRV Resource record, known as Service Proto Name (SPN), to query the DNS server to locate the actual target NRF FQDNS (DNS SRV NRF FQDN). Thus, the user can configure primary (mandatory), secondary, and tertiary NRFs based on their priority and weights from different regions in the DNS server against a NRF SRV FQDN.

During migration, SCP deregisters and unsubscribes from static NRFs to update the NRF details stored statically at SCP with DNS SRV NRFs. Hence, it creates new rules for DNS SRV NRFs and deletes old static NRF rules. SCP instructs Audit microservice to perform an on-demand audit. The user can configure the DNS SRV and update all the data in the database for subscription, registration, discovery, and audit services. Configuration of different NRF SRV FQDN's with duplicate `nfsetIds` is not allowed. SCP allows users to configure multiple `nfsetIDs`, provided they are unique, but SCP will support only the 0th `nfsetID`.

To use the same `NFInstance ID` from the static NRF config, the following conditions must be met:

- The NF set ID should match
- NF service counts should match, and NF service FQDNs should also match

Hence, if the LCI comes from NRF against a different `nfinstanceID`, SCP will ignore the received LCI header as unknown.

To enable `InterPlmn` routing, the user needs to set the `isInterPlmnFqdn` field to `true` in the NRF SRV CONFIG table for the corresponding NRF SRV FQDN. Also, users need to add DNS SRV entries as target FQDNs against the NRF SRV FQDN.

### Note

To avoid the loss of service, it is recommended that the user configure the same static target FQDN and `NFSetID` in the DNS SRV configuration, which are configured for Support for Model D and Support for OAuth2.0 Feature.

If the same target NRF FQDN is detected against different NRF SRV FQDNs, the `ocscp_configuration_dnssrv_nrf_duplicate_target_detected` metric is pegged, where the value of `nrfSrvFqdn` indicates the NRF SRV FQDN against which a duplicate target NRF is detected.

### Managing NRF Configuration using DNS SRV Resolution

#### Enable

During deployment:

Set the `enableDnsBasedNrfBootStrapInfoFeature` to `true` and provide the NRF SRV Config under the `nrfSrvConfiguration` field of the deployment file to enable the DNS SRV NRF feature during fresh deployment.

Sample of changes in deployment file:

```
#-----NRF Bootstrapping based on DNS SRV-----#
#Enable/Disable nrf_bootstrap_info feature
  enableDnsBasedNrfBootStrapInfoFeature : false
  deRegisterScpDuringMigration: false

#Preferred DNSSRV NrfSetId to be used for on demand discovery when
nrf_bootstrap_info feature is enabled during deployment
  preferredDNSSRVNrfSetIdForOnDemandDiscovery:
["setnrf11.nrfset.5gc.mnc012.mcc345"]

#Configure NRF Configuration using DNS SRV Resolution when the
nrf_bootstrap_info feature is enabled.
  nrfSrvConfiguration:
    - nrfSrvFqdn: nrf1svc.scpsvc.svc.cluster.local
      data:
        "v1":
          nfSetIdList:
            - "setnrf11.nrfset.5gc.mnc012.mcc345"
          #plmnList:
          # - mcc: 330
          #   mnc: 143
          performSubscription: true
          performAudit: true
          registerScp: true
          scheme: http
          #apiPrefix: USEast
          versions:
            - apiVersionInUri: v1
              apiFullVersion: 1.0.0
          serviceNames:
            - nnrf-nfm
            - nnrf-disc
            - nnrf-oauth2
          isInterPlmnFqdn: false
```

For more information, refer *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

By default, this feature is disabled. You can use the `nrf_bootstrap_info` option to enable or disable NRF configuration using the DNS SRV resolution feature and its configuration as described in the [Step 15](#) of the [Configuring SCP Features](#) section.

#### Note

DNS SRV alternate routing feature should be enabled to enable NRF Configuration using DNS SRV Resolution feature.

## Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about configuring this feature, see the [Configuring NRF SRV](#) and [Mapping NFInstanceId and ServiceInstanceId](#) sections. To view the runtime status of NRF migration task, see the [Viewing SCP Feature Status](#) Status section.
- **Configure using REST API:**  
You can configure this feature using REST APIs as described in "Configuring SCP Features", "SCP NRF SRV Configuration", and "SCP NRF FQDN InstanceId Mapping". You can view the runtime status of NRF migration task in the "Viewing SCP Feature Status" section in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

The following metrics are added in the [SCP Metrics](#) section:

- `ocscp_configuration_dnssrv_nrf_non_migration_task_failure_count_total`
- `ocscp_configuration_dnssrv_nrf_non_migration_task_success_count_total`
- `ocscp_configuration_dnssrv_nrf_non_migration_task_failure`
- `ocscp_configuration_dnssrv_nrf_migration_task_failure`
- `ocscp_configuration_dnssrv_nrf_duplicate_target_detected`

The following alerts are added in the [Alerts](#) section:

- [SCPDNSSRVNRFMigrationTaskFailure](#)
- [SCPDNSSRVNRFNonMigrationTaskFailure](#)
- [SCPDNSSRVNRFDuplicateTargetDetected](#)

### Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.5 SCP Response Timeout Extension

Currently, users can configure a response timeout, a time interval to receive a response by SCP, up to 10 seconds.

This feature allows users to set a maximum response timeout of up to 15 seconds for all the services supported by the SCP. Once the timeout expires, SCP initiates rerouting to an available alternate NF or pod.

**Note**

SCP raises an alert if total forwarded request rate with a response time greater than 10-seconds cross 200 requests per second. If the number of such requests is high, then overload control based on pending transactions or CPU-based overload control will be triggered.

**Managing SCP Response Timeout in Routing Option Configuration****Enable**

This feature is enabled automatically at the time of SCP deployment.

**Configure**

You can configure this feature using REST APIs as described in "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

**Observe**

- The `ocscp_metric_upstream_service_time_total` metric is updated with new buckets for response timeout in the [SCP Metrics](#) section.
- Added `SCPHighResponseTimeFromProducer` alert in the [SCPHighResponseTimeFromProducer](#) section.

**Maintain**

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.6 Overload Control Based on the Overload Control Information Header

SCP, SEPP, producer NFs, and consumer NFs get overloaded when they operate beyond their signaling capacity. An enhancement is required to include Overload Control Information (OCI) in 5G Service Based Interface (SBI) messages to convey the overload capacity of NFs to their peers.

Using the Overload Control Based on the Overload Control Information Header feature, SCP, SEPP, consumer NFs, and producer NFs can gracefully reduce their incoming signaling traffic by conveying consumer NFs to reduce sending service requests or by conveying producer NFs to reduce sending notification requests, respectively, so that these entities or peer NFs can process the traffic according to their configured capacities. After receiving the `3gpp-Sbi-Oci` header from consumer NFs, producer NFs perform the signaling reduction toward the consumer NF only for the notifications or callback requests according to the overload scope and not for any NF services that may be produced by the same NF.

Depending on SCP's configuration, SCP can:



- send its load information in the OCI header with reduction metrics based on the REST API configuration.
- reduce traffic toward the peer based on the OCI received from a peer.

OCI is conveyed within the 3gpp-Sbi-Oci header. When SCP, SEPP, consumer NF, or producer NF experiences overload conditions, it sends overload condition information through the 3gpp-Sbi-Oci header, which is tagged along with the messages to peers.

OCI contains Overload Timestamp, Overload-Reduction-Metric, Period-of-Validity, and Scope attributes in the 3gpp-Sbi-Oci header.

A sample format of the 3gpp-Sbi-Oci header for an NF instance is as follows:

Timestamp: "Mon, 04 Dec 2023 08:49:37 GMT"; Period-of-Validity: 75s; Overload-Reduction-Metric: 50%; NF-Instance: 54804518-4191-46b3-955c-ac631f953ed8

The following table describes attributes of the 3gpp-Sbi-Oci header format:

**Table 3-2 3gpp-Sbi-Oci Header Attributes**

| Attribute                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Timestamp                 | Indicates the time when the OCI was generated. This attribute is used by the OCI recipient such as peers or SCP, to decide whether the newly received OCI is the same as the previously received OCI or different. The OCI recipient can overwrite any stored OCI for a peer NF, NF set, NF service, NF service set, Callback URI, SCP, or SEPP with the newly received OCI if the new OCI is more recent than the previously stored OCI.<br>Example: Timestamp: "Mon, 04 Dec 2023 08:49:37 GMT".                                                                                                                                                                                                                                                                                                                                                              |
| Period-of-Validity        | Indicates the duration during which the overload condition specified by the 3gpp-Sbi-Oci header is considered valid until overridden by subsequent new OCIs.<br>Example: Period-of-Validity: 75s.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Overload-Reduction-Metric | Indicates the percentage of traffic reduction requested by the OCI sender to the OCI recipient. This value can range from 0 to 100.<br>Example: Overload-Reduction-Metric: 50%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Scope                     | Indicates the message requests or notification requests to which the OCI is applicable. It identifies the traffic that the OCI sender requests the receiver to process in accordance with the OCI.<br>Example: NF-Instance: 54804518-4191-46b3-955c-ac631f953ed8.<br>List of supported olcScope in the OCI header at SCP: <ul style="list-style-type: none"> <li>• nfProducerScope <ul style="list-style-type: none"> <li>– NF-Instance</li> <li>– NF-Service-Instance</li> </ul> </li> <li>• nfConsumerScope <ul style="list-style-type: none"> <li>– Callback-Uri</li> <li>– NF-Instance</li> <li>– NF-Service-Instance</li> <li>– NF-Instance and Service-Name</li> </ul> </li> <li>• scpScope <ul style="list-style-type: none"> <li>– SCP-FQDN</li> </ul> </li> <li>• seppScope <ul style="list-style-type: none"> <li>– SEPP-FQDN</li> </ul> </li> </ul> |

### Conveyance of OCI

The following scenarios explain the conveyance of OCI:

## Peer OCI Enforcement

SCP performs OCI enforcement based on the OCI header received from the peer and the REST API configuration.

When a peer NF is overloaded, it sends OCI to SCP so that SCP can throttle the traffic destined for that peer NF. Based on the `ociEnforcementAction` REST API parameter configuration, SCP can perform alternate routing to another equivalent peer NF or directly send an error response to the peer consumer NF. SCP relays the OCI received from the peer NF to other peer NFs based on the `relayPeerOci` REST API parameter configuration as described in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*. For example, if the `Overload-Reduction-Metric` attribute of the OCI header is 10%, the producer NF conveys SCP to reduce the message rate by 10%. If SCP has 100 messages to be routed to that producer NF, SCP will route 90 messages to the target producer NF. To process the pending 10 messages, SCP can reroute the messages to another equivalent NF or send an error response to the consumer NF based on the `ociEnforcementAction` REST API parameter.

After the expiry of peer OCI `Period-of-Validity` attribute, SCP can continue sending traffic toward the peer immediately or incrementally based on the `ociTrafficRecoveryPolicy` REST API parameter.

## Self-OCI Generation and Conveyance

SCP conveys its overload control information, which is known as self-OCI, with its peer NFs when SCP is overloaded.

The overload condition of SCP is determined by the CPU utilization of all SCP-Worker pods. SCP is overloaded when the average CPU utilization of all the pods exceeds the configured OCI threshold levels.

When SCP is overloaded, SCP generates OCI based on the threshold levels such as `WARN`, `MINOR`, `MAJOR`, and `CRITICAL`, configured using the `ociThresholdConfig` REST API parameter as described in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*. SCP sends the self-generated OCI only when there is any message to be routed to the peer NF.

SCP starts conveying OCI to peers when it gets overloaded based on the configured threshold level. OCI is conveyed for the following scenarios:

- When OCI threshold changes: Whenever SCP's traffic load changes resulting in OCI threshold changes, SCP creates a new OCI based on the current threshold level configuration values and current timestamp.
- When the `Period-of-Validity` attribute expires: When the `Period-of-Validity` attribute of the last sent OCI expires, SCP creates a new OCI based on the current threshold level configuration values and current timestamp.
- Periodically: After every `scpOciConveyanceInterval` interval, SCP sends the same OCI that was sent last time to the peer NF.

## Managing Overload Control Information

### Enable

By default, this feature is disabled. You can use the `oci` option to enable or disable this feature as described in [Configuring SCP Features](#).

### Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about CNC Console configurations, see
  - [Configuring OCI](#)
  - [Configuring OCI Threshold Levels](#)
- **Configure using REST API:** For information about configuring REST APIs, see "Configuring SCP Features", "Configuring Overload Configuration Information Threshold" and "Configuring Overload Configuration Information" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

The following metrics are added in the [Metrics](#) section:

- ocscp\_worker\_peer\_oci\_conveyance\_total
- ocscp\_worker\_oci\_conveyance\_total
- ocscp\_worker\_oci\_enforced\_total
- ocscp\_worker\_rx\_unsupported\_oci\_scope\_total
- ocscp\_metric\_nf\_oci\_rx\_total

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.7 Custom Header Support at SCP

To enhance efficiency across the converged networks and optimize the 5G core traffic, Custom Header Support at SCP feature is introduced.

### Support for 3gpp-Sbi-Custom-UDR-Nf-Group-Id

When an NF sends a SBI message request or response with the custom header, 3gpp-Sbi-Custom-UDR-Nf-Group-Id, SCP sends the message request or response, including the custom header, to the target NF.

### Managing Custom Header Support at SCP

#### Enable

This feature doesn't require a flag to be enabled or disabled and is enabled by default.

#### Configure

There's no specific configuration required for this feature.

#### Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.8 Support for HTTPS

Hypertext Transfer Protocol secure (HTTPS) is an extension of Hypertext Transfer Protocol (HTTP). HTTPS establishes a secure connection between Network Functions (NFs) in a 5G network and uses Transport Layer Security (TLS) to encrypt the communication protocols.

With the support of HTTPS connections, SCP accepts secured ingress connection requests from a consumer NF and establishes a secured egress connection with a producer NF. HTTPS provides confidentiality and integrity protection to 5G Service Based Interface (SBI) messages.

SCP processes 5G SBI messages over HTTPS connection based on the `sbiProxySslConfigurations` parameter configuration as specified in the `custom-values.yaml` file. For more information, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*. The `sbiProxySslConfigurations` configuration authorizes both ingress and egress connections from consumer NFs and producer NFs, respectively with SCP.

SCP supports a single and multiple TLS certificates to enable HTTPS as described in [TLS Certificate Configuration Enhancement](#). SCP supports two-way TLS authentication for HTTPS connections and accesses Certificate Authority (CA) from Kubernetes secret.

### ① Note

- This feature supports HTTPS for inter-NF communication but not intra-NF communication, that is, communication between two microservices within SCP.
- SCP supports both HTTP and HTTPS concurrently. You can select to expose service IP for HTTP, HTTPS, or both.
- This feature supports TLSv1.2.

### Managing Support for HTTPS

#### Enable

This feature is enabled by setting the following Helm parameters in the `custom-values.yaml` file:

- Enabling HTTPS for ingress connections:
  - For Release 16 deployment: The `scpProfileInfo.scpInfo.scpPorts.https` parameter enables SCP to establish ingress connection with consumer NFs. You must set the `https` port to the same value as the `publicSignallingPortHttps` parameter.
  - For Release 15 deployment: To enable HTTPS for ingress connections, a new `nscp-5g-sbi-proxy` service with scheme as `https` must be added in the `nfServices` section of `scpProfileInfo` in the `custom-values.yaml` file. You must set the port to the same value as the `publicSignallingPortHttps` parameter.

## Example of NF Service for HTTPS:

```
# - serviceInstanceId: f86b54b7-aef9-4c78-b346-3bfb7f380813
#   serviceName: nscp-5g-sbi-proxy
#   fqdn: <scprel>-scp-worker.scpsvc.svc.cluster.local
#   scheme: https
#   priority: 0 # Default value is 0
#   capacity: 100 # Default value is 100
#   load: 0
#   nfServiceStatus: REGISTERED
#   ipEndpoints:
#     - ipv4Address: 10.104.121.240 # this IP should be same as
      "publicSignalingIPHttps" of SCP mentioned above.
#     port: '9443' # this port should be same as
      "publicSignalingPortHttps" of SCP mentioned above.
#   apiPrefix: # Ignored in SCP processing
#   versions: # Ignored in SCP processing, but kept for
      registering with NRF
#     - apiFullVersion: 1.0.0
#     apiVersionInUri: v1
```

- Enabling HTTPS for egress connections: The `nativeEgressHttpsSupport` parameter must be set to `true` to enable SCP to establish a connection with producer NFs over HTTPS. By default, this value is set to `false`. If this value is set to `false`, then all the connections with producer NFs are established through HTTP.

For more information about above mentioned parameters, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

**Note**

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

**Configure**

`sbiProxySslConfigurations` and `ddSslConfiguration` Helm parameters are introduced as part of this feature. To use this feature, complete the configuration as described in "Global Parameters" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

**Observe**

- The `ocscp_metric_ssl_certificate_expire_total` metric is updated in the [Metrics](#) section.
- The `SCPWorkerSSLCertificateExpire` alert is updated in the [SCPWorkerSSLCertificateExpire](#) section.

**Maintain**

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

- 1. Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.

2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.8.1 TLS Certificate Configuration Enhancement

SCP uses Hypertext Transfer Protocol Secure (HTTPS) to establish secured ingress and egress connections with consumer NFs and producer NFs, respectively. These communication protocols are encrypted using Transport Layer Security (TLS).

In SCP 23.2.0, SCP used to support a single TLS certificate configuration to enable HTTPS.

From 23.3.0, this enhancement enables SCP to configure different Transport Layer Security (TLS) certificates on ingress and egress interfaces. It also allows users to provide primary and secondary certificates for each interface.

Multiple TLS certificates can be configured across the following communication interfaces:

- Egress connections on 5G Service Based Architecture (SBA): SCP acts as a client while sending message requests to producer NFs, producer SCP-P, or NRF. For example:
  - A consumer SCP-C sends health check request to a producer SCP-P.
  - SCP forwards notifications to consumer NFs.
  - SCP forwards Service, Discovery, or Access Token requests to NRF or producer NFs.
- Ingress connections on 5G SBA: SCP acts as a server to process message requests received from consumer NFs, SCP-C, or NRF. For example:
  - SCP-P receives health check request from SCP-C.
  - SCP receives notifications from NRF or NF producer.
  - SCP receives service or health check requests from consumer NFs.
- Oracle Communications Network Analytics Data Director (OCNADD) connection on message feed: SCP acts as a client toward OCNADD on message feed interfaces, for example, SCP sends message feed data to OCNADD.

### Note

You can use a single or multiple TLS certificates to enable HTTPS.

If the primary TLS certificate expires or is about to expire, SCP switches to an alternate or secondary TLS certificate. If there is no alternate TLS certificate configured, SCP uses a single certificate to enable HTTPS. At each communication interface such as ingress, egress, and OCNADD, you can configure the `caBundle` Helm parameter to manage the Certificate Authority (CA) bundle. The CA can be the same or different at these interfaces. For example, CA signing the TLS certificate at the ingress communication interface can be the same or different from the CA at the egress communication interface.

**Note**

It is recommended to maintain multiple TLS certificates with overlapping expiry time to avoid service interruption during certificate expiry. For example, if the primary certificate validity is changed from T0 and T1, then the validity of the secondary certificate must be changed from T0 to T2 so that when the primary certificate expires, the secondary certificate gets activated within the expiry period of the primary certificate, where,  $T0 < T1 < T2$ .

By default, SCP uses a single TLS certificate to enable HTTPS. To enable support for multiple TLS certificates, you can modify the `sbiProxySslConfigurations` Helm parameter configurations for ingress and egress connections and the `ddSslConfiguration` Helm parameter for OCNADD connections.

SCP uses the `sslCertExpireTimeInMin` Helm parameter to configure the certificate renewal notification time. The `SCPWorkerSSLCertificateExpire` alert is raised at the configured time to indicate the certificate expiry.

SCP provides the `terminateTLSConnsOnCertExpiry` Helm configuration at the egress communication interface to determine whether to terminate or maintain the existing HTTPS connections when the configured TLS certificate is updated or renewed. When the TLS certificate expires, then SCP:

- maintains the existing HTTPS connections that were using the expired certificates.
- creates new HTTPS connections which uses the updated or renewed TLS certificate.

For more information about configuring Helm parameters for multiple TLS certificates, see "Global Parameters" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

## 3.8.2 Support for Automated Certificate Lifecycle Management

In SCP 23.3.x and earlier releases, X.509 and Transport Layer Security (TLS) certificates were managed manually. When multiple instances of SCP were deployed in a 5G network, certificate management, such as certificate creation, renewal, removal, and so on, was tedious and error-prone.

Using the Support for Automated Certificate Lifecycle Management feature, you can integrate SCP with OCCM to support automation of certificate lifecycle management. OCCM manages TLS certificates stored in Kubernetes secrets by integrating with Certificate Authority (CA) using the Certificate Management Protocol Version 2 (CMPv2) protocol. OCCM obtains and signs TLS certificates and stores them in Kubernetes secrets of SCP namespace. For more information about OCCM, see *Oracle Communications Cloud Native Core, Certificate Management User Guide*.

Using this feature, you can monitor, create, recreate, and renew TLS certificates based on their validity. For information about creating Kubernetes secrets, see "Configuring SSL or TLS Certificates to Enable HTTPS" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.



## 3.9 Routing Options Enhancement to Control SCP Routing Features

At SCP, there are a number of routing features such as Circuit Breaking, Outlier Detection and so on that proactively track the producer NF to determine the load conditions and health status of the producer NF and perform alternate routing of incoming SBI messages that are targeted towards the degraded producer NFs.

With this enhancement, SCP supports proactive rerouting, in which a user can control the applicability of routing features at the NF service level by providing options to enable or disable rerouting.

The following routing features at the NF service level can be enabled or disabled:

- Congestion control based on Producer load
  - Using producer load from NRF
  - Using producer load in the LCI header
- Circuit Breaking
- Outlier Detection

### Note

Alternate routing based on the following conditions are not impacted by this enhancement:

- Error received from the producer
- Request a timeout at the SCP
- Transport error at SCP during connection creation

### Managing Routing Options Enhancements

#### Enable

You can enable this feature by setting `odEnabled`, `loadBasedCongestionControlEnabled`, `cbEnabled` parameters to true. For more information, see [Configuring Global Options](#), [Configuring Routing Options](#), and [Routing Config Set](#) respectively.

#### Configure

You can configure this feature using REST APIs as described in "Routing Option Configuration", "Congestion Control Configuration", "Routing Config Set", "Circuit Breaking Configuration", "Configuring Routing Option", and "Configuring System Option" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.



2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.10 Enhanced NF Status Processing

In older SCP releases, SCP removes routing rules when SCP receives an NFProfile with the SUSPENDED status.

With the enhanced NF Status Processing feature, Service Communication Proxy (SCP) provides the following 5G Service Based Interface (SBI) message request routing modes when an NFProfile is in the SUSPENDED state:

- Mode 1: SCP does not route message requests to producer NFs that are in the SUSPENDED state.
- Mode 2: SCP routes the message request to the target producer NF even if it is in the SUSPENDED state.
- Mode 3: SCP routes the message request to producer NFs that are in the SUSPENDED state only if alternate REGISTERED producer NFs are unavailable.

### Note

When an NFProfile is SUSPENDED, it remains in the SUSPENDED state for an infinite duration unless NRF marks it as REGISTERED, or it gets DE-REGISTERED.

In case of Mode 2 routing, when SCP receives a 5G SBI message request from a consumer NF, SCP considers all NFs that are configured using the `suspendedStateRouting` REST API parameter to route the message request.

In case of Mode 3 routing, when SCP receives a 5G SBI message request from a consumer NF, if the target producer NF is SUSPENDED, SCP routes the message to the first alternate producer NF, which is in the REGISTERED state. If the alternate REGISTERED producer NF is unavailable or responds with an error response, SCP routes the message request to the next available producer NF, which is in the REGISTERED state.

After exhausting all the routing attempts on REGISTERED producer NFs, if alternate routing attempts are available, SCP routes the message request to the SUSPENDED producer NFs if the `enhanced_nf_status_processing.enhancedSuspendedStateRouting` REST API parameter is set for a particular NF type. Otherwise, SCP returns the same error response to the consumer NF that it received due to the routing attempted on the last producer NF. SCP determines the target producer NF using the "3gpp-Sbi-Target-apiRoot" header and NF Set ID in the message request.

### Note

You must not configure the same NF type for `enhancedSuspendedStateRouting` and `suspendedStateRouting` for both Mode 2 and Mode 3.

## Managing Enhanced NF Status Processing

### Enable

You can enable this feature using the CNC Console as described in [Configuring SCP Features](#).

### Configure

You can enable and configure one of the following routing modes of this feature:

- Mode 1: Set `enhanced_nf_status_processing` to false.
- Mode 2: Set `enhanced_nf_status_processing` to true and configure `suspendedStateRouting`.
- Mode 3: Set `enhanced_nf_status_processing` to true and `enhancedSuspendedStateRouting` must be present.

For more information about the above mentioned REST API parameters, see "Configuring SCP Features" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

For information about metrics, see [Metrics](#).

### Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.11 Support for Default Notification Message Routing

During NF profile registration or update, NF has the ability to publish the Notification URI for default notifications. This is crucial due to the expected default Subscriptions in NF profiles. SCP plays a vital role in this process by creating routing rules for the purpose of routing 5G SBI messages. SCP achieves this by obtaining knowledge of the 5G topology from the NRF through NF status notifications. Previously, the SCP's topology learning did not include the default notification callback URI information published in the `defaultNotificationSubscription` attribute of the NF profile. Consequently, SCP remained unaware of these default notification callback URIs and was unable to do alternate routing of received default notification messages.

SCP has now significantly improved its topology learning process by incorporating the default notification URI and endpoint from both the NF profile and NF service level. As a result, SCP is now fully informed about these default notification callback URIs and possesses the capability to efficiently do routing and alternate routing of received default notification messages.

### Managing Default Notification Message Routing

#### Enable

This feature is enabled by default in SCP at the time of deployment.

#### Configure

You can view or edit the default notification message subscription feature using the CNC Console. For information about this feature, see [Configuring NF Rule Profile](#) to view the default notification message subscriptions that are present under NF service level or NF profile level.

**Maintain**

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

### 3.11.1 Default Notification Routing Behavior at SCP

The expected behavior at SCP based on the presence of various headers is as follows:

**Table 3-3 Default Notification Routing Behavior**

| pseudo header                 | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                         |
|-------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"                       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                  |
| "/scp-default-sub-notify-uri" | Absent                         | Present                  | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | NA                              | SCP performs the discovery and gets the callback URI from the selected producer's profile for the given notification type.<br><b>Note:</b> Only apiversion is considered from 3gpp-Sbi-Callback. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                 | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                   |
|-------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------|
| ":path"                       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                            |
| "/scp-default-sub-notify-uri" | Absent                         | Present                  | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | NA                              | 400 Bad request cause: query parameter missing (TS29.500 ) |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                 | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"                       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                |
| "/scp-default-sub-notify-uri" | Absent                         | Absent                   | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | NA                              | <p>SCP performs the discovery and gets the callback URI from the selected producer's profile for the given notification type at the NF profile level defaultnotification/subscription parameters.</p> <p>This is the default notification due to the presence of the 3gpp-Sbi-Discovery-notification-type header. apiversion =1</p> <p><b>Note:</b> Only apiversion is considered from 3gpp-Sbi-Callback..</p> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                     | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                            |
|-----------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"                           | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                     |
|                                   |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | If not, the apiversion will be assumed to be 1.                                                                                                                                                     |
| "/scp-default-sub-notify-uri"     | Absent                         | Absent                   | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | NA                              | 400 Bad request cause: query parameter is missing (TS29.500)                                                                                                                                        |
| non "/scp-default-sub-notify-uri" | Absent                         | Present                  | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Absent                          | SCP performs the discovery and gets the callback URI from the selected producer's profile for the given notification type. SCP modifies the :path header as per the selected notification endpoint. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                    |
| non "/" scp-default-sub-notify-uri" | Absent                         | Present                  | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Absent                          | <p>Selection of NF is dependent on the discovery response. The path will remain the same as it was when the consumer made their original request. Furthermore, the notification processing is non-default. For example, explicit notification since 3gpp-Sbi-Callback header is present.</p> <p><b>Note:</b> The callbackUri from defaultNotificationSubscriptions section is not considered. It goes with the</p> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                 |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                          |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | typical rule match.<br>For more information, see Note at the bottom of this table if the notification message is without a service name. |



Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                              |
|-------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                       |
| non "/" scp-default-sub-notify-uri" | Absent                         | Absent                   | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Absent                          | SCP performs the discovery and gets the callback URI from the selected producer's profile for the given notification type at the NF profile level defaultnotification/subscription parameters. This is the default notification due to the presence of the 3gpp-Sbi-Discovery-notification-type header. apiversion =1 |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| non "/" scp-default-sub-notify-uri" | Absent                         | Absent                   | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Absent                          | <p>Selection of NF is dependent on the discovery response. The path will remain the same as it was when the consumer made their original request. Moreover, non-default notification processing, normal discovery, and NF selection processing is applied.</p> <p><b>Note:</b> The callbackUri from defaultNotificationSubscriptions section is not considered. It goes with the typical rule match.</p> <p>For more information, see Note at</p> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                           |
|-------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
|                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                    |
| ":path"                             |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | the bottom of this table if the notification message is without a service name.                                                    |
| non "/" scp-default-sub-notify-uri" | Absent                         | Present                  | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Present                         | SCP does callback URI selection based on 3gpp-Sbi-Routing-Binding header information along with other received header information. |
| non "/" scp-default-sub-notify-uri" | Absent                         | Present                  | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Present                         | NF selection is based on 3gpp-Sbi-Routing-Binding header information along with other received header information.                 |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                           |
|-------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
|                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                    |
| non "/" scp-default-sub-notify-uri" | Absent                         | Absent                   | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Present                         | SCP does callback URI selection based on 3gpp-Sbi-Routing-Binding header information along with other received header information. |
| non "/" scp-default-sub-notify-uri" | Absent                         | Absent                   | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Present                         | NF selection is based on 3gpp-Sbi-Routing-Binding header information along with other received header information.                 |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                 | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                       |
|-------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                |
| "/scp-default-sub-notify-uri" | Present                        | Present                  | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | NA                              | First Attempt: Normal route to the selected producer with the received :path header.<br>Alternate Attempt: SCP performs the discovery and gets the callback URI from the selected producer's profile for the given notification type. SCP modifies the :path header as per the selected notification endpoint. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                 | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| "/scp-default-sub-notify-uri" | Present                        | Present                  | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | NA                              | <p>First Attempt: Normal route to the selected producer with the received :path header.</p> <p>Alternate Attempt: Non-default notification processing , normal discovery, and NF selection processing</p> <p><b>Note:</b> The callbackUri from defaultNotificationSubscriptions section is not considered. It goes with the typical rule match.</p> <p>For more information, see Note at the bottom of this table if the notification</p> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                 | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                   |
|-------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                            |
| ":path"                       |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | message is without a service name                                                                                                                                                                                                                                                                          |
| "/scp-default-sub-notify-uri" | Present                        | Absent                   | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | NA                              | First Attempt: Normal route to the selected producer with the received :path header. Alternate Attempt: SCP performs the discovery and gets the callback URI from the selected producer's profile for the given notification type. SCP modifies the :path header as per the selected notification endpoint |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                 | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| "/scp-default-sub-notify-uri" | Present                        | Absent                   | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | NA                              | <p>First Attempt: Normal route to the selected producer with the received :path header.</p> <p>Alternate Attempt: Non-default notification processing, normal discovery, and NF selection processing</p> <p><b>Note:</b> The callbackUri from defaultNotificationSubscriptions section is not considered. It goes with the typical rule match.</p> <p>For more information, see Note at the bottom of this table if the notification</p> |



Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP           |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                    |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | message is without a service name. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                                                      | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                    | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                  |
| non "/" scp-default-sub-notify-uri"i.e., notification/callback URI | Present                        | Present                  | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Absent                          | Model C Default notification processing with selected notification endpoint. First Attempt: Normal route to the selected producer with the received :path header. Alternate route: SCP performs the discovery and gets the callback URI from the selected consumer's profile for the given notification type and apiversion in the callback header. SCP modifies |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                    |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|-------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                             |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | the :path header as per the selected notification endpoint. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                                                      | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                    | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| non "/" scp-default-sub-notify-uri"i.e., notification/callback URI | Present                        | Present                  | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Absent                          | <p>Explicit notification processing</p> <p>The first routing is based on the 3gpp-target-apiRoot header.</p> <p>Alternate routing is based on normal discovery and NF selection processing, as applicable.</p> <p><b>Note:</b> The callbackUri from defaultNotificationSubscriptions section is not considered. It goes with the typical rule match.</p> <p>For more information, see Note at the bottom of this table if the notification message</p> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP   |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|----------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                            |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | is without a service name. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                                                      | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                    | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                               |
| non "/" scp-default-sub-notify-uri"i.e., notification/callback URI | Present                        | Absent                   | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Absent                          | Model C Default notification processing with selected notification endpoint.<br><br>First Attempt: Normal route to the selected producer with the received :path header.<br><br>Alternate route: SCP performs the discovery and gets the callback URI from the selected producer's profile for the given notification type at the NF profile level defaultnotification/subscription parameter |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                    |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                             |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | s. In the absence of a callback header, apiversion =1 is considered. This is the default notification due to the presence of the 3gpp-Sbi-Discovery-notification-type header. apiversion =1 |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                                                      | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                    | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| non "/" scp-default-sub-notify-uri"i.e., notification/ callback UR | Present                        | Absent                   | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Absent                          | <p>Non Default notification processing</p> <p>The first routing is based on the 3gpp-target-apiRoot header.</p> <p>Alternate routing is based on normal discovery and NF selection processing , as applicable.</p> <p><b>Note:</b> The callbackUri from defaultNotificationSubscriptions section is not considered. It goes with the typical rule match.</p> <p>For more information, see Note at the bottom of this table if the notification</p> |



Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP           |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                    |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | message is without a service name. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                                                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                          |
| non "/" scp-default-sub-notify-uri" i.e., notification/callback URI | Present                        | Present                  | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Present                         | Model C Default notification processing with selected notification endpoint.<br><br>First Attempt: Normal route to the selected producer with the received :path header.<br><br>Alternate route: SCP does callback uri selection based on 3gpp-Sbi-Routing-Binding header information along with other received header information. SCP gets the callback URI from the selected consumer |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                       |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | <p>'s profile for the given notification type and apiversion in the callback header. SCP modifies the :path header as per the selected notification endpoint.</p> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>If servName is present in the 3gpp-sbi-Routing-binding header, then SCP gets the callback URI from the</li> </ol> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                 |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                          |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | <p>selected consumer's profile for the given notification type for that service name.</p> <p>2. If servName is absent in the 3gpp-sbi-Routing-binding header, then SCP gets the callback URI from the selected consu</p> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                   |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                            |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | mer's profile for the given notification type from service level. If it is not found at the service level, it gets the callbackURI from the profile level. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                                                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| non "/" scp-default-sub-notify-uri" i.e., notification/callback URI | Present                        | Present                  | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Present                         | <p>Explicit notification processing</p> <p>The first routing is based on the 3gpp-target-apiRoot header.</p> <p>Alternate routing is based on 3gpp-Sbi-Routing-Binding header information along with other received header information and NF selection processing as applicable.</p> <p><b>Note:</b> The callbackUri from defaultNotificationSubscriptions section is not considered. It goes with the typical rule match.</p> <p>For more information</p> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                     |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                              |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | n, see Note at the bottom of this table if the notification message is without a service name.<br>Note: Alternate routing is only performed when servName is present in the 3gpp-sbi-Routing-binding header. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                                                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                    |
| non "/" scp-default-sub-notify-uri" i.e., notification/callback URI | Present                        | Absent                   | Present                                                | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Present                         | Model C Default notification processing with selected notification endpoint.<br><br>First Attempt: Normal route to the selected producer with the received :path header.<br><br>Alternate route: SCP does callback uri selection based on 3gpp-Sbi-Routing-Binding header info along with other received header info. SCP gets the callback URI from the selected producer's profile for the given |



Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | <p>notification type at the NF profile level defaultnotification/subscription parameters. In the absence of a callback header, apiversion=1 will be considered.</p> <p>This is the default notification due to the presence of the 3gpp-Sbi-Discovery-notification-type header. apiversion=1</p> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>If servName is present in the 3gpp-sbi-</li> </ol> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                           |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                    |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Routing-binding header, then SCP gets the callback URI from the selected consumer's profile for the given notification type for that service name.<br><br>2. If servName is absent in the 3gpp-sbi-Routing-binding |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                   |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                            |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | g header, then SCP gets the callback URI from the selected consumer's profile for the given notification type from service level. If it is not found at the service level, it gets the callbackURI from the profile level. |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header                                                       | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                     | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| non "/" scp-default-sub-notify-uri" i.e., notification/callback URI | Present                        | Absent                   | Absent                                                 | Present                                  | Present                                     | Optional (don't care)                  | Optional (don't care)                   | Optional (don't care)       | Present                         | <p>Non-default notification processing</p> <p>The first routing is based on the 3GPP-target-apiRoot header.</p> <p>Alternate routing is based on 3gpp-Sbi-Routing-Binding header information along with other received header information and NF selection processing as applicable.</p> <p><b>Note:</b> The callbackUri from defaultNotificationSubscriptions section is not considered. It goes with the typical rule match.</p> |

Table 3-3 (Cont.) Default Notification Routing Behavior

| pseudo header | 3GPP 5G SBI custom header      |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | Expected behavior at SCP                                                                                                                                                                                                                              |
|---------------|--------------------------------|--------------------------|--------------------------------------------------------|------------------------------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|-----------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ":path"       | 3gpp-sbi-target-apiRoot Header | 3gpp-Sbi-Callback Header | 3gpp-Sbi-Discovery-notification-type(Mandatory) Header | 3gpp-Sbi-Discovery-target-nf-type Header | 3gpp-Sbi-Discovery-requester-nf-type Header | 3gpp-Sbi-Discovery-n1-msg-class Header | 3gpp-Sbi-Discovery-n2-info-class Header | 3gpp-Sbi-Discovery-* Header | 3gpp-sbi-Routing-binding Header |                                                                                                                                                                                                                                                       |
|               |                                |                          |                                                        |                                          |                                             |                                        |                                         |                             |                                 | <p>For more information, see Note at the bottom of this table if the notification message is without a service name.</p> <p><b>Note:</b> Alternate Routing is only performed in case when servName is present in 3gpp-sbi-Routing-binding header.</p> |

**Note**

SCP behavior for Notification message without service name is as follows:

- SCP does the rule match or delegated discovery based on available information from the service request.
- SCP selects profile level FQDN for routing.
- SCP uses 80 as the default port for routing.
- SCP uses "http" as the default port for routing.

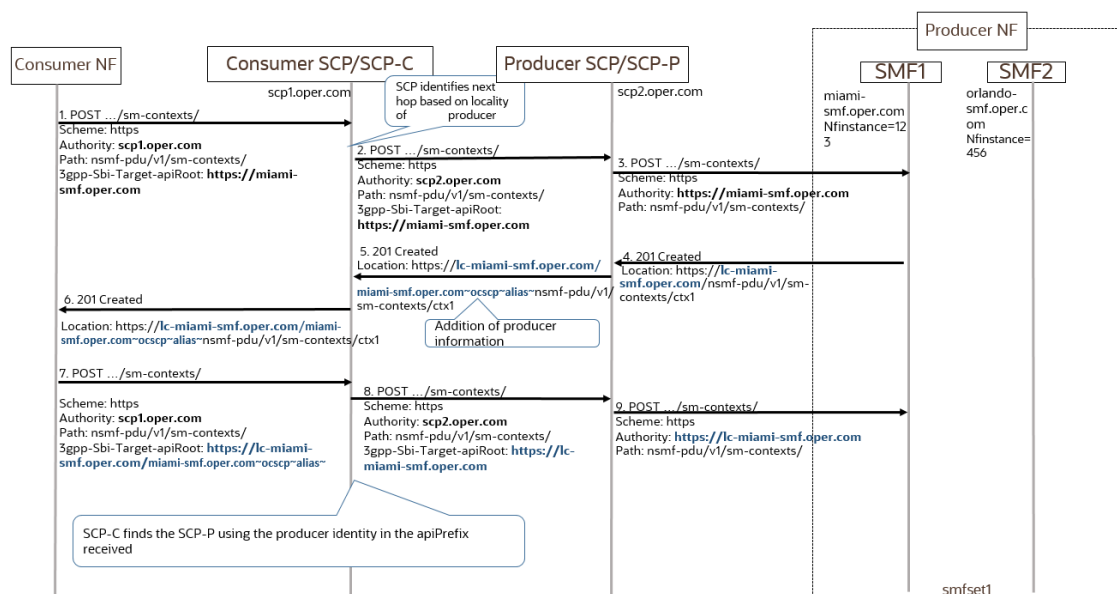
## 3.12 Location Header for Host Mismatch

According to 3GPP, a consumer NF is expected to use the received "Location" header content while sending subsequent message requests. After receiving a subsequent request, consumer SCP extracts the producer NF details from the API prefix in the "3gpp-Sbi-Target-Apiroot" header and selects an appropriate inter-SCP path to route the request.

SCP matches the authority (FQDN or IP) in "Location" header of the "201 Created" response with the producer's authority (FQDN or IP) where the message request was sent. If the FQDN or IP in the response is different, producer SCP provides the producer's NF details as an API prefix in the "Location" header of the "201 Created" response. If the FQDN or IP is the same, the "Location" header does not perform any modification.

This feature has been introduced to correct inter-SCP routing in the above scenario.

**Figure 3-2 Initial and Subsequent Request Routing Supported at SCP**



### Managing Location Header for Host Mismatch

#### Enable

By default, this feature is disabled. To enable this feature, you must set the `location_hdr_update_for_host_mismatch` option to true as described in [Configuring SCP Features](#).

#### Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about configuring this feature, see [Configuring SCP Features](#) to enable the location header update for host mismatch feature.
- **Configure using REST API:**  
Previously, SCP used to support the above scenario through a Helm configuration in `values.yaml` using the `fqdnAliasingEnabled` field. Now a REST API parameter, `location_hdr_update_for_host_mismatch`, is introduced to enable this feature.

For information about configuring REST APIs, see "Configuring SCP Features" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.13 Support for the Client Credentials Assertion Header

The 3GPP introduced Client Credentials Assertion (CCA) enables the NRF or the producer NF to authenticate the consumer NF when using indirect communication through SCP. The CCAs are JSON web tokens and are secured with digital signatures based on JSON Web Signature (JWS). The consumer NF adds the 3gpp-Sbi-Client-Credentials header containing the CCA. The CCA contains the following:

- The NF instance ID of the consumer NF (subject)
- A timestamp (iat) and an expiration time (exp)
- The NF type of the expected audience, such as the NRF type or the NF type of the producer NF

The consumer NF digitally signs the generated CCA based on its private key. The signed CCA contains one of the following fields:

- The X.509 URL (x5u) to refer to a resource for the X.509 public key certificate or certificate chain used for signing the client authentication assertion
- The X.509 Certificate Chain (x5c) includes the X.509 public key certificate or certificate chain used for signing the client authentication assertion

**Table 3-4 CCA Contents**

| Claim                                 | Description                                                                                                                                                                                                                                                     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| audience (aud)                        | NF type of the producer NF whose services are requested and/or NRF                                                                                                                                                                                              |
| expiration time (exp)                 | Timestamp of CCA expiration                                                                                                                                                                                                                                     |
| subject (sub)                         | NF instance ID of consumer NF                                                                                                                                                                                                                                   |
| timestamp (iat)                       | Timestamp of CCA generation                                                                                                                                                                                                                                     |
| Security details used for signing CCA | <ul style="list-style-type: none"> <li>• x5u - X.509 URL that refers to a resource for the X.509 public key certificate or certificate chain</li> <li>• x5c - X.509 Certificate Chain includes the X.509 public key certificate or certificate chain</li> </ul> |

The NRF, or producer NF, performs the CCA verification. It verifies that the public key certificate used to sign the CCA contains the same NF instance ID as the consumer's NF instance ID in the CCA. If the verification of the CCA fails at the receiving entity, a "403" response is returned with the cause attribute set to CCA\_VERIFICATION\_FAILURE.

If some rogue consumer NF acquires a valid CCA from some other consumer NF and uses it as its own CCA, then the CCA validation by the NRF or producer NF creates a security gap. Therefore, additional CCA validations on SCP are needed to mitigate this security impact. The NF instance ID of the NFs in the CCA must match the NF instance ID in the certificate used in the TLS connection by the consumer NF as part of the SCP validations.

### Managing Client Credentials Assertion Header

#### Enable

By default, this feature is disabled. To enable this feature, you must complete the configuration as described in the following configuration section.

#### Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about configuring this feature, see:
  - [Configuring SCP Features](#) to enable the CCA Header Validation feature
  - [Configuring Error Profile](#) to edit the error profiles
- **Configure using REST API:** For information about configuring REST APIs, see "Configuring SCP Features" and "Configuring Error Profile" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Observe

The following metrics are added in the [Metrics](#) section:

- `ocscp_worker_cca_validation_failed_total`
- `ocscp_worker_cca_validation_feature_enabled_without_https`
- `ocscp_worker_cca_validation_performed_total`

Added the `SCPCcaFeatureEnabledWithoutHttps` alert in the [Alerts](#) section.

#### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.14 Support for 5G SBI Message Correlation using the 3gpp-Sbi-Correlation-Info Header

The 3gpp-Sbi-Correlation-Info header contains correlation information, User Equipment (UE) identity that is used by an operator in various offline network management, performance analysis, and troubleshooting tools and applications to identify messages (requests, responses, subscriptions, and notifications) related to a particular subscriber.

In this header, the UE identifier used is Subscription Permanent Identifier (SUPI), and the SUPI type is an International Mobile Subscriber Identity (IMSI). For example, 3gpp-Sbi-Correlation-Info: imsi-345012123123123



SCP efficiently routes message requests, along with the 3gpp-Sbi-Correlation-Info header, to the designated producer NFs. In cases where the correlation header is absent in the response from the target producer NF, SCP forwards the response to the consumer NF while appending the same 3gpp-Sbi-Correlation-Info header received in the request message. Additionally, when the correlation header is present in the request message and SCP generates an error response, SCP includes the correlation header in the response to the consumer NF. This ensures smooth and consistent correlation of 5G SBI messages throughout the system.

SCP adds the correlation header in the following cases if the request from the consumer contains this header:

- Access token requests toward NRF received from Model-C consumer NF.
- Discovery requests or access token requests toward NRF received in service request for delegated discovery in Model-D.
- During alternate routing.
- All the transaction in SCP is forwarded with correlation header toward traffic feed server to save the data in Traffic Feed OCNADD.

### Managing Support for 3gpp-Sbi-Correlation-Info Header

#### Enable

Not applicable

#### Configure

Not applicable

#### Observe

There is no specific metrics and alerts required for the Support for 3gpp-Sbi-Correlation-Info Header.

## 3.15 Support for Kubernetes Resources

This section provides you with information about the Network Policies feature and the Pod Disruption Budget feature.

### 3.15.1 Dual Stack Support

Using the dual stack mechanism, applications or NFs can establish connections with pods and services in a Kubernetes cluster using IPv4 or IPv6 or both simultaneously. Dual stack provides:

- coexistence strategy that allows hosts to reach IPv4 and IPv6 simultaneously.
- IPv4 and IPv6 allocation to the Kubernetes clusters during cluster creation. This allocation is applicable for all the Kubernetes resources unless explicitly specified during the cluster creation.

SCP can be deployed on CNE that supports dual stack networking. Currently, SCP supports working in a dual stack environment with IPv4 preference.

### 3.15.2 Network Policies

Network Policies are an application-centric construct that allows you to specify how a pod communicates with various network entities. It creates pod-level rules to control

communication between the cluster's pods and services, and to determine which pods and services can access one another inside a cluster.

Previously, the pods under deployment can be contacted by any other pods in the Kubernetes cluster without any restrictions. Now, Network Policy provides namespace-level isolation, which allows secured communications to and from SCP with rules defined in respective Network Policies. The network policies enforce access restrictions for all the applicable data flows except communication from Kubernetes node to pod for invoking container probe. For example, SCP internal microservices cannot be contacted directly by any other pods; The scp-workers in the data plane have special privileges to communicate with other NFs. Pods in the control plane can communicate with other pods only within their namespace.

### Managing Support for Network Policies

#### Enable

To use this feature, network policies need to be applied to the namespace wherein SCP is applied.

#### Configure

You can configure this feature using Helm. For information about Configuring Network Policies for SCP Deployment, see *Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide*.

#### Observe

There are no specific metrics and alerts required for the Network Policy feature.

## 3.15.3 Pod Disruption Budget

PodDisruptionBudget (PDB) is a Kubernetes resource that helps to achieve the high availability of scalable application services in voluntary disruptions performed by cluster administrators to manage the cluster nodes. It is defined for highly available and scalable SCP services such as scp-worker, scp-cache, and scp-nrfproxy microservices. PDB restricts the number of pods of a highly available application that are down simultaneously from voluntary disruptions, and allows safe eviction of pods when a node is drained of pods to perform maintenance. The `maxPdbUnavailable` parameter is specified in the Helm chart to determine the maximum number of pods that can remain unavailable during a voluntary disruption.

### Managing Pod Disruption Budget

#### Enable

This feature is enabled automatically if you're deploying SCP with release 16.

#### Configure

You can configure this feature using Helm. For information about configuring PDB, see *Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide*.

#### Observe

There is no specific metrics and alerts required for the Support of PDB functionality.

## 3.15.4 SCP Microservices and Probes

SCP microservices uses Kubernetes probes to monitor and manage the SCP application's initialization, health, and status. These are HTTP probes that provide a mechanism to identify

the health status of the application. This probing occurs on a regular basis at a fixed interval, and appropriate action is taken if the probes fail.

The Kubernetes probes are as follows:

- **Liveness probes:** These probes allow you to evaluate whether an application that is running in a container is in a healthy state. If not, Kubernetes terminates the container, and the container is subjected to its restart policy.  
If a container doesn't provide a liveness probe, the default state is success.

- **Readiness probes:** These probes continuously verify whether a container is ready to serve requests. If the probe returns a failed state, Kubernetes removes the IP address for the pod from the endpoints of all services.  
The default state of readiness before the initial delay is failure. If a container doesn't provide a readiness probe, the default state is success.

A pod is deemed ready when all of its containers have reached a state of readiness. The use of the signal is to regulate the selection of pods that serve as backends for services. When a pod is in an unready state, it's removed from the load balancer service. The stable support of the readiness probe has been available since the release of Kubernetes 1.0.

- **Startup probes:** These probes verify whether an application within a container has started. All other probes are disabled if a startup probe is provided until it succeeds, and if a container fails this probe, the container is terminated and follows the restart policy for the pod.  
This can be used to adopt liveness checks on slow-starting containers, avoiding them getting killed by the kubelet before they're up and running. The stable support of the startup probe has been available since the release of Kubernetes 1.0.

The following table describes the probes used by SCP microservices and their details.

Table 3-5 SCP Microservices and Startup Probes

| SCP Microservice | Startup probes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                |                   |
|------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------|
|                  | Probe Support  | Probe Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Probe Configuration                                                                                                            | Action on Failure |
| SCP-Worker       | Yes            | <p>If all of the conditions listed below are met, the starting probe succeeds; otherwise, the probe fails:</p> <ul style="list-style-type: none"> <li>Routing rules received from the Notification microservice.</li> <li>Routing options received from Configurations</li> <li>The following data objects are received from the Configuration microservice: <ul style="list-style-type: none"> <li>WORKER_POD_OVERLOAD_ACTION_POLICY</li> <li>WORKER_POD_OVERLOAD_CTRL_POLICY</li> <li>WORKER_POD_OVERLOAD_DISCARD_POLICY</li> <li>SERVICE_SPECIFICATIONS</li> <li>SCP_NF_PROFILES</li> <li>SCP_FEATURES</li> <li>LOCAL_NF_AUTH2_REQUIRED</li> <li>ACCESS_TO_KEN_GRANULARITY_CONFIG</li> </ul> </li> <li>The scp-worker is able to access the scp-cache if rate limiting is enabled.</li> </ul> | <ul style="list-style-type: none"> <li>Initial delay: 35s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul> | Pod Restart       |

**Note**

Startup probes are only implemented for SCP\_worker as of the current release.

Table 3-6 SCP Microservices and Readiness Probes

| SCP Microservice | Readiness probes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                          |                                                                                                                                                                               |
|------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | Probe Support    | Probe Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Probe Configuration                                                                                                                                                                                      | Action on Failure                                                                                                                                                             |
| SCP-Worker       | Yes              | <p>The scp-worker service is marked as ready if all the below conditions are met; otherwise, it is marked as not ready:</p> <ul style="list-style-type: none"> <li>Routing rules received from the Notification microservice.</li> <li>Routing options received from Configurations</li> <li>The following data objects are received from the Configuration microservice: <ul style="list-style-type: none"> <li>WORKER_POD_OVERLOAD_ACTION_POLICY</li> <li>WORKER_POD_OVERLOAD_CTRL_POLICY</li> <li>WORKER_POD_OVERLOAD_DISCARD_POLICY</li> <li>SERVICE_SPECIFICATIONS</li> <li>SCP_NF_PROFILES</li> <li>SCP_FEATURES</li> <li>LOCAL_NF_AUTH2_REQUIRED</li> <li>ACCESS_TO_KEN_GRANULARITY_CONFIG</li> </ul> </li> <li>The scp-worker is able to access the scp-cache if rate limiting is enabled.</li> </ul> | <ul style="list-style-type: none"> <li>The readiness probe starts after the startup probe is successful.</li> <li>Initial delay: 1s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul> | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |

Table 3-6 (Cont.) SCP Microservices and Readiness Probes

| SCP Microservice   | Readiness probes |                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                 |                                                                                                                                                                               |
|--------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | Probe Support    | Probe Condition                                                                                                                                                                                                                                                                                                                                                                 | Probe Configuration                                                                                                             | Action on Failure                                                                                                                                                             |
| SCP-nrfproxy       | Yes              | <p>The SCP-nrfproxy service is marked as ready if all the below conditions are met; otherwise, it is marked as not ready.</p> <ul style="list-style-type: none"> <li>Check if the NRF configuration is available and can be read from the NRF Profiles table in the cnDBtier service.</li> <li>Check if the list of prioritized NRFs is available as per preference.</li> </ul> | <ul style="list-style-type: none"> <li>Initial delay: 30s</li> <li>Probe interval: 10s</li> <li>Failure threshold: 5</li> </ul> | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |
| SCP-loadManager    | Yes              | The readiness probe for the SCP-loadManager service returns false during application initialization, and after the application is initialized, it starts returning the true value.                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Initial delay: 5s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul>   | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |
| SCP-nrfProxy-Oauth | Yes              | The readiness probe for the scp-nrfproxy-oauth service returns false during application initialization, and after the application is initialized, it starts returning the true value.                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Initial delay: 5s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul>   | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |
| SCP-Cache          | Yes              | <p>The scp-cache service is marked as ready if the below conditions are met; otherwise, it is marked as not ready.</p> <ul style="list-style-type: none"> <li>Check if application maps in scp-cache service are initialized.</li> </ul>                                                                                                                                        | <ul style="list-style-type: none"> <li>Initial delay: 5s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul>   | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |

Table 3-6 (Cont.) SCP Microservices and Readiness Probes

| SCP Microservice   | Readiness probes |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                 |                                                                                                                                                                               |
|--------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | Probe Support    | Probe Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Probe Configuration                                                                                                             | Action on Failure                                                                                                                                                             |
| SCPC-Notification  | Yes              | <p>The scpc-notification service is marked as ready if the below conditions are met; otherwise, it is marked as not ready.</p> <ul style="list-style-type: none"> <li>Check whether the following tables have been created and populated: <ul style="list-style-type: none"> <li>SCP_NF_PROFILES</li> <li>NRF_NF_DETAILS</li> <li>CANARY_RELEASES</li> <li>ROUTING_OPTIONS</li> <li>SYSTEM_OPTIONS</li> <li>VIRTUAL_SERVICES</li> <li>SERVICE_ENTRIES</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Initial delay: 30s</li> <li>Probe interval: 10s</li> <li>Failure threshold: 5</li> </ul> | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |
| SCPC-Audit         | Yes              | <p>The scp-audit service is marked as ready if all the below conditions are met; otherwise, it is marked as not ready.</p> <ul style="list-style-type: none"> <li>Check if the NRF configuration is available and can be read from the NRF Profiles table in the cnDBtier service.</li> <li>For release 15, check if virtual services are created for NRF profiles.</li> </ul>                                                                                               | <ul style="list-style-type: none"> <li>Initial delay: 30s</li> <li>Probe interval: 10s</li> <li>Failure threshold: 5</li> </ul> | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |
| SCPC-Configuration | Yes              | <p>The scpc-configuration service is marked as ready if the below conditions are met; otherwise, it is marked as not ready.</p> <ul style="list-style-type: none"> <li>Check if the cnDBtier service is accessible and the required DB tables are available or created.</li> </ul>                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Initial delay: 30s</li> <li>Probe interval: 10s</li> <li>Failure threshold: 5</li> </ul> | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |

Table 3-6 (Cont.) SCP Microservices and Readiness Probes

| SCP Microservice          | Readiness probes |                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                 |                                                                                                                                                                               |
|---------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | Probe Support    | Probe Condition                                                                                                                                                                                                                                                                                                                                                                                                                       | Probe Configuration                                                                                                             | Action on Failure                                                                                                                                                             |
| SCPC-Subscription         | Yes              | <p>The scpc-subscription service is marked as ready if all the below conditions are met; otherwise, it is marked as not ready.</p> <ul style="list-style-type: none"> <li>Check if the cnDBteir service is accessible and if NRF and SCP profiles are available or created in the cnDBteir service.</li> </ul>                                                                                                                        | <ul style="list-style-type: none"> <li>Initial delay: 30s</li> <li>Probe interval: 10s</li> <li>Failure threshold: 5</li> </ul> | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |
| SCPC-Alternate-resolution | Yes              | <p>The scpc-alternate resolution service is marked as ready if all the below conditions are met; otherwise, it is marked as not ready.</p> <ul style="list-style-type: none"> <li>Check if the cnDBtier service is accessible and if DNS SRV configuration for alternate route groups is available or created in the cnDBtier service.</li> <li>Validate if system options are synced from the scpc-configuration service.</li> </ul> | <ul style="list-style-type: none"> <li>Initial delay: 30s</li> <li>Probe interval: 10s</li> <li>Failure threshold: 5</li> </ul> | Pod is marked as not ready, and hence its endpoint will not be created. As a result, the pods become inaccessible. For more information see, <a href="#">Readiness probes</a> |



Table 3-7 SCP Microservices and Liveness Probes

| SCP Microservice | Liveness probes |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                         |                   |
|------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
|                  | Probe Support   | Probe Condition                                                                                                                                                                                                                                                                                   | Probe Configuration                                                                                                                                                                                     | Action on Failure |
| SCP-Worker       | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | <ul style="list-style-type: none"> <li>The liveness probe starts after the startup probe is successful.</li> <li>Initial delay: 1s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul> | Pod restart       |
| SCP-nrfproxy     | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | <ul style="list-style-type: none"> <li>Initial delay: 180s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul>                                                                         | Pod restart       |
| SCP-loadManager  | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | <ul style="list-style-type: none"> <li>Initial delay: 180s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul>                                                                         | Pod restart       |

Table 3-7 (Cont.) SCP Microservices and Liveness Probes

| SCP Microservice   | Liveness probes |                                                                                                                                                                                                                                                                                                   |                                                                                                                                 |                   |
|--------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------|
|                    | Probe Support   | Probe Condition                                                                                                                                                                                                                                                                                   | Probe Configuration                                                                                                             | Action on Failure |
| SCP-nrfProxy-Oauth | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | <ul style="list-style-type: none"> <li>Initial delay: 180s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul> | Pod restart       |
| SCP-Cache          | Yes             | The liveness probe for scp-cache always returns true.                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Initial delay: 180s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul> | N/A               |
| SCPC-Notification  | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | <ul style="list-style-type: none"> <li>Initial delay: 180s</li> <li>Probe interval: 2s</li> <li>Failure threshold: 5</li> </ul> | Pod restart       |
| SCPC-Audit         | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | N/A                                                                                                                             | Pod restart       |

Table 3-7 (Cont.) SCP Microservices and Liveness Probes

| SCP Microservice          | Liveness probes |                                                                                                                                                                                                                                                                                                   |                     |                   |
|---------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|
|                           | Probe Support   | Probe Condition                                                                                                                                                                                                                                                                                   | Probe Configuration | Action on Failure |
| SCPC-Configuration        | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | N/A                 | Pod restart       |
| SCPC-Subscription         | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | N/A                 | Pod restart       |
| SCPC-Alternate-resolution | Yes             | <ul style="list-style-type: none"> <li>Threadwatchdog controls the Liveness probe.</li> <li>ThreadWatchDog monitors all the threads running in the pod at a fixed interval.</li> <li>If threadwatchdog identifies that a thread is stuck, then the liveness probe is marked as failed.</li> </ul> | N/A                 | Pod restart       |

## 3.16 SCP Health Check API

In the previous release, consumer NFs used to send Service Based Interface (SBI) message requests to SCP without checking the status of SCP because there was no health check mechanism implemented at SCP.

Using the SCP Health Check Application Programming Interface (API) feature, consumer NFs can determine the health status of SCP before forwarding any SBI message request to SCP.

This feature allows consumer NFs or SCP-C, which is a consumer SCP, to perform the following health check verification on SCP:

- **SCP Reachable:** Determines if SCP is reachable through the transport path.
- **SCP Available:** Determines if SCP is available to provide responses to SBI message requests.

**Note**

- This feature supports HTTP/2
- Health check fails if either of the above mentioned requirements is not achieved.

SCP provides the RestFul health check service Uniform Resource Identifier (URI) (/ {scpapiRoot}/{apiVersion}/status) to consumer NFs to confirm its availability to process the message requests. Consumer NFs can use the following URI to get the status of SCP:

- Method: OPTIONS
- Resource URI: {scpapiRoot}/{apiVersion}/status

This feature facilitates consumer NFs to determine the health status of SCPs by sending the health query request to SCPs. Based on the health query response, consumer NFs decide whether to send SBI message requests to that SCP or perform alternate routing on other healthy SCP.

SCP uses the following process to provide its health status to a consumer NF:

1. When SCP receives a health query request, it calculates its overall average load by considering the load of each SCP-Worker instance present in that SCP.
2. SCP compares the overall average load with the configured values of the avgScpLoadThresholdValue REST API parameter as described in "Configuring SCP Features" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
3. If the overall average load value is more than the value of avgScpLoadThresholdValue, SCP is considered as unhealthy and SCP sends error responses to the consumer NF based on the healthCheckErrorProfile parameter as described in "Configuring Error Profiles" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
4. If the overall average load value is less than or equal to the value of avgScpLoadThresholdValue, SCP is considered as healthy and SCP sends one of the following responses to the consumer NF based on the configuration:
  - **200WithPayload:** Sends 200 OK response code with the overall average load information of SCP.
  - **200WithEmptyPayload:** Sends 200 OK response code without the overall average load information of SCP.
  - **204WithNoContent:** Send only 204 response code with no other information.

### Inter-SCP Health Check

In inter-SCP health check scenarios, a consumer SCP-C performs health check query on peer SCP instances before sending any SBI message request.

When a consumer SCP-C receives a health query request from a consumer NF, it checks for the availability of a healthy SCP-P to which the SBI message request can be forwarded.

The following procedure describes how a consumer SCP-C checks the status of peer producer SCP-P instances:

1. SCPC-Notification sends the InterScpList to SCPC-Audit through REST APIs if the `isScpHealthCheckSvcEnabled` REST API parameter is enabled. For more information about this parameter, see "Configuring SCP Features" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
2. SCPC-Configuration sends the configuration information, such as `isScpHealthCheckSvcEnabled`, time interval to trigger periodic health query polls, number of consecutive positive responses, number of negative responses, and so on, to SCPC-Audit.
3. SCPC-Audit periodically triggers health check query polls to SCP-P through SCP-Worker of SCP-C with `3gppapiroot: scp-pfqdn+ruriPath` of health query if the `isScpHealthCheckSvcEnabled` REST API parameter is enabled.
4. SCP-Worker forward the health query request received from SCPC-Audit toward SCP-P.
5. SCP-P responds with its health query status.
6. SCPC-Audit obtains the response for the health query request from SCP-P through SCP-Worker.
7. SCPC-Configuration sends the configuration information, such as `isScpHealthCheckSvcEnabled`, time interval to trigger periodic health query polls, number of consecutive positive responses, number of negative responses, and so on, to SCP-Worker.
8. SCPC-Audit sends the health status of the inter-SCPs to SCP-Worker for the inter-SCP messages processing.

## Managing SCP Health Check API

### Enable

By default, this feature is enabled at the ingress side. However, in case of inter-SCP scenarios, this feature is disabled by default. To enable this feature, you must set the `health_check` option to true as described in [Configuring SCP Features](#).

### Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about CNC Console configurations, see [Configuring SCP Features](#).
- **Configure using REST API:** For information about configuring REST APIs, see "Configuring SCP Features" and "Configuring Error Profiles" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

The following metrics are added in the [Metrics](#) section:

- `ocscp_worker_health_check_rx_req_total`
- `ocscp_worker_health_check_success_res_total`
- `ocscp_worker_health_check_error_res_total`
- `ocscp_interscp_health_check_status_success_total`

- ocsdp\_interscp\_health\_check\_status\_failure\_total
- ocsdp\_health\_check\_status\_failed
- ocsdp\_interscp\_health\_check\_status\_failed
- ocsdp\_audit\_interscp\_health\_check\_tx\_req\_total
- ocsdp\_audit\_interscp\_health\_check\_rx\_res\_total

The following alerts are added in the [Alerts](#) section:

- [SCPHealthCheckFailedForPeerSCP](#)
- [SCPHealthCheckFailed](#)

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.17 Verbose Logging for SCP

SCP warn and error level logs are enhanced to display more information to ease the troubleshooting process for various issues in the production environment.

The Verbose Logging for SCP feature defines a common log format to include required information to enhance debugging process for WARN and ERROR logs. Using the following log format, ERROR and WARN level logs are modified to standardize the log format, add more details, and enhance readability:

- WARN: Category: <<category>>, Event: <<Event>>, Details: <<Message\_Details>>
- ERROR: Category: <<category>>, Event: <<Event>>, Details: <<Message\_Details>>, Exception: {Cause:<<Exception\_cause>>, Message: <<Exception\_Message>>, StackTrace: <<Exception\_Stacktrace>>}

### Note

- This feature supports SCP-Worker and SCP-nrfproxy microservice with WARN and ERROR level logs.
- SCP is deployed with WARN level log in the production environment.

The SCP log format is made verbose to follow a common format for WARN and ERROR log levels to determine and investigate issues in various events as described in the following table:

**Table 3-8 Log Attributes**

| Log Attribute | Description                              |
|---------------|------------------------------------------|
| Category      | Determines the category of log messages. |

**Table 3-8 (Cont.) Log Attributes**

| Log Attribute        | Description                                               |
|----------------------|-----------------------------------------------------------|
| Event                | Represents logged message event type.                     |
| Message_Details      | Represents the actual message defining the error.         |
| Exception_cause      | Returns the cause of an error.                            |
| Exception_Message    | Represents actual exception message.                      |
| Exception_Stacktrace | Contains complete stack trace which is causing the error. |

The new log format provides comprehensive information about an issue comprising issue category, event name, and detailed description of the issue to help you identify and resolve errors.

The following table describes log levels for various event types:

**Table 3-9 Log Levels for SCP-Worker**

| Category     | Event                          | Log Level | Description                                                                                                                                          |
|--------------|--------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Up Stream    | Connection Timeout             | ERROR     | This event is raised when the connection fails due to connect timeout expiry.                                                                        |
|              | Request Timeout                | WARN      | This event is raised when message request processing fails due to the message response not being received within the configured time.                |
|              | Response Timeout               | WARN      | This event is raised when the destination client response is timeout.                                                                                |
|              | RetryCount Exhausted           | WARN      | This event is raised when message request routing fails because all retry attempts are exhausted. All retry attempts lead to unsuccessful responses. |
| Overload     | Pod OverLoad                   | WARN      | This event specifies the transition of pod overload state from one state to another.                                                                 |
|              | Pending Transaction Overload   | ERROR     | This event is raised when the pending transaction count reaches the configured threshold level.                                                      |
| Health Check | Readiness Failure              | ERROR     | This event is raised when cache members or routing options are unavailable or the rule engine is down.                                               |
|              | Thread Status                  | ERROR     | This event is raised when thread watchdog detects a thread is stuck.                                                                                 |
| Routing      | Destination Search Exhausted   | WARN      | This event is raised when no further valid destination is found for routing, all eligible producer NFs are attempted.                                |
|              | Rule Not Found                 | WARN      | This event is raised when routing rules are not found for the selected producer NFs to route messages.                                               |
|              | Invalid API Version in Request | WARN      | This event is raised when no matching rule is found for the API version received in request.                                                         |
|              | Release16 Validation Failed    | WARN      | This event is raised when any Rel16 message validation fails.                                                                                        |
|              | Message Loop Detected          | WARN      | This event is raised when SCP detects a message loop for a request if it has a VIA header containing SCP's self FQDN.                                |

Table 3-9 (Cont.) Log Levels for SCP-Worker

| Category           | Event                          | Log Level | Description                                                                                                                                                                                     |
|--------------------|--------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | Destination Congested          | WARN      | This event is raised when SCP detects that the selected destination is congested.                                                                                                               |
|                    | Destination Connection Failure | WARN      | This event is raised when the upstream connection fails.                                                                                                                                        |
|                    | Invalid or Empty Details       | ERROR     | This event is raised when any routing related data is empty or contains invalid data.                                                                                                           |
|                    | Miscellaneous                  | WARN      | This event is raised when any warning is raised due to miscellaneous reasons, such as failure in inter-plmn rule creation, handling routing failure responses, and so on.                       |
| Internal           | Internal Error                 | ERROR     | This event is raised when an internal error, such as monitoring of Kubernetes resources, failure to load or validate SSL certificates, object invocation, pegging of metrics, and so on, occur. |
|                    | Conversion Failure             | ERROR     | This event is raised due to unsupported formats, type cast, object formation, and parsing failures.                                                                                             |
|                    | Initialization Failed          | ERROR     | This event is raised when any class initialization fails, such as Jetty client and Kafka admin client creation.                                                                                 |
|                    | Miscellaneous                  | WARN      | This event is raised when any failure in retrieval or updating of values to an object or due to unexpected event method execution.                                                              |
|                    | SSE Failure                    | ERROR     | This event is raised due to connectivity issue with the SCPC-Configuration or SCPC-Notification microservice that impacts data retrieval.                                                       |
|                    | Config Data Parse              | ERROR     | This event is raised when parsing failed for the received config data.                                                                                                                          |
| Data Sync          | Rule Engine                    | ERROR     | This event is raised when routing rules fail to synchronize and update routing rules from the SCPC-Notification microservice.                                                                   |
|                    | Keep Alive                     | WARN      | This informational event is raised when the received Keep Alive and Config connectivity are up.                                                                                                 |
|                    | Invalid Data                   | WARN      | This event is raised when any incorrect configuration data is received due to missing parameters in any configuration.                                                                          |
|                    | Config Update                  | WARN      | This event is raised when any failure occurs while fetching or updating configuration values received from the SCPC-Configuration microservice.                                                 |
| Cache              | Cache Initialization           | ERROR     | This event is raised when the initialization of the coherence cache fails.                                                                                                                      |
|                    | Cache Read Write Failure       | WARN      | This event is raised when any read or write operation fails for the cache.                                                                                                                      |
|                    | Invalid or Empty Details       | WARN      | This event is raised when any incorrect or empty data from the cache is received.                                                                                                               |
| Message Validation | CCA Header Validation Failed   | WARN      | This event is raised when the validation for the CCA header fails.                                                                                                                              |



Table 3-10 Log Levels for SCP-nrfproxy

| Category     | Event                                    | Log Level | Description                                                                                                                                                               |
|--------------|------------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Up Stream    | Connection Timeout                       | ERROR     | This event is raised when the connection fails due to connect timeout expiry.                                                                                             |
|              | Request Timeout                          | WARN      | This event is raised when request processing fails due to response not received within configured time.                                                                   |
|              | Response Timeout                         | WARN      | This event is raised when the destination client response is timeout.                                                                                                     |
|              | RetryCount Exhausted                     | WARN      | This event is raised when message request routing fails because all retry attempts are exhausted. All retry attempts lead to unsuccessful responses.                      |
| Health Check | Readiness Failure                        | ERROR     | This event is raised when cache members or routing options are unavailable or the rule engine is down.                                                                    |
|              | Thread Status                            | ERROR     | This event is raised when thread watchdog detects a thread is stuck.                                                                                                      |
| Routing      | Destination Search Exhausted             | WARN      | This event is raised when no further valid destination is found for routing, all eligible producer NFs are attempted.                                                     |
|              | Rule Not Found                           | WARN      | This event is raised when routing rules are not found for the selected producer NFs to route messages.                                                                    |
|              | Destination webclient Connection Failure | WARN      | This event is raised when upstream connection establishment fails.                                                                                                        |
|              | Invalid or Empty Details                 | ERROR     | This event is raised when any routing related data is empty or contains invalid data.                                                                                     |
|              | Miscellaneous                            | WARN      | This event is raised when any warning is raised due to miscellaneous reasons, such as failure in inter-plmn rule creation, handling routing failure responses, and so on. |
| Internal     | Internal Error                           | ERROR     | This event is raised when an internal error occurs, such as a failure to read the application.properties file or a failure in the registration of NRF-specific details.   |
|              | Conversion Failure                       | ERROR     | This event is raised due to unsupported formats, type cast, object formation, and parsing failures.                                                                       |
|              | Initialization Failed                    | ERROR     | This event is raised when any class initialization fails, such as Jetty client and Kafka admin client creation.                                                           |
|              | Miscellaneous                            | WARN      | This event is raised when any failure in retrieval or updating of values to an object or due to unexpected event method execution.                                        |
| Data Sync    | SSE Failure                              | ERROR     | This event is raised due to connectivity issue with the SCPC-Configuration or SCPC-Notification microservice that impacts data retrieval.                                 |
|              | Config Data Parse                        | ERROR     | This event is raised when parsing failed for the received config data.                                                                                                    |
|              | Rule Engine                              | ERROR     | This event is raised when routing rules fail to synchronize and update routing rules from the SCPC-Notification microservice.                                             |

Table 3-10 (Cont.) Log Levels for SCP-nrfproxy

| Category | Event         | Log Level | Description                                                                                                                                     |
|----------|---------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|          | Keep Alive    | WARN      | This informational event is raised when the received Keep Alive and Config connectivity are up.                                                 |
|          | Invalid Data  | WARN      | This event is raised when any incorrect configuration data is received due to missing parameters in any configuration.                          |
|          | Config Update | WARN      | This event is raised when any failure occurs while fetching or updating configuration values received from the SCPC-Configuration microservice. |

### Managing Verbose Logging

#### Enable

This feature is enabled automatically at the time of SCP deployment.

#### Configure

There is no specific configuration required for this feature.

#### Observe

There is no specific metrics and alerts required for this feature.

#### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

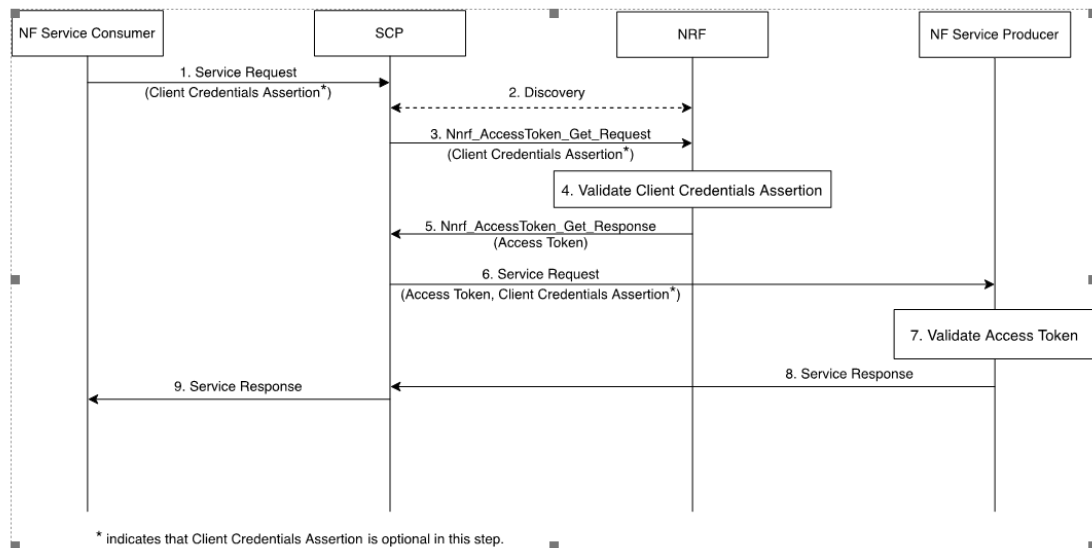
1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.18 Support for OAuth2.0

Access tokens are credentials used by consumer NFs to access protected resources provided by producer NFs. These credentials are issued by NRF. These tokens represent specific scope and duration of access. SCP supports OAuth2.0 (Open Authorization) access tokens in 5G indirect communication models such as Model C and Model D.

In the 5G SBI Model D indirect communication (with delegated discovery) mode, SCP obtains access tokens from NRF for 5G SBI message requests except notification or callback messages. SCP uses the acquired access tokens to forward SBI message requests to the selected producer NFs.

The following call flow represents how SCP obtains access tokens from NRF:

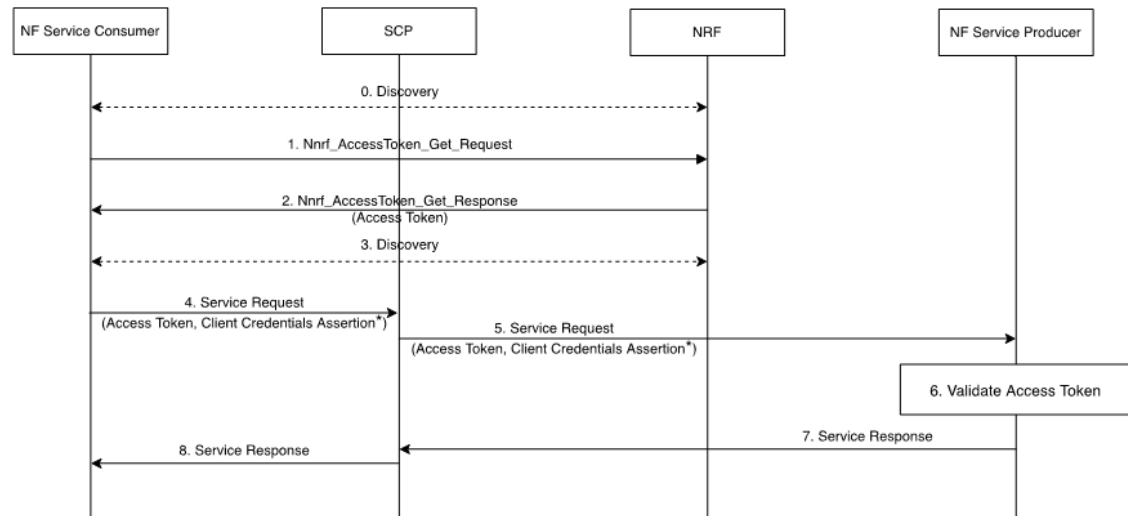
**Figure 3-3 SCP Obtains Access Tokens from NRF**

The above mentioned call flow describes the process to use the Discovery parameter to send a request to NRF for obtaining the access token:

1. NF Service Consumer sends a service request to SCP.
2. If SCP does not get an access token in the service request, it uses the Discovery parameter to send the access token request to NRF.
3. SCP sends Nnrf\_AccessToken\_Get\_Request to NRF.
4. NRF validates the access token request using Client Credential Assertion (CCA).
5. NRF sends Nnrf\_AccessToken\_Get\_Response to SCP.
6. SCP forwards the service request, along with CCA and access token, to NF Service Producer.
7. NF Service Producer validates the access token.
8. NF Service Producer sends the service response to SCP.
9. SCP relays the service response to NF Service Consumer.

In the 5G SBI Model C indirect communication (without delegated discovery) mode, consumer NFs obtain access tokens from NRF except notification or callback messages. SCP uses the access tokens received from consumer NFs and forward SBI message requests to the selected producer NFs.

The following call flow represents how NF Service Consumer obtains access tokens from NRF:

**Figure 3-4 NF Consumer Obtains Access Tokens from NRF**

\* Indicates that Client Credentials Assertion is optional in this step.

The above mentioned call flow describes the process that NF Service Consumer uses to obtain access token from NRF and how SCP uses this access token to forward the service request.

1. When there is no mutual authentication between NF Service Consumer and NRF, NF Service Consumer sends Nnrf\_AccessToken\_Get\_Request to NRF.
2. NRF sends Nnrf\_AccessToken\_Get\_Response to NF Service Consumer.
3. NF Service Consumer sends Discovery service requests to NRF.
4. After receiving the discovery response with NF profiles, NF Service Consumer sends the service request to SCP.
5. SCP uses the access token received from NF Service Consumer and forwards the service request, along with CCA and access token, to NF Service Producer.
6. NF Service Producer validates the access token.
7. NF Service Producer sends the service response to SCP.
8. SCP relays the service response to NF Service Consumer.

#### **Note**

SCP supports 5G SBI Client Credentials Assertion (CCA) custom header for Model C and Model D indirect communication routing. It is an optional header that can be sent by consumer NFs, along with the service request for enabling consumer NFs authentication. For more information about CCA header, see [Support for the Client Credentials Assertion Header](#).

This feature enables SCP to perform the following tasks:

- SCP determines the status of OAuth2 support of producer NFs deployed in the network using the following:
  - Learnt 5G NF service topology from NRF

- NF discovery response during delegated service request
- Configurations at SCP
- In Model D indirect communication, SCP is responsible for access token lifecycle (initiate, maintain, and delete). SCP caches the access tokens and reuses them during initial, subsequent, or alternate routing.
- SCP validates access tokens as per the configuration.
- SCP returns the access token received from NRF to consumer NFs using the "3gpp-Sbi-Access-Token" header.
- SCP determines service level scope information in the access token from the "3gpp-Sbi-Access-Scope" header
- SCP regulates and avoids duplicate access token requests for the same consumer NF and producer NF pair.
- SCP supports OAuth2.0 in inter-SCP scenarios.
- SCP proactively attempts to refresh the access tokens when required.
- SCP supports NF type and NF instance type of access tokens.

SCP has introduced the SCP-nrfProxy-Oauth microservice to manage requests initiated to NRF for its nnrf-oauth2 service that considers various parameters as body and CCA header to provide an authentication token as response to the consumer NF. This microservice interacts with SCP-Worker when it receives request from SCP-Worker. When SCP-Worker initiates the access token request to NRF, Oauth2.0 service sends a request to SCP-Worker with NRF details in the routing binding header. Coherence cache is integrated with this service where the values of tokens are stored based on the cache configuration at SCP. To avoid duplicate requests to NRF, an internal cache is also maintained. This service is capable of handling various states of access tokens received, such as expiration, and acts accordingly.

## Managing Support for OAuth2.0

### Enable

By default, this feature is disabled. To enable this feature, do the following tasks:

1. Set the nrfProxyOauthService Helm parameter to true in the `ocscp_values.yaml` file.
2. Set the `oauth2_support` option to true as described in [Configuring SCP Features](#).

### Configure

You can configure this feature using Helm, REST APIs, and the CNC Console.

- **Configure using CNC Console:** For information about CNC Console configurations, see [Configuring SCP Features](#) and [OAuth2.0 Configurations](#).
- **Configure using REST API:** For information about configuring REST APIs, see "Configuring SCP Features", "Configuring NRF", "Configuring OAuth2.0 Access Token Granularity", and "Configuring OAuth2.0 Local PLMN Required" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
- **Configure using Helm:** For information about configuring the SCP-nrfProxy-Oauth microservice, see "SCP-nrfProxy-oauth Parameters" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

### Observe

The following metrics are added in the [Metrics](#) section:

- ocsdp\_oauth\_access\_token\_cache\_match\_total
- ocsdp\_worker\_access\_token\_forwarded\_in\_tx\_res\_total
- ocsdp\_worker\_access\_token\_forwarded\_in\_tx\_req\_total
- ocsdp\_worker\_access\_token\_cache\_match\_total
- ocsdp\_nrf\_oauth\_error\_counts\_total
- ocsdp\_oauth\_access\_token\_tx\_rsp\_total
- ocsdp\_oauth\_access\_token\_rx\_res\_total
- ocsdp\_oauth\_access\_token\_tx\_req\_total
- ocsdp\_oauth\_access\_token\_rx\_req\_total
- ocsdp\_worker\_access\_token\_rx\_res\_total
- ocsdp\_worker\_access\_token\_tx\_req\_total

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.19 Pod Overload Control

SCP processes 5G Service Based Interface (SBI) messages using its microservices. To protect scp-worker pods from the overload, SCP has introduced the Pod Overload Control feature.

This feature throttles only ingress 5G SBI message requests based on:

- CPU utilization of the scp-worker microservice pods.
- Pending Transactions for which responses from producer NFs are awaited by SCP.

SCP provides the following pod overload configurations for scp-worker:

- **Pod Overload Action Policy:** To configure action to be taken by scp-worker pods for CPU overload.
- **Pod Overload Control Policy:** To configure CPU and pending transactions onset threshold, abatement threshold, and abatement time for scp-worker.
- **Pod Overload Discard Policy:** To configure the percentage of messages to be discarded based on the discardPercentage parameter or discard messages based on the sbiMsgPriorityDiscardFrom parameter.

For more information about the aforementioned configurations, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

When CPU utilization or pending transactions of the scp-worker pod exceeds the configured threshold level, SCP responds based on the configured overload Action Policy as described in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Message Priority

SCP assigns and updates the "3gpp-Sbi-Message-Priority" header to prioritize ingress 5G SBI messages during the overload control task. For more information about message priority, see [Message Priority Assignment and Override](#).

### Managing Pod Overload Control

#### Enable

This feature is enabled automatically in SCP at the time of deployment.

#### Configure

You can configure the Pod Overload Control feature using the CNC Console or REST API.

- **Configure using CNC Console:** For information about 5G SBI message priority and pod overload policies configurations, see [Configuring Pod Overload Control Policies](#) and [Configuring SBI Message Priority](#).
- **Configure using REST API:** For information about 5G SBI message priority and pod overload policies configurations, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Observe

For information about metrics, see [Metrics](#).

The following alerts are added in the [Alerts](#) section:

- [SCPCPUUsageFileReadFailed](#)
- [SCPCGroupVersionDetectionFailed](#)

#### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.20 Routing Support for NEF Services

In the previous releases, SCP did not learn the NEF NF profile from the NRF and hence could not alternate-route the traffic for Nnef services.

This update lets SCP support learning from the NRF about NEF NF profile registration and updates, as well as creating routing and alternate-routing rules for Nnef services.

SCP supports all the existing features for NEF services.

The following are the services offered by NEF at SCP:

- **Nnef\_EventExposure:** Allows NF service consumers to subscribe to and modify application events and to notify NF service consumers about observed events on the NEF.

- **Nnef\_AFsessionWithQoS:** Allows an AF to request the network to provide a specific Quality of service (QoS) for a session.

### Managing Routing Support for NEF Services

#### Enable

This feature is enabled automatically if you are deploying SCP with Release 16.

#### Configure

You can configure the support for NEF services functionality using the CNC Console or REST API.

- **Configure using CNC Console:** For information about how to configure Routing Support for NEF Services, see [Configuring Routing Options](#).
- **Configure using REST API:** For information about how to configure Routing Support for NEF Services, see "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Observe

There is no specific metrics and alerts required for the Routing Support for NEF Services functionality.

#### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.21 Host Preference for Egress Message Requests

Although Fully Qualified Domain Name (FQDN) is present in the ingress message requests, SCP uses IP as the host in the egress message request if IP is present in the learned Network Function (NF) profile of the producer NF.

Using the Host Preference for Egress Message Requests feature, SCP can determine the host type to be included in the egress messages. SCP uses one of the host types such as FQDN or IP, in the egress message request.

The host type in the egress message request is determined by the following:

- 3gpp-Sbi-Target-apiRoot header
- hostPreference of egress\_host\_preference as described in the "Configuring SCP Features" section of *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*
- Learned NF profile from NRF

If the 3gpp-Sbi-Target-apiRoot header is present in the ingress message request, the host type is determined by the `hostPreference.request.apiRootHdrPresent` REST API parameter. If this parameter value is set to `passThrough`, which is the default value, SCP uses the same type of host in the egress message request as received through the ingress message request. For



more information about the `hostPreference.request.apiRootHdrPresent` REST API parameter, see "Configuring SCP Features" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

If the `3gpp-Sbi-Target-Apiroot` header is absent in the ingress message request, SCP uses the `hostPreference.request.apiRootHdrNotPresent` REST API configuration to determine the host type. By default, SCP uses IP as the host type.

In case of alternate routing, SCP determines the host type of another equivalent producer NF by using the same method as used for the target producer NF.

If the selected host type is FQDN, SCP provides the `fqdnResolution.fqdn` REST API parameter to choose whether to resolve the FQDN in the egress message request with the IPs (from IP Endpoints) present in learned NF profiles of the target producer NF or trigger a Domain Name System (DNS) query.

SCP tries to get the same host type as configured in the `hostPreference` REST API parameter, however, if the corresponding information such as FQDN or IP, is unavailable, then SCP uses other available information for routing.

## Managing Host Preference for Egress Message Requests

### Enable

By default, this feature is disabled. To enable this feature, you must complete the configuration as described in the following configuration section.

### Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about CNC Console configurations, see [Configuring SCP Features](#).
- **Configure using REST API:** For information about configuring REST APIs, see "Configuring SCP Features" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

The following metrics are added in the [Metrics](#) section:

- `ocscp_worker_fqdn_resolution_total`
- `ocscp_worker_interplmn_fqdn_resolution_total`
- `ocscp_worker_http_req_host_type_total`

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.22 Enhanced 5G SBI Message Failure Handling

SCP adds server header to all SCP generated error responses as defined in 3GPP TS 29.500. SCP forwards error responses received from producer NFs to consumer NFs without modifying the server header. In case of alternate routing, SCP forwards the last received error response to the consumer NF.

In SCP 1.15.0, the 5G SBI Message Failure Handling functionality was enhanced to enable SCP to send information of all the routing attempts made on producer NFs by SCP. The server header format was enhanced to include all the routing information while forwarding error responses with server header to consumer NFs.

The server header format included information of all the attempted producer NFs in the reverse order of attempts made. For example: If NF1 and NF2 are attempted in that order, then the server header formats are:

- In forwarded responses: "Server: <NF2 Type>-<NF2 instance id> <NF1 Type>-<NF1 instance id>"
- In self-generated responses: "Server: SCP-<scp-fqdn> <NF2 Type>-<NF2 instance id> <NF1 Type>-<NF1 instance id>"

In SCP 23.1.0, when SCP does not receive a server header in an error response from a producer NF, SCP adds a server header with its FQDN for the self-generated error responses. SCP generates error responses in the following scenarios:

- Connection issue with producer NF: When the producer NF is unhealthy or SCP is unable to establish connection with the producer NF.
- Timeout at SCP: When the producer NF fails to reply to SCP within the specified time as configured in the `responseTimeout` REST API parameter or if the configured `totalTransactionLifetime` expires.
- Service unavailable: When the connection is unavailable between SCP and producer NF.
- Received error response without server header: When a producer NF sends an error response without a server header.

SCP adds a server header with its FQDN in the error responses received from the service mesh sidecar. The server header format is: "Server": "SCP-<SCP FQDN>".

SCP forwards the server header received in the error response from the producer NF as it is to the consumer NF.

When SCP receives an error response from sidecar or service mesh, then SCP adds a server header with its FQDN to the service mesh error response and relays them to the consumer NF. SCP detects an error generated by sidecar or service mesh failure when the received response has server header matching one of the configured server header strings in the `sideCarProxyServerHeader` REST API parameter. For example, "envoy", "istio-envoy", and custom string configured in SCP, and the status code in the received error response matches the status code configured in the `sideCarProxyStatusCode` REST API parameter.

SCP appends its FQDN in the server header if it has received a response from at least one producer (also known as the last error response), and SCP couldn't try others due to the following:

- Connection issue, unknown host exception or unknown error
- Service mesh reported errors
- Timeout at SCP

- Received error response from the producer NF without server header

The error response for the above scenarios has the server header as follows: "Server": "SCP-<SCP Fqdn> NFTYPE-<NfInstanceId>".

In SCP 23.2.0, the 5G SBI Message Failure Handling functionality is enhanced further. SCP now forwards the last or latest error response received from producer NFs to consumer NFs, and server header content is populated with the details of the producer NF from which the error response is received.

SCP does not append SCP FQDN in returned server header to downstream if it has received an error response from at least one producer and SCP couldn't try other producer NFs due to following:

- Connection issue, unknown host exception or unknown error
- Service mesh reported errors
- Timeout at SCP
- Received error response from the producer NF without server header

The error response for the above scenarios has the server header as follows: "Server": "NFTYPE-<NfInstanceId>".

**Example:**

**Table 3-11 Implemented Behavior**

| Scenario                                                                                                                                                                                                                                                                                                                                 | Server Header in 23.1.0                         | Server Header in 23.2.0          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------|
| When SCP sends a message request to UDM1, UDM1 sends an error response with a server header. Then, SCP performs alternate routing on UDM2, and a timeout occurs at SCP.                                                                                                                                                                  | "Server": "SCP-<scp-fqdn> UDM-udm1-instance-id" | "Server": "UDM-udm1-instance-id" |
| Scenario 2: When SCP sends a message request to UDM1, SCP receives an error response from the service mesh or sidecar. Then, SCP performs alternate routing on UDM2 and receives an error response without a server header, and when SCP performs another alternate routing on UDM3, it receives an error response with a server header. | "Server": "SCP-<scp-fqdn> UDM-udm3-instance-id" | "Server": "UDM-udm3-instance-id" |

### Managing Enhanced 5G SBI Message Failure Handling

#### Enable

This default behavior, which is specified in 3GPP TS 29.500, of this feature is enabled automatically in SCP at the time of deployment. To enable the enhanced server header behavior introduced in SCP 1.15.0, set **Enable Enhance Server Header Behavior** to true. To enable the enhanced server header behavior introduced in SCP 23.1.0, set **Enable Enhance Server Header Behavior V2** to true. For more information, see [Configuring Server Header](#).

#### Note

The enhanced server header behavior of SCP 1.15.0 and SCP 23.1.0 are mutually exclusive.

## Configure

You can configure the Enhanced 5G SBI Message Failure Handling feature using the CNC Console or REST API.

- **Configure using CNC Console:** For information about server header parameters configuration, see [Configuring Server Header](#).
- **Configure using REST API:** For information about server header configurations, see "Configuring Server Header" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

## Observe

Updated the `ocscp_metric_sidecarproxy_failures_total` metric with the `ocscp_server_header` dimension in the [Metrics](#) section.

Added the [SCPSERVICE\\_MESH\\_FAILURE](#) alert in the [Alerts](#) section.

## Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.23 Extension of HTTP Status Code List for Rerouting

SCP can reroute a request when a producer responds with an error code. Prior to this release, rerouting took place based on the configurable response codes. However, the list of configurable error codes was limited to a smaller set of enumerations (ENUMs), such as `GATEWAY_ERROR`, few other status codes and ENUMs.

With this enhancement, SCP now supports rerouting a request based on an extended list of configurable HTTP Status codes. The user-provided configurable list of error codes serves as the basis for rerouting. A wider set of numerical response codes is supported with the introduction of the new attribute "reRouteConditionList," which replaced the old attribute "reRouteOnResponseCodeList" in the Routing Options REST API. When a received error code matches a status code in the configurable list, the SCP reroutes the request based on the configured alternate routing mechanism.

### Managing Configurable HTTP Status Codes for Rerouting

#### Enable

You can enable this feature using REST API by setting the `reRouteConditionList` routing option parameter. For more information about this parameter, see "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Configure

You can configure the HTTP Status Codes for Rerouting functionality using the CNC Console or REST API.

- **Configure using CNC Console:** For information about how to configure HTTP Status Codes for Rerouting, see [Configuring Routing Options](#).
- **Configure using REST API:** For information about how to configure HTTP Status Codes for Rerouting, see "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

There is no specific metrics and alerts required for the Extension of HTTP Status Code List for Rerouting functionality.

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.24 Load Balancing

The 5G core network is a service-based architecture that does not lend itself to an efficient load balancing of provider NFs. By introducing Service Communication Proxy (SCP) in the midst, the load balancing across available NFs can be significantly improved. SCP has a complete view of all the messages arriving for a given NF type and supports traffic distribution patterns, such as round-robin, based on its capacity and availability by enabling uniform load balancing strategy across the network.

SCP supports Load Balancing Algorithm: Priority and Capacity. Load balancing across the equivalent NF or NF Services is based on the priority and capacity.

### Managing Load Balancing

#### Enable

The Load Balancing feature is a core functionality of SCP.

You can enable this feature using REST API by setting the routePolicy routing option parameter to Load\_Balance. For more information about this parameter, see "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Note

This feature is enabled automatically if you are deploying SCP with Release 16 of Model C. For more information about Model C, see [Support for Model C Indirect 5G SBI Communication](#).

### Configure

You can configure the Load Balancing functionality using the CNC Console or REST API.

- **Configure using CNC Console:** For information about how to configure load balancing, see [Configuring Routing Options](#).

- **Configure using REST API:** For information about how to configure load balancing, see "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

There is no specific metrics and alerts required for the Load Balancing functionality.

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.25 5G SBI Message Routing

Service Communication Proxy (SCP) provides 5G Service Based Interface (SBI) message routing control and brings resiliency to the network. It relieves user NFs from remembering and interpreting complex routing rules associated with the next hop selection. Concurrently, it makes rerouting decisions based on the load conditions and health status of NF providers within the configured time period.

SCP acts as a proxy and forwards and routes any 5G ingress service request to the host (5G NF) present in the request's URI.

For Release 15, SCP supports:

- Routing based on International Mobile Subscriber Identity (IMSI) and Mobile Station International Subscriber Directory Number (MSISDN)
  - Routing based on Subscription Permanent Identifier (SUPI) and Generic Public Subscription Identifier (GPSI) are supported based on the start and end attributes as published in NF Profile and routing based on the pattern attribute is not supported.
- Only IPv4 IP family
- Every producer NFs are required to publish IpEndPoints for each NFServices in NFProfile while registering with NRF.
- Routing Scope: Site
- DB Sync Status: No Sync, Site Wide
  - Load Balancing and alternate routing is based on DB Sync Status within the Site

For Release 16, SCP supports:

- 5G SBI Model C indirect communication
- 5G SBI Model D indirect communication
- Learns 5G NF topology from NRF
- Static configuration of 5G NF topology
- Load Control based on the Load Control Information Header and so on.
- IPv4 IP family

- Every NF deployed in the network is expected to register with NRF as SCP learns the deployed network's NF topology from NRF.

### Alternate Routing

SCP performs alternate routing by forwarding the message request to the next available producer NF if the target producer NF:

- Is unavailable
- Doesn't respond due to a timeout
- Responds with an error

After receiving a message request, if SCP does not find any routing rules, SCP uses a default routing rule to route the request directly to the target producer NF. In such scenarios, alternate routing and load balancing functionalities are not applicable.

SCP provides circuit breaking functionality by rejecting message requests for failed or degraded NFs when alternate routing is unavailable. This process prevents consumer NFs from using their resources because they wait for responses from producer NFs. SCP attempts to get a response from producer NFs on behalf of consumer NFs by allowing the service user to focus on the application..

SCP also reroutes message requests with one of the configured HTTP status codes. For more information about the status codes, see "HTTP Status Code and Applicability for Rerouting" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

When one of the following nexthop SCP/SEPP routing failure conditions occurs, SCP performs alternative routing:

- Error received from nextHop SCP/SEPP
- Request timeout at the SCP
- Transport error

### Types of Routing Options Supported by SCP

The types of routing options are:

- Pod Level Routing: Controls routing across the pods of selected NF
- Service Level Routing: Controls routing of selected NF services

### InterSCP Routing

SCP supports Inter-SCP routing for scenarios where routing across regions is required.

The network can be divided into different geographical regions, with each region deploying redundant NF instances. Each of these regions can be deployed with their own georedundant NRFs. There are scenarios when traffic routing is required across the regions.

In such cases, SCP has to learn the network topology by interacting with NRFs in different regions. SCP also discovers other SCPs in the network. To enable routing to producer NF instances in other regions, the consumer's SCP in a region is aware of the producer's SCP in other regions.

SCP defines its serving Locality in the servingScope parameter in its profile registered with NRF and learns the NF topology from NRF. SCP learns other SCPs from NRF in the same way as it learns from any other producer.



When consumer NF's SCP receives a request, it finds the locality of the selected producer NF instance.

If the producer NF locality is not served by the consumer SCP, the consumer NF's SCP finds the SCP serving the producer NF's locality and routes the request to that SCP. The producer's SCP forwards the request to the producer NF within its served locality.

If the consumer SCP serves the producer locality, it is routed by the consumer SCP. If not, the request is forwarded to the producer SCP serving the NF locality for routing in its served region.

### "User-Agent" Header Formats

SCP adds the "User-Agent" header to SCP originated message requests to NRF.

SCP uses the `userAgentHeaderFormat` REST API parameter to define the format of the "User-Agent" header that is added in the SCP originated message requests towards NRF. SCP supports the following formats of the "User-Agent" header:

- NFTYPE-NFINSTANCEID FQDN
- NFTYPE-NFINSTANCEID-FQDN
- NFTYPE-FQDN NFINSTANCEID
- NFTYPE-FQDN-NFINSTANCEID
- NFTYPE-NFINSTANCEID
- NFTYPE-FQDN
- NFTYPE
- NFTYPE-UNIQUEID

This enhancement enables SCP to support above mentioned "User-Agent" formats and includes consumer NFs identity as dimensions in SCP metrics, alerts, and logs. The following dimension are introduced as part of this enhancement to filter SCP metrics based on the consumer NF information: `ocscp_consumer_host`, `ocscp_consumer_nf_instance_id`, and `ocscp_consumer_nf_type`.

SCP uses the `scp_user_agent_info` REST API parameter to enable or disable the addition of the "User-Agent" header in the SCP originated messages towards NRF. For more information about the `scp_user_agent_info` parameter, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Loop Detection

The loop detection feature is used to identify the loops in the 5G control plane network. SCP detects loops using the `via` header in the incoming request. SCP looks for its own FQDN presence in `via` header. If such a case occurs, this implies that the same SCP is invoked twice in the same request sequence, which means there is a loop. Hence, SCP rejects such a request. The loop detection feature is enabled by default.

### Managing 5G SBI Message Routing

#### Enable

SCP determines 5G NF topology information from NRF. You can enable the 5G SBI Message Routing functionality by providing all the NRF profiles' information in the YAML file as described in the global parameters section in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.



**Note**

- This feature is enabled automatically if you are deploying SCP with Release 16 of Model C. For more information about Model C, see [Support for Model C Indirect 5G SBI Communication](#).
- You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

**Configure**

You can configure the 5G SBI Message Routing functionality using the CNC Console or REST API.

- **Configure using CNC Console:** For information about how to configure routing options, see [Configuring Routing Options](#).
- **Configure using REST API:** For information about configuring routing options, see "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

**Observe**

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

**Maintain**

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.25.1 5G SBI Notification Requests processing

The ApiPrefix usage in notification messages at SCP are as follows:

Table 3-12 5G SBI Notification Requests Processing

| Notification Message Received at SCP   |                   |                               | Forwarded Notification Message to NextHop SCP (SCP-P) |                     |                                                                                                    | Forwarded Notification Message to Target NF |                         |                                   | Description                                                                                        |
|----------------------------------------|-------------------|-------------------------------|-------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------|
| 3gpp-sbi-target-apiRoot Header         | :authority header | :path header                  | 3gpp-sbi-target-apiRoot Header                        | :authority header   | :path header                                                                                       | Routing Attempt                             | :authority header       | :path header                      |                                                                                                    |
| scheme://NF-C1.com:port/NF-C1ApiPrefix | scp.com:port      | scpApiPrefix/notification Uri | scheme://NF-C1.com:port/NF-C1ApiPrefix                | nextHopScp.com:port | {nextHopScpApiPrefix}/notification Uri<br>• If next hop SCP has published ApiPrefix in SCP Profile | Primary routing                             | scheme://NF-C1.com:port | NF-C1ApiPrefix/notification Uri   | While registering with NRF, the notification handling service published apiPrefix in NFProfile.    |
|                                        |                   |                               |                                                       |                     |                                                                                                    | Alternate routing                           | scheme://NF-C2.com:port | {NF-C2ApiPrefix}/notification Uri | NF-C2ApiPrefix is used as per deployment and the apiPrefix value in the NFProfile for the service. |
| scheme://NF-C1.com:port/               | scp.com:port      | scpApiPrefix/notification Uri | scheme://NF-C1.com:port/                              | nextHopScp.com:port | {nextHopScpApiPrefix}/notification Uri<br>• If next hop SCP has published ApiPrefix in SCP Profile | Primary routing                             | scheme://NF-C1.com:port | /notification Uri                 | NF-C2ApiPrefix is used as per deployment and the apiPrefix value in the NFProfile for the service. |
|                                        |                   |                               |                                                       |                     |                                                                                                    | Alternate routing                           | scheme://NF-C2.com:port | {NF-C2ApiPrefix}/notification Uri | NF-C2ApiPrefix is used as per deployment and the apiPrefix value in the NFProfile for the service. |

Table 3-12 (Cont.) 5G SBI Notification Requests Processing

| Notification Message Received at SCP   |                   |                  | Forwarded Notification Message to NextHop SCP (SCP-P) |                     |                                                                                                   | Forwarded Notification Message to Target NF |                         |                                  | Description                                                                                        |
|----------------------------------------|-------------------|------------------|-------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------|----------------------------------|----------------------------------------------------------------------------------------------------|
| 3gpp-sbi-target-apiRoot Header         | :authority header | :path header     | 3gpp-sbi-target-apiRoot Header                        | :authority header   | :path header                                                                                      | Routing Attempt                             | :authority header       | :path header                     |                                                                                                    |
| scheme://NF-C1.com:port/NF-C1ApiPrefix | scp.com:port      | /notificationUri | scheme://NF-C1.com:port/                              | nextHopScp.com:port | {nextHopScpApiPrefix}/notificationUri<br>• If next hop SCP has published ApiPrefix in SCP Profile | Primary routing                             | scheme://NF-C1.com:port | NF-C1ApiPrefix/notificationUri   | SCP is deployed without apiPrefix in SCP profile.                                                  |
|                                        |                   |                  |                                                       |                     |                                                                                                   | Alternate routing                           | scheme://NF-C2.com:port | {NF-C2ApiPrefix}/notificationUri | NF-C2ApiPrefix is used as per deployment and the apiPrefix value in the NFProfile for the service. |
| scheme://NF-C1.com:port/               | scp.com:port      | /notificationUri | scheme://NF-C1.com:port/                              | nextHopScp.com:port | {nextHopScpApiPrefix}/notificationUri<br>• If next hop SCP has published ApiPrefix in SCP Profile | Primary routing                             | scheme://NF-C1.com:port | /notificationUri                 | SCP and the notification handling service are deployed without an apiPrefix in the NFProfile.      |
|                                        |                   |                  |                                                       |                     |                                                                                                   | Alternate routing                           | scheme://NF-C2.com:port | {NF-C2ApiPrefix}/notificationUri | NF-C2ApiPrefix is used as per deployment and the apiPrefix value in the NFProfile for the service. |

Table 3-12 (Cont.) 5G SBI Notification Requests Processing

| Notification Message Received at SCP     |                   |                                           | Forwarded Notification Message to NextHop SCP (SCP-P)                                                            |                     |                                                                                                                                                       | Forwarded Notification Message to Target NF |                         |                                   | Description                                                                                   |
|------------------------------------------|-------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------|
| 3gpp-sbi-target-apiRoot Header           | :authority header | :path header                              | 3gpp-sbi-target-apiRoot Header                                                                                   | :authority header   | :path header                                                                                                                                          | Routing Attempt                             | :authority header       | :path header                      |                                                                                               |
| Delegated Discovery notification request | scp.com:port      | {scpApiPrefix}/scp-default-sub-notify-uri | scheme://NF-C1.com:port/<br><ul style="list-style-type: none"> <li>Select ed target notific ation URI</li> </ul> | nextHopScp.com:port | {nextHops cpApiPrefix}/notification Uri<br><ul style="list-style-type: none"> <li>If next hop SCP has publis hed ApiPr efix in SCP Profile</li> </ul> | Primary routing                             | scheme://NF-C1.com:port | {NF-C1ApiPrefix}/notification Uri | Notificatio n URI is used according to the published NFProfile based on discovery responses . |
|                                          |                   |                                           |                                                                                                                  |                     |                                                                                                                                                       | Alternate routing                           | scheme://NF-C2.com:port | {NF-C2ApiPrefix}/notification Uri | Notificatio n URI is used according to the published NFProfile based on discovery responses . |
| Delegated Discovery notification request | scp.com:port      | /scp-default-sub-notify-uri               | scheme://NF-C1.com:port/<br><ul style="list-style-type: none"> <li>Select ed target notific ation URI</li> </ul> | nextHopScp.com:port | {nextHops cpApiPrefix}/notification Uri<br><ul style="list-style-type: none"> <li>If next hop SCP has publis hed ApiPr efix in SCP Profile</li> </ul> | Primary routing                             | scheme://NF-C1.com:port | {NF-C1ApiPrefix}/notification Uri | Notificatio n URI is used according to the published NFProfile based on discovery responses . |
|                                          |                   |                                           |                                                                                                                  |                     |                                                                                                                                                       | Alternate routing                           | scheme://NF-C2.com:port | {NF-C2ApiPrefix}/notification Uri | Notificatio n URI is used according to the published NFProfile based on discovery responses . |

## 3.25.2 5G SBI Service Requests Processing

The ApiPrefix usage in service request messages at SCP are as follows:

**Table 3-13 5G SBI Service Requests Processing**

| 5G SBI request message received at SCP |                   |                                                                        | SBI Service Request to NextHop SCP     |                     |                                                                                                                                                                                                 | Forwarded SBI Service Request Message to Target NF |                         |                                                                            | Description                                                                                              |
|----------------------------------------|-------------------|------------------------------------------------------------------------|----------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 3gpp-sbi-target-apiRoot Header         | :authority header | :path header                                                           | 3gpp-sbi-target-apiRoot Header         | :authority header   | :path header                                                                                                                                                                                    | Routing Attempt                                    | :authority header       | :path header                                                               |                                                                                                          |
| scheme://NF-P1.com:port/NF-P1ApiPrefix | scp.com:port      | scpApiPrefix/<br><apiName>/<br><apiVersion>apiSpecificResourceURI      | scheme://NF-P1.com:port/NF-P1ApiPrefix | nextHopScp.com:port | {nextHops<br>cpApiPrefix}/<br><apiName>/<br><apiVersion>/<br>apiSpecificResourceURI<br><ul style="list-style-type: none"> <li>If next hop SCP has published ApiPrefix in SCP Profile</li> </ul> | Primary routing                                    | scheme://NF-P1.com:port | NF-P1ApiPrefix/<br><apiName>/<br><apiVersion>/<br>apiSpecificResourceURI   | While registering with NRF, the NF service published apiPrefix in NFProfile.                             |
|                                        |                   |                                                                        |                                        |                     |                                                                                                                                                                                                 | Alternate routing                                  | scheme://NF-P2.com:port | {NF-P2ApiPrefix}/<br><apiName>/<br><apiVersion>/<br>apiSpecificResourceURI | NF-P2ApiPrefix is used according to deployment and the apiPrefix value in the NFProfile for the service. |
| scheme://NF-P1.com:port/               | scp.com:port      | scpApiPrefix/<br><apiName>/<br><apiVersion>/<br>apiSpecificResourceURI | scheme://NF-P1.com:port/               | nextHopScp.com:port | {nextHops<br>cpApiPrefix}/<br><apiName>/<br><apiVersion>/<br>apiSpecificResourceURI<br><ul style="list-style-type: none"> <li>If next hop SCP has published ApiPrefix in SCP Profile</li> </ul> | Primary routing                                    | scheme://NF-P1.com:port | /<br><apiName>/<br><apiVersion>/<br>apiSpecificResourceURI                 | NF service is not supporting apiPrefix and not published in NF Profile.                                  |

Table 3-13 (Cont.) 5G SBI Service Requests Processing

| 5G SBI request message received at SCP |                   |                                                | SBI Service Request to NextHop SCP |                     |                                                                                                                                                                               | Forwarded SBI Service Request Message to Target NF |                         |                                                                | Description                                                                                              |
|----------------------------------------|-------------------|------------------------------------------------|------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 3gpp-sbi-target-apiRoot Header         | :authority header | :path header                                   | 3gpp-sbi-target-apiRoot Header     | :authority header   | :path header                                                                                                                                                                  | Routing Attempt                                    | :authority header       | :path header                                                   |                                                                                                          |
|                                        |                   |                                                |                                    |                     |                                                                                                                                                                               | Alternate routing                                  | scheme://NF-P2.com:port | {NF-P2ApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI | NF-P2ApiPrefix is used according to deployment and the apiPrefix value in the NFProfile for the service. |
| scheme://NF-P1.com:port/NF-P1ApiPrefix | scp.com:port      | /<apiName>/<apiVersion>/apiSpecificResourceURI | scheme://NF-P1.com:port/           | nextHopScp.com:port | {nextHopScpApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI<br><ul style="list-style-type: none"><li>If next hop SCP has published ApiPrefix in SCP Profile</li></ul> | Primary routing                                    | scheme://NF-P1.com:port | NF-P1ApiPrefix/<apiName>/<apiVersion>/apiSpecificResourceURI   | SCP is deployed without apiPrefix in SCP profile.                                                        |
|                                        |                   |                                                |                                    |                     |                                                                                                                                                                               | Alternate routing                                  | scheme://NF-P2.com:port | {NF-P2ApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI | NF-P2ApiPrefix is used according to deployment and the apiPrefix value in the NFProfile for the service. |
| scheme://NF-P1.com:port/               | scp.com:port      | /<apiName>/<apiVersion>/apiSpecificResourceURI | scheme://NF-P1.com:port/           | nextHopScp.com:port | {nextHopScpApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI<br><ul style="list-style-type: none"><li>If next hop</li></ul>                                            | Primary routing                                    | scheme://NF-C1.com:port | /<apiName>/<apiVersion>/apiSpecificResourceURI                 | SCP and NF service are deployed without an api prefix in the NFProfile.                                  |

Table 3-13 (Cont.) 5G SBI Service Requests Processing

| 5G SBI request message received at SCP           |                   |                                                              | SBI Service Request to NextHop SCP                             |                     |                                                                                                                                   | Forwarded SBI Service Request Message to Target NF |                         |                                                                | Description                                                                                              |
|--------------------------------------------------|-------------------|--------------------------------------------------------------|----------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 3gpp-sbi-target-apiRoot Header                   | :authority header | :path header                                                 | 3gpp-sbi-target-apiRoot Header                                 | :authority header   | :path header                                                                                                                      | Routing Attempt                                    | :authority header       | :path header                                                   |                                                                                                          |
|                                                  |                   |                                                              |                                                                |                     | SCP has published ApiPrefix in SCP Profile .                                                                                      | Alternate routing                                  | scheme://NF-C2.com:port | {NF-P2ApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI | NF-P2ApiPrefix is used according to deployment and the apiPrefix value in the NFProfile for the service. |
| Delegated Discovery 5G SBI request (Not Present) | scp.com:port      | {scpApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI | scheme://NF-P1.com:port/<br>• Selected target notification URI | nextHopScp.com:port | {nextHopScpApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI<br>• If next hop SCP has published ApiPrefix in SCP Profile . | Primary routing                                    | scheme://NF-P1.com:port | {NF-P1ApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI | apiRoot is created according to the published NFProfile based on discovery responses .                   |
|                                                  |                   |                                                              |                                                                |                     |                                                                                                                                   | Alternate routing                                  | scheme://NF-P2.com:port | {NF-P2ApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI | apiRoot is created according to the published NFProfile based on discovery responses .                   |
| Delegated Discovery 5G SBI request (Not Present) | scp.com:port      | /scp-default-sub-notif-uri                                   | scheme://NF-P1.com:port/<br>• Selected target notification URI | nextHopScp.com:port | {nextHopScpApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI<br>• If next hop SCP has                                      | Primary routing                                    | scheme://NF-P1.com:port | {NF-P1ApiPrefix}/<apiName>/<apiVersion>/apiSpecificResourceURI | apiRoot is created according to the published NFProfile based on discovery responses .                   |

Table 3-13 (Cont.) 5G SBI Service Requests Processing

| 5G SBI request message received at SCP |                   |              | SBI Service Request to NextHop SCP |                   |                                    | Forwarded SBI Service Request Message to Target NF |                         |                                                                 | Description                                                                           |
|----------------------------------------|-------------------|--------------|------------------------------------|-------------------|------------------------------------|----------------------------------------------------|-------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 3gpp-sbi-target-apiRoot Header         | :authority header | :path header | 3gpp-sbi-target-apiRoot Header     | :authority header | :path header                       | Routing Attempt                                    | :authority header       | :path header                                                    |                                                                                       |
|                                        |                   |              |                                    |                   | published ApiPrefix in SCP Profile | Alternate routing                                  | scheme://NF-P2.com:port | {NF-P2ApiPrefix}/<apiName>/<apiVersion>/apiSpecificResource URI | apiRoot is created according to the published NFProfile based on discovery responses. |

## 3.26 5G SBI Message Mediation Support

In the release 1.9.0 and earlier, SCP supports Mediation as an independent service to modify 5G Service Based Interface (SBI) message content, which includes HTTP2 header values and JSON message body, based on the user-defined mediation rule sets.

SCP is enhanced to include Mediation as a microservice, scp-mediation, that applies user configured message mediation policy rules to ingress 5G SBI messages to perform message mediation transformation. The scp-worker microservice applies mediation invocation filter criteria according to the mediation trigger point configuration and forwards 5G SBI messages to the scp-mediation microservice.

The following parameters are configured to forward SBI messages to Mediation from the trigger points:

- **nfType:** It routes all message requests for this nfType to the scp-mediation microservice.
- **serviceName:** It routes all message requests for this serviceName to the scp-mediation microservice.
- **httpMethods:** It routes all messages of a particular HTTP method type, which corresponds to the methods specified in this list, to the scp-mediation microservice.
- **triggerPoints:** It contains the list of trigger points that must be enabled to forward message requests from SCP to the scp-mediation microservice from the enabled trigger point. It has four values, requestIngress, requestEgress, responseIngress, and responseEgress.
- **match:** This block specifies the criteria required to match HTTP headers or JSON body or the both to route to the scp-mediation microservice.



**Note**

- Mediation is supported only in Release 16 SCP deployment.
- Mediation does not support multipart messages.

**Managing Mediation****Enable**

To enable this feature, set the `mediationService` parameter to `true` in the global parameters section of the `custom-values.yaml` file. For more information about this parameter, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

**Note**

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

**Configure**

You can configure the Mediation feature using Helm, REST API, and the CNC Console.

- **Configure using Helm:** For information about configuring the `scp-mediation` microservice parameters, see "scp-mediation Parameters" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.
- **Configure using CNC Console:** You can enable this feature by setting `mediation` to `true`. For more information, see [Configuring SCP Features](#). To configure trigger points, see [Configuring Mediation](#), to configure Mediation routing options, see [Configuring Routing Options for Mediation](#) and to configure the Mediation rules, see [Configuring Mediation Rules](#).
- **Configure using REST API:** For information about configuring trigger points, see "Configuring Mediation Trigger Point", for configuring Mediation routing options, see "Configuring App Routing Options" and for configuring Mediation rules, see "Configuring Mediation Rules" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

You must configure Mediation rules as described in [Mediation Rules Configuration](#) and [Configuring Mediation Rules](#).

**Observe**

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

**Maintain**

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

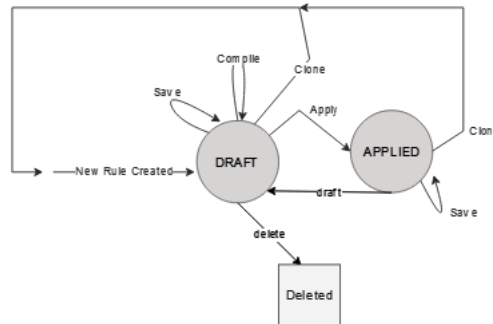
1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.

2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

### 3.26.1 Mediation Rules Configuration

Mediation rules stored in the database can be retrieved, new rules can be added, and existing rules can be modified using the CCNC GUI and RESTful API. In addition, the storage capacity has improved.

**Figure 3-5 Rule Status Flow**



The following table lists the state of rules and its description

**Table 3-14 Types of State**

| State   | Description                                                                                                                                                                                           |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clone   | To create a new rule, the values of the rule already created and stored in the database are used. This newly created rule has a name followed by a term draft. A new name must be provided as a rule. |
| Compile | This state precompiles, takes the rule source, and builds an executable rule base.                                                                                                                    |
| Draft   | This state moves a rule from APPLIED status to DRAFT status.                                                                                                                                          |
| Apply   | This state moves a rule from DRAFT status to APPLY status.                                                                                                                                            |
| Save    | This state saves the changes in database.                                                                                                                                                             |

The table lists the modifications allowed to be configured in rule status:

**Table 3-15 Rule Status**

| Field Name     | DRAFT status | Applied status |
|----------------|--------------|----------------|
| Rule Name      | Not Allowed  | Not Allowed    |
| Format         | Not Allowed  | Not Allowed    |
| Status         | Not Allowed  | Not Allowed    |
| Mediation Mode | Allowed      | Allowed        |
| Code           | Allowed      | Not Allowed    |
| State          | Allowed      | Allowed        |

**Note**

The Rule Name must be unique. The status of a rule can be DRAFT or APPLIED. Only DRAFT status can be deleted, edited, or viewed.

This section describes APIs that are used to define Mediation rules.

**Header Rule APIs**

The following are the header APIs used to create header rules supported in Mediation.

**Table 3-16 Header Rule APIs**

| API Name                                            | Return Type | Description                                                                                                                                                                                                                                 |
|-----------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| get(String key)                                     | String      | Returns the header value for the key specified.<br>Example:<br>Request(headers.get("x-number") )                                                                                                                                            |
| has(String key)                                     | Boolean     | Returns true or false depending on whether the header specified by the key attribute is present or absent.<br>Example:<br>Request(headers.has("3gpp-Sbi-Producer-Id"))                                                                      |
| has(String key, String value)                       | Boolean     | Returns true or false depending on whether the header specified by the key attribute is present.<br>Example:<br>Request(headers.has("3gpp-Sbi-Producer-Id","nfinst=1faf1bbc-6e4a-3994-a507-a14ef8e1bc23"))                                  |
| put( String key, String value)                      | Boolean     | Creates the header with the specified key value pair if the key is absent. If the key is present, it updates the value of the header with the specified value.<br>Example:<br>req.headers.put("x-original-authority", "10.172.19.110:8080") |
| add( String key, String value);                     | Boolean     | Adds the header with the provided key and value if it does not find the key.<br>Example:<br>req.headers.add("Content-type","application/json")                                                                                              |
| set( String key, String value);                     | Boolean     | Updates the header with the value if the provided key is found.<br>Example:<br>req.headers.set("3gpp-Sbi-Producer-Id","nfinst=1faf1bbc-6e4a-3994-a507-a14ef8e1bc25")                                                                        |
| set( String key, String oldValue, String newValue); | Boolean     | Updates the header with a new value if the existing value of the header matches with the value specified by the oldValue attribute.<br>Example:<br>req.headers.set("x-number", "2", "3")                                                    |
| del(String key)                                     | Boolean     | Removes the header specified by the key attribute.<br>Example:<br>req.headers.del("3gpp-Sbi-Message-Priority")                                                                                                                              |
| del(String key, String value)                       | Boolean     | Removes the header if it matches with the provided key and value.<br>Example:<br>req.headers.del("x-forwarded-NF","NRF")                                                                                                                    |
| count();                                            | Integer     | Returns the total count of all the headers.<br>Example:<br>Request(headers.count())                                                                                                                                                         |

**Table 3-16 (Cont.) Header Rule APIs**

| API Name                        | Return Type | Description                                                                                                                    |
|---------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------|
| count(String key);              | Integer     | Returns the total count of headers with the key.<br>Example:<br>Request(headers.count("Accept"))                               |
| count(String key, String value) | Integer     | Returns the total count of headers with the key and value.<br>Example:<br>Request(headers.count("Accept", "application/json")) |

**APIs for Modifying Request Body**

The following table describes the rule APIs to update and delete HTTP message body that are supported in mediation:

**Note**

The paths in all the parameters must be in the JSONPath format.

**Table 3-17 APIs for Modifying Request Body**

| API Name                                             | Return Type  | Description                                                                                                                                                                                                                                                                     |
|------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| get(String path)                                     | Object       | Returns the value present at the specified path.<br>Example:<br>body.get("\$.serviceName")                                                                                                                                                                                      |
| getAll(String path)                                  | List<Object> | Returns the list of objects present at the specified path.<br>Example:<br>body.getAll("\$.serviceName")                                                                                                                                                                         |
| has(String path);                                    | boolean      | Checks whether the key is present at the path or not.<br>Example:<br>body.has("\$.serviceName")                                                                                                                                                                                 |
| has(String path, Object value)                       | boolean      | Checks whether the key has the value present at the path or not.<br>Example:<br>body.has("\$.serviceName", "value")                                                                                                                                                             |
| absPath(String arrayPath, String elem, Object value) | Object       | Returns the whole path from the head to the element if the value is present.<br>Example:<br>req.body.absPath("\$.payload", "iePath", "/a")                                                                                                                                      |
| indexOf(String arrayPath, String elem, Object value) | Integer      | Returns the index of the value in that JSONArray.<br>Example:<br>req.body.indexOf("\$.dataToIntegrityProtectBlock.payload", "value", 100)                                                                                                                                       |
| put(String path, String key, T value)                | boolean      | Adds the body with the provided key and value at the path if the key is absent. Otherwise, update the body with the value at the path.<br>Example:<br>req.body.put("\$", "key", "value")<br><b>Note:</b> It is recommended to use the PUT method while trying to add a new key. |

**Table 3-17 (Cont.) APIs for Modifying Request Body**

| API Name                  | Return Type | Description                                                                                                                                                                                                                               |
|---------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| add(String path, T value) | boolean     | Adds the key embedded in the path with the provided value if the element is absent.<br>Example:<br>req.body.add("\$.ipEndPoints", "value")<br><b>Note:</b> When adding a new key, the PUT method is always preferred over the ADD method. |
| set(String path, T value) | boolean     | Updates the key embedded in the path with the provided value if the element is present.<br>Example:<br>rsp.body.add("\$.ipEndPoints", "value")                                                                                            |
| del(String path, T value) | boolean     | Removes the element at that path with the value present. Not supported.<br>Example:<br>req.body.del("\$.path", "value")                                                                                                                   |
| del(String path)          | boolean     | Removes the element at that path.<br>Example:<br>req.body.del("\$.path")                                                                                                                                                                  |

**Http Message Common APIs**

The following are the common Http message APIs supported by both request and response body.

**Table 3-18 Http Message Common APIs**

| API Name                                  | Return Type | Description                                                                                         |
|-------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------|
| getUri()                                  | String      | Returns the URI of the request.<br>Example:<br>req.getUri()                                         |
| setUri(String URI)                        | void        | Sets the URI in the body of the request.<br>Example:<br>req.setUri("http://oracle.com")             |
| getHttpStatusCode()                       | Integer     | Returns the StatusCode from the body of the response.<br>Example:<br>rsp.getHttpStatusCode()        |
| setHttpStatusCode(Integer httpStatusCode) | void        | Sets the StatusCode in the body of the response.<br>Example:<br>rsp.setHttpStatusCode(201)          |
| getRejectMessage()                        | String      | Returns the Reject Message from the body of the response.<br>Example:<br>rsp.getRejectMessage()     |
| setRejectMessage(String rejectMessage)    | void        | Sets the Reject Message in the body of the response.<br>Example:<br>rsp.setRejectMessage("Message") |

**Mediation Service Rule Configuration with Scenarios**

This section captures various types of mediation rule configuration with scenarios.

**Use Case 1**

To update the headers for specific requests.

**Scenario**

The mediation rule is configured when headers get ("pduSessionId"="23476") and add the header (X-Service-Name=PCF) value to the request.

**Mediation Rule**

```
rule "Rule2_PCF"
  agenda-group "CUSTOM_ORACLE_SCP-requestEgress"
  when
    req : Request(headers.get("pduSessionId") == "23476")
  then
    req.headers.put("x-service-name", "PCF")
  end
```

**Use Case 2**

To add, update, or delete any attribute in the JSON payload in the request or response.

**Scenario**

Mediation rule is configured as when incoming response payload got servingNetworkName="5G:nmc310.mcc310.3gppnetwork.org" then delete the "traceData" attribute and add TP="ResIngressAusf" in json payload.

**Mediation Rule**

```
rule "Rule7_AUSF"
  agenda-group "CUSTOM_ORACLE_SCP-responseIngress"
  when
    res : Response(body.get("$.servingNetworkName")=="5G:nmc310.mcc
310.3gppnetwork.org")
  then
    res.body.del("$.traceData")
    res.body.put("$", "TP", "ResIngressAusf")
  end
```

**Use Case 3**

To update URI components such as apiRoot, apiName, apiVersion, and apiSpecificResourceUriPart in the request or response.

**Scenario**

Mediation rule is configured as when request payload got "3gpp-sbi-target-apiroot"="http://ausf1svc.default.svc.cluster.local:8080/USEast" then update the URI to "http://ausf2svc.scpsvc.svc.cluster.local:8080/USEast/nausf-auth/v1/ue-authentications".

**Mediation Rule**

```
rule "Rule5_AUSF"
  agenda-group "CUSTOM_ORACLE_SCP-requestEgress"
  when
    req : Request(headers.get("3gpp-sbi-target-apiroot") == "http://
ausf1svc.default.svc.cluster.local:8080/USEast")
  then
    req.setUri("http://ausf2svc.default.svc.cluster.local:8080/USEast/nausf-
```

```
auth/v1/ue-authentications")
end
```

#### Use Case 4

To update the authority in apiRoot coming in the request or response.

##### Scenario

Mediation rule is configured as when request header got 3gpp-Sbi-Target-apiRoot="http://pcf1svc.default.svc.cluster.local:8080/USEast" update the authority to pcf3 from pcf1.

##### Mediation Rule

```
rule "Rule6_PCF"
  agenda-group "CUSTOM_ORACLE_SCP-requestEgress"
when
  req : Request(headers.get("3gpp-sbi-target-apiroot") == "http://
pcf1svc.scpsvc.svc.cluster.local:8080/USEast")
then
  req.setUri("http://pcf3svc.scpsvc.svc.cluster.local:8080/USEast/npcf-
smpolicycontrol/v1/sm-policies")
end
```

#### Use Case 5

To add any vendor-specific header.

##### Scenario

Mediation rule is configured as when response payload got "sliceInfo"=="adfg127" then add the vendor-specific header ("x-service-name","PCF").

##### Mediation Rule

```
rule "Rule2_PCF"
  agenda-group "CUSTOM_ORACLE_SCP_requestEgress"
when
  req : Request(body.get("$.sliceInfo") == "adfg127")
then
  req.headers.put("x-service-name","PCF")
end
```

#### Use Case 6

To convert the response status code that it received to any specific status code..

##### Scenario

The mediation rule is configured; if mediation receives an HTTP response code of 401, it should update the response code to 402.

##### Mediation Rule

```
rule "status rule_responseEgress"
  agenda-group "CUSTOM_ORACLE_SCP_responseEgress"
when
  rsp : Response(getHttpStatusCode() == "402")
then
```

```
    rsp.setHttpStatusCode(401)
end
```

### Use Case 7

To update authority in apiRoot based on a JSON-nested object from the body.

### Scenario

The mediation rule is configured to segregate NF Producer based on MSISDN.

To retrieve the nested parameter, servedGPSI, from the below structure:

```
"pDUSessionChargingInformation":{
  "chargingId":747941933,
  "pduSessionInformation":{},
  "ueTimeZone":"+00:00+0",
  "userInformation":{
    "servedGPSI":"msisdn-447432982860",
    "servedPEI":"imeisv-3528878115855501",
    "unauthenticatedFlag":false
  },
  "
```

### Mediation Rule

```
rule "G_N40_odd"
  agenda-group "G_N40_odd-requestIngress"
when
  req :
Request(body.get("$.pDUSessionChargingInformation.userInformation.servedGPSI"
)=="msisdn-447432982860")
then
  req.headers.put("3gpp-sbi-target-apiroot",http://10.251.132.183:8080)
end
```

## 3.26.2 Mediation Rule Configuration Enhancement

Currently, the process of creating mediation rules in mediation-NF using a configmap with Kubernetes has several limitations, such as configuring the code to create and update the mediation rules using a configmap, whose size is limited to 1 MiB.

With this feature enhancement, mediation rules stored in the database can be retrieved, new rules can be added, and existing rules can be modified using the CCNC GUI and RestFul API. In addition, the storage capacity has improved.

For more information on creating mediation rules using RESTFul APIs, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### 3.26.2.1 Mediation Rule Migration Process

Previously, rules were used from the Kubernetes config map. Currently, the rules present in the config map are migrated to the database table (mediation\_rule table).

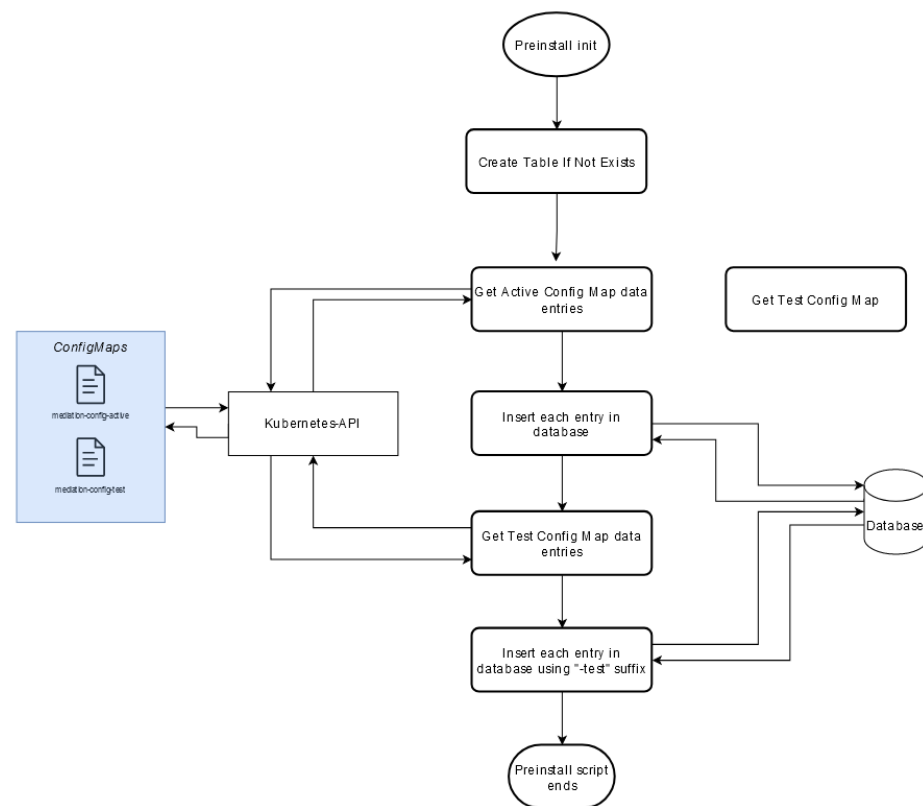


This section describes the procedure to execute the migration of rules from the existing config-map based implementation into the new REST API.

The following are the config-map related to mediation:

- `ocscp-nf-mediation-config-boot`: It contains all the configuration related to the spring boot application and is used in both modes (test and active).
- `ocscp-nf-mediation-config-active`: It contains rule entries and is only applicable to active mode.
- `ocscp-nf-mediation-config-test`: It contains rule entries and is only applicable to test mode.
- The following image illustrates the migration process:

**Figure 3-6 Migration to Database table**



#### **Note**

To successfully migrate to database table, all the rules in the Config map must be valid.

#### **Generate Rule Entries**

1. Read `ocscp-nf-mediation-config-active` configuration map.
2. For each entry in key-value map structure, create entry in Rule table with the following:
  - a. Rule.name: entry.key removing .drl extension

- b. Rule.code: entry.value
  - c. Rule.status: APPLIED
  - d. Rule.mode: MEDIATION\_ACTIVE
3. Read ocscf-nf-mediation-config-test configuration map.
  4. Create entry in Rule table with the following:
    - a. Rule.name: entry.key removing .drl extension adding "-test" as suffix to avoid name conflicts with active configmap
    - b. Rule.code: entry.value
    - c. Rule.status: APPLIED
    - d. Rule.mode: MEDIATION\_TEST

### Migration of Rule Entries

The following examples details about the rule migrated from configmap to database table.

Example of ocscf-nf-mediation-config-active configuration map:

```
apiVersion: v1
kind: ConfigMap
metadata:
  creationTimestamp: "2022-11-11T13:15:14Z"
  name: nf-mediation-nf-mediation-config-active
  namespace: scpsvc
data:
  rule_1.drl: |
    package com.oracle.cgbu.ocmediation.nfmediation;

    import com.oracle.cgbu.ocmediation.nfruleengine.NFDroolsRuleEngine;
    import com.oracle.cgbu.ocmediation.factdetails.Request;
    import com.oracle.cgbu.ocmediation.factdetails.Response;
    import java.util.Map;
    import java.util.HashMap;

    dialect "mvel"

    rule "Rule_show_add_header"
    when
      req : Request(headers.has("header-test") == true)
    then
      req.headers.add("3gpp-Sbi-Message-Priority","10")
      req.headers.del("x-test-req-header1")
    end

    rule "Rule_show_delete_header"
    when
      req : Request(headers.has("header-test2") == true)
    then
      req.headers.del("header-test2")
    end

  rule_2.drl: |
    package com.oracle.cgbu.ocmediation.nfmediation;
```

```

import com.oracle.cgbu.ocmediation.nfruleengine.NFDroolsRuleEngine;
import com.oracle.cgbu.ocmediation.factdetails.Request;
import com.oracle.cgbu.ocmediation.factdetails.Response;
import java.util.Map;
import java.util.HashMap;

dialect "mvel"

rule "Rule_show_add_headerv2"
when
    req : Request(headers.has("another-header") == true)
then
    req.headers.add("new-header2", "10")
end

```

Example of ocscp-nf-mediation-config-test configuration map:

```

apiVersion: v1
kind: ConfigMap
metadata:
  creationTimestamp: "2022-11-11T13:15:14Z"
  name: nf-mediation-nf-mediation-config-test
  namespace: scpsvc
data:
  rule_1.drl: |
    package com.oracle.cgbu.ocmediation.nfmediation;

    import com.oracle.cgbu.ocmediation.nfruleengine.NFDroolsRuleEngine;
    import com.oracle.cgbu.ocmediation.factdetails.Request;
    import com.oracle.cgbu.ocmediation.factdetails.Response;
    import java.util.Map;
    import java.util.HashMap;

    dialect "mvel"

    rule "Rule_show_add_header"
    when
        req : Request(headers.has("header-test") == true)
    then
        req.headers.add("3gpp-Sbi-Message-Priority", "10")
        req.headers.del("x-test-req-header1")
    end

    rule "Rule_show_delete_header"
    when
        req : Request(headers.has("header-test2") == true)
    then
        req.headers.del("header-test2")
    end

```

In this examples, the ocscp-nf-mediation-config-active configuration map has two different entries (rule\_1.drl and rule\_2.drl) and rule\_1.drl has the definition of two different rules, Rule\_show\_add\_header and Rule\_show\_delete\_header, it is important to consider that rule\_1 will have a single rule entry in the database containing all the code for its two rules.

In this case, the database entries are as follows:

**Table 3-19 Database Entries**

| Name   | Status  | Mode             | Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------|---------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| rule_1 | APPLIED | MEDIATION_ACTIVE | <pre> package com.oracle.cgbu.ocmediation.nfmediation;  import com.oracle.cgbu.ocmediation.nfruleengine.NFDrools RuleEngine; import com.oracle.cgbu.ocmediation.factdetails.Request import com.oracle.cgbu.ocmediation.factdetails.Response; import java.util.Map; import java.util.HashMap;  dialect "mvel"  rule "Rule_show_add_header" when     req : Request(headers.has("header-test") == true) then     req.headers.add("3gpp-Sbi-Message- Priority","10")     req.headers.del("x-test-req-header1") end  rule "Rule_show_delete_header" when     req : Request(headers.has("header-test2") == true) then     req.headers.del("header-test2") end </pre> |

Table 3-19 (Cont.) Database Entries

| Name   | Status  | Mode                 | Code                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------|---------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| rule_2 | APPLIED | MEDIATION_ACTIVATIVE | <pre> package com.oracle.cgbu.ocmediation.nfmediation;  import com.oracle.cgbu.ocmediation.nfruleengine.NFDrools RuleEngine; import com.oracle.cgbu.ocmediation.factdetails.Request import com.oracle.cgbu.ocmediation.factdetails.Response; import java.util.Map; import java.util.HashMap;  dialect "mvel"  rule "Rule_show_add_headerv2" when     req : Request(headers.has("another-header") == true) then     req.headers.add("new-header2", "10") end </pre> |

Table 3-19 (Cont.) Database Entries

| Name        | Status  | Mode           | Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|---------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| rule_1-test | APPLIED | MEDIATION_TEST | <pre> package com.oracle.cgbu.ocmediation.nfmediation;  import com.oracle.cgbu.ocmediation.nfruleengine.NFDrools RuleEngine; import com.oracle.cgbu.ocmediation.factdetails.Request import com.oracle.cgbu.ocmediation.factdetails.Response; import java.util.Map; import java.util.HashMap;  dialect "mvel"  rule "Rule_show_add_header" when     req : Request(headers.has("header-test") == true) then     req.headers.add("3gpp-Sbi-Message- Priority", "10")     req.headers.del("x-test-req-header1") end  rule "Rule_show_delete_header" when     req : Request(headers.has("header-test2") == true) then     req.headers.del("header-test2") end </pre> |

## 3.27 Message Priority Assignment and Override

The "3gpp-Sbi-Message-Priority" header is defined to carry the message priority of 5G messages. Service Communication Proxy (SCP) includes or modifies the header based on the configuration parameters.

The operator can assign or override the message priority of 5G messages as per their network requirements. SCP uses the message priority in prioritising the message in congestion or overload features.

### Managing Message Priority Assignment and Override

#### Enable

Not applicable.

## Configure

You can configure the Message Priority Assignment and Override functionality using the CNC Console or REST API.

- **Configure using CNC Console:** For information about how to configure message priority options, see [Configuring SBI Message Priority](#).
- **Configure using REST API:** For information about how to configure message priority options, see "Configuring SBI Message Priority for Pod Overload Control" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

## Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

## Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.28 Outlier Detection

The Outlier Detection feature monitors the status of each endpoint of the producer NF or NF services. Upstream producer endpoints that continuously return the service responses with non-2xx status codes are removed from the routing pool for a predefined period based on the configured non-2xx status codes, counts, and ejection time.

In SCP 22.4.0, this feature is enhanced to support outlier detection for upstream NFs, which includes local producer NFs, next-hop SCP, and next-hop SEPP.

When SCP receives a message request from a consumer NF, it routes the message request to the target upstream NFs if the upstream NF is healthy. When SCP receives non-2xx status codes consecutively from the target upstream NF, SCP marks the upstream NF unhealthy after the number of error responses exceeds the preconfigured value. For example, if the `consecutiveErrors` parameter range is set to 5, after receiving five consecutive errors from upstream NF1, SCP marks the upstream NF1 as degraded or unhealthy. When SCP receives the sixth message request from the consumer NF, it routes the message request to upstream NF2 or any other available upstream NF without considering upstream NF1, which is marked unhealthy. SCP starts forwarding message requests to upstream NF1 after the configured time period as defined in the `baseEjectionTime` parameter. For more information about `consecutiveErrors` and `baseEjectionTime` parameters, see "Configuring Outlier Detection" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

For the next hop, SCP or SEPP, these error codes are SCP or SEPP-generated errors. These error responses contain a server header that includes the FQDN of SCP or SEPP.

## Managing Outlier Detection

### Enable

To enable the Outlier Detection feature, complete the following configurations as described in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*:

- For specific NF service, set `odEnabled` to `true`, and then configure `odRuleName` as described in the "Configuring Routing Options" section.
- For Inter SCP scenarios, set `odEnabled` to `true` and configure `odScpRuleName` as described in the "Configuring System Options" section.
- For Inter PLMN routing scenarios, set `odSeppEnabled` to `true` and configure `odSeppRuleName` as described in the "Configuring System Options" section.

### Configure

You can configure Outlier Detection feature using the CNC Console and REST API.

- **Configure using CNC Console:** For information about CNC Console configurations, see [Configuring Global Options](#) and [Configuring Outlier Detection](#).
- **Configure using REST API:** For information about REST API configurations, see "Outlier Detection Configuration", "Configuring System Options", and "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.29 Circuit Breaking

The Circuit Breaking feature is triggered on a per NF service instance basis (including all of the service's IP endpoints or FQDNs) when its outstanding transactions exceed a preconfigured value. If outstanding transaction exceeds the preconfigured value and alternate routing is configured, the message requests are routed to alternate NFs. When Circuit Breaking is activated, message requests are routed alternatively or rejected.

### Managing Circuit Breaking

#### Enable

The Circuit Breaking feature is enabled using REST API by setting the `cbEnabled` REST API parameter to `true`. For more information about the `cbEnabled` parameter, see "Configuring System Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Configure

You can configure Circuit Breaking feature using the CNC Console and REST API.



- **Configure using CNC Console:** For information about CNC Console configurations, see [Configuring Global Options](#).
- **Configure using REST API:** For information about REST API configurations, see "Circuit Breaking Configurations" and "Configuring System Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.30 Canary Release

The Canary Release feature inspects the API version attribute of the NF service profile published by the NFs during NF registration or update. In case there is a new version of the API, Service Communication Proxy (SCP) identifies the version as a canary version if the version matches the configured value.

The older version is considered as the Production version and the new version of the service instance is considered as the Canary version. SCP distributes traffic between Production version and Canary version based on the operator configuration.

When the canary version's deployment is complete, the production version is upgraded to the canary version.

### Managing Canary Release

#### Enable

You can enable the Canary Release functionality using the CNC Console or REST API.

- **Enable using CNC Console:** To enable the Canary Release feature, set the **Canary Release Flag** switch to **Enabled** as described in [Configuring Canary Release](#).
- **Enable using REST API:** To enable the Canary Release feature using REST API, set the `canaryReleaseFlag` parameter to `true` as described in "Configuring Canary Release Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Note

Canary Release must be enabled for each service.

### Configure

You can configure the Canary Release functionality using the CNC Console or REST API.

- **Configure using CNC Console:** For information about how to configure Canary Release, see [Configuring Canary Release](#).
- **Configure using REST API:** For information about how to configure Canary Release, see "Configuring Canary Release Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.31 Static Configuration of NF Profiles

The Static Configuration Fallback feature provides a static configuration of NF profiles when georedundant NRFs in the network fail. Under failure conditions, when NRF is not configured, or when static configurable routing is preferred, Service Communication Proxy (SCP) uses the user configured or updated NF profiles. SCP retains the 5G topology information from NRF for further operations. It allows fallback to a static mode of operation for modifying the previously discovered NF producer profiles through NRF and adds any new NF producer profile while the NRFs are unavailable.

The following configurations are used for the Static Configuration Fallback feature:

- **TopologySourceInfo:** This is the configuration used by SCP to determine the 5G topology source. SCP learns and creates the routing rules accordingly.
- **5G NF topology information:** This information is available with SCP after learning the 5G topology from the defined source as per the previous section configuration either from NRF or a static method.
- You can create or modify the 5G NF profile information using REST APIs.

### Managing Static Configuration

#### Enable

You can enable the Static Configuration feature by setting the `scpcconfiguration.defaultTopologySource` parameter to `LOCAL` in the `scpc` configuration section of the `values.yaml` file. For more information about this parameter, see *Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide*.

#### Note

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

## Configure

You can configure the Static Configuration feature using the CNC Console or REST API.

- **Configure using CNC Console:** For information about how to configure the Static Configuration feature, see [Configuring Topology Source Info](#).
- **Configure using REST API:** For information about how to configure the Static Configuration feature, see "Configuring NF Topology Groups" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

## Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

## Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.32 Preventive Audit on Last NF Instance

SCP determines the network topology from NRF by subscribing to each NF type. When a new NF instance is registered in the network, SCP receives a registration notification from the NRF and creates a routing rule based on the NF profile in the notification.

SCP removes the routing rule for an NF instance after receiving a deregistration notification from NRF.

When the primary NRF communication breaks, the producer NF registers with the configured secondary NRF. In case the primary NRF is not notified about this reregistration, then it sends a deregistration notification to SCP. This results in the removal of the routing rule at SCP. Also, it causes network failure if repeated for multiple NF instances.

With the introduction of the Preventive Audit on Last NF Instance feature, SCP can control NRF failure scenarios in the network by performing the preventive audit (discovery). This audit is performed with all the configured regional NRFs before removing the last NF instance of a particular NF type. If any NRF returns the success discovery response with NF profiles, SCP creates the routing rules based on the discovery response. SCP raises an alert to notify operators about such NRF failure scenarios.

### Managing Preventive Audit on Last NF Instance

#### Enable

You can enable the Preventive Audit on Last NF Instance feature by setting the `preventiveAuditOnLastNFInstanceDeletion` parameter to `true` in the global parameters section of the `values.yaml` file. For more information about this parameter, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

**Note**

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

**Configure**

There is no specific configuration required for the Preventive Audit on Last NF Instance feature.

**Observe**

There is no specific metrics and alerts required for the Preventive Audit on Last NF Instance feature.

**Maintain**

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.33 Rate Limiting

Service Communication Proxy (SCP) provides the Rate Limiting feature to:

- protect the network from consumer NFs that might overload the network with service requests.
- protect the producer NF instance from getting overloaded.

### 3.33.1 Local Rate Limit Feature

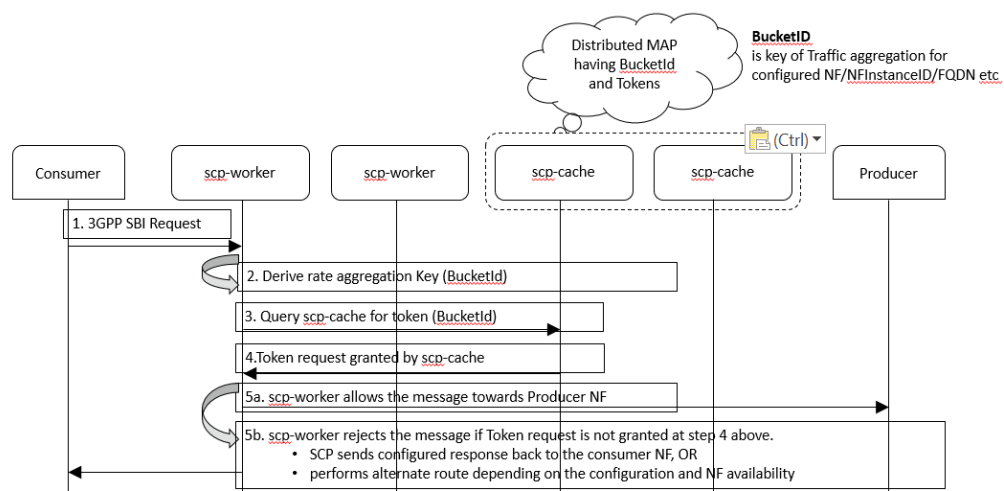
SCP uses the token bucket algorithm in the Rate Limit feature functionality to track the allowed and consumed tokens in a given time period as per rate limit configuration.

In the following ways SCP uses the distributed cache to aggregate the token consumption across scp-worker pods of an SCP instance:

1. Over a 1 second time period, the rate limit framework divides the configured rate into smaller slots of 100milliseconds each.
2. SCP monitors the difference between the actual request message rate received and the total request messages, i.e., allowed to send in the 100 milliseconds window as calculated.
3. Each SCP worker pod also calculates its own share of the total request message sent and accordingly decides on a batch of tokens to be preconsumed.
4. If at any time the scp-worker POD is not able to get a token, the request message is treated with rate limit treatment as per rate limit configuration.

**Note**

- The prediction of token batch count depends on the traffic rate detected in scp-worker PODs; hence, irregular traffic may lead to more token consumption by scp-workers. This may result in a difference between the overall message rate allowed and the configured rate.
- The rate limit framework expects a uniform traffic pattern over a second period for a configured rate.

**Figure 3-7 Local Rate Limit Feature Functional View**

### 3.33.2 Global Rate Limit Feature

The global rate limit feature aggregates traffic rate data across multiple SCP instances and applies traffic rate control based on the configured aggregated rate.

The aggregated rate is configured at each SCP instance in the following way:

1. Each SCP instance monitors its own traffic routed count against the configured NF, NFInstanceId, FQDN, and so on, and reports the same to all other SCP instances.
2. Each SCP instance aggregates the total traffic routed against the configured NF, NFInstanceId, and FQDN from all SCP instances.
3. Each SCP also calculates its own share of routed traffic in the aggregated total routed traffic count, as well as the status of the difference between total routed traffic and the configured aggregated rate.
4. Global Rate Limit Control actions such as allowing or disallowing traffic are decided based on the data collected in the steps above.

**Note**

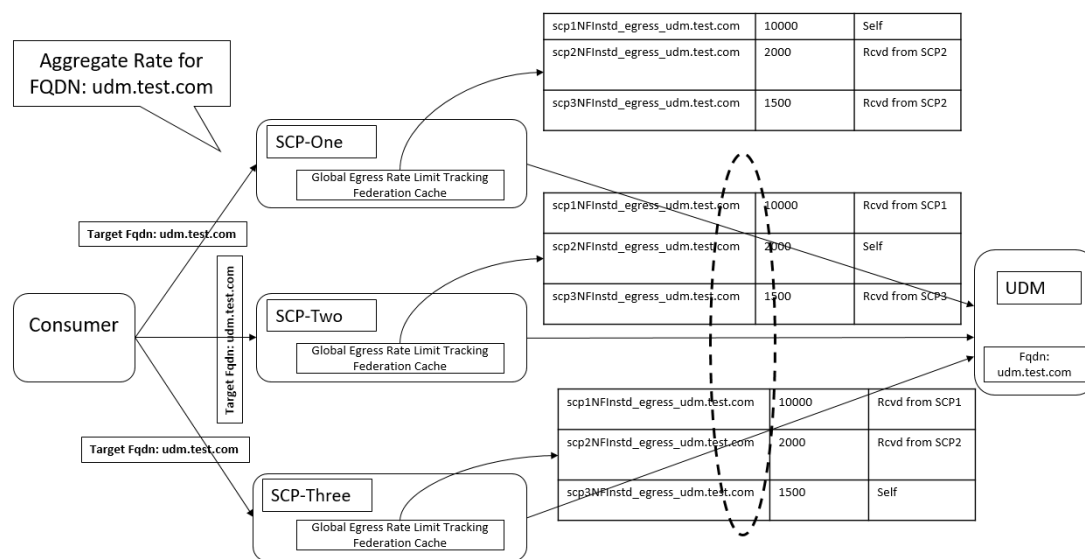
Convergence of global rate data aggregation depends on network latency among the SCP instances, and higher latency can impact rate-limiting performance.

**Global Rate Working Principle**

The working principle are as follows:

1. Each SCP instance has an aggregation cache, which syncs its own traffic route count with other SCP instances.
2. In this aggregation cache, a routed traffic rate count is maintained for each SCP instance.
3. Each SCP instance calculates the total traffic routed towards the configured NF, NFInstanceID, FQDN, and so on.
4. For example, the diagram depicts the aggregated routed traffic count for a FQDN, "udm.test.com," across all 3 SCP instances.
  - Sample configuration 1: A global rate limit is configured in 3 SCP instances for FQDN "udm.test.com" with a rate of 15000 per sec.
  - Sample configuration 2: A global rate limit is configured in 3 SCP instances for FQDN "udm.test.com" with a rate of 13000 per sec.
5. The global rate limit control action, such as allowing or disallowing the traffic, is decided based on the aggregated routed traffic count collected.
  - Action for configuration 1: Traffic is allowed since the total traffic routed rate is less than 15000 per sec.
  - Action for configuration 2: Traffic is throttled since the total traffic routed rate is greater than 13000 per sec.

**Figure 3-8 Global Rate Limit Working Principle**



SCP supports rate limiting at the ingress and egress side.

If the SCP-cache service is unavailable, then SCP-worker continues to process service requests, however, rate limiting is not applied. If any SCP-worker is unavailable, it cannot move to the Ready state until SCP-cache initializes the rate limiting.

**Note**

- The Rate Limit framework depends on the ingress traffic pattern at SCP, and its variation reflects in traffic rate detection and applies throttling of messages in a distributed environment since it involves convergence of message rate for a specific rate limit configuration, for example, a configured allowed rate value for a specific FQDN of an NF service instance across multiple scp-worker service pods.
- The average allowed traffic rate with rate control may be achieved as per the configured allowed traffic rate over a few seconds. The instantaneous allowed traffic rate with rate control may have some variation with respect to the configured allowed traffic rate on a short time scale.

The following sections explain how the SCP Rate Limiting feature controls ingress and egress traffic.

### 3.33.3 Ingress Rate Limiting

The Ingress Rate Limiting feature protects the network from unsecured consumer NFs that might overload the network with message requests. SCP secures the network when aggregated ingress traffic from any registered NF instance exceeds the allowed traffic rate limit. If the traffic exceeds the allowed traffic rate limit, SCP does not process the traffic and responds with an error code. Operators can configure the error code. Otherwise, the default error code 429 is set.

With the enhanced Ingress Rate Limiting functionality, SCP can use the User-Agent or XFCC header in the ingress message request to identify the consumer NF and apply ingress rate limiting at the ingress side.

The traffic rate limit is set at the NF type level that is applicable for all NF instances. SCP obtains the FQDN of consumer NF from the x-forwarded-client-cert (XFCC) header in the incoming message request. SCP provides the configuration for ingress "allowed requests/sec" per NF type. This configuration is applicable for all NF instances of the NF type.

As most of the network do not provide XFCC header in the ingress message requests, SCP cannot rely on the XFCC header to fetch consumer NFs' identity. Therefore, as recommended by 3GPP, the User-Agent header can be added to service request by the consumer NF to communicate its identity. The User-Agent header is added to each ingress message request irrespective of the network type. This header contains consumer NF identity in the different formats.

SCP supports the following types of User-Agent header formats to retrieve the consumer NF identity:

- **Format1:** NFTYPE-NFINSTANCEID FQDN or NFTYPE-NFINSTANCEID-FQDN
- **Format2:** NFTYPE-FQDN NFINSTANCEID or NFTYPE-FQDN-NFINSTANCEID
- **Format3:** NFTYPE-NFINSTANCEID
- **Format4:** NFTYPE-FQDN

Where,

- NFTYPE indicates the type of consumer NF.
- NFINSTANCEID indicates the instance ID of the consumer NF.
- FQDN indicates the FQDN of the consumer NF.

Using the aforementioned parameters of User-Agent header, SCP obtains the consumer NF information and applies ingress rate limiting at the ingress side. SCP uses the ConsumerInfo REST API parameter to determine the header type such as XFCC or User-Agent, in the ingress message request. For more information about the ConsumerInfo REST API parameter, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

SCP determines consumer NF identity such as NFTYPE, NFINSTANCEID, or FQDN, from the User-Agent header and applies the ingress rate limiting configurations in the following sequence:

1. NFINSTANCEID
2. FQDN
3. NFTYPE

If SCP determines any one of the configurations as per the order, SCP stops searching for the remaining configurations and uses the retrieved configurations for ingress rate limiting.

### Example of Ingress Rate Limiting Configuration

You can configure ingress request rate for all NF instances of an NFType so that this configuration is applicable for all NF instances. You can configure MPS for a single NF instance identified by FQDN.

There are 10 Session Management Functions (SMFs) determined by SCP. The maximum traffic limit for all SMFs except for SMF3, SMF4, and SMF7 is 1000 MPS.

1. The maximum ingress requests limit from SMF3 is 600 MPS.
2. The maximum ingress requests limit from SMF4 with instance ID 26740918-e9cd-0205-aada-71a76214d33c is 200 MPS.
3. The maximum ingress requests limit from SMF7 is 400 MPS.

**Table 3-20 Example of Ingress Rate Limiting Configuration**

| Exception | NFType | FQDN             | NF Instance ID                       | MPS      |
|-----------|--------|------------------|--------------------------------------|----------|
| NA        | SMF    | -                | -                                    | 1000 MPS |
| 1         | -      | smf3.example.com | -                                    | 600 MPS  |
| 2         | -      | smf7.example.com | -                                    | 400 MPS  |
| 3         | -      | -                | 26740918-e9cd-0205-aada-71a76214d33c | 200 MPS  |

#### Note

The NF Instance ID parameter is used only in the User-Agent header.



### Ingress Rate Limiting Process Using the User-Agent or XFCC Header Parameter

SCP uses the values of `primaryHeaderName` and `secondaryHeaderName` in the `ConsumerInfo` REST API parameter to identify the consumer NF in an ingress message request. When SCP receives an ingress message request, it searches for the `primaryHeaderName` value and follows the following methods to apply ingress rate limiting:

- If SCP finds `primaryHeaderName`, it considers the configured value such as XFCC header or User-Agent header, to identify the consumer NF and uses the configurations that match the consumer NF identity to apply ingress rate limiting. If SCP does not find any configurations for consumer NF, it does not apply ingress rate limiting.
- If SCP does not find `primaryHeaderName`, it searches for `secondaryHeaderName` and considers the configured value such as XFCC header or User-Agent header, to obtain the identity of the consumer NF and uses the configurations that match the consumer NF identity to apply ingress rate limiting. If SCP does not find any configurations for consumer NF, it does not apply ingress rate limiting.
- If SCP does not find `secondaryHeaderName`, it does not apply ingress rate limiting.

### Managing Ingress Rate Limiting

#### Enable

The Ingress Rate Limiting feature is a core functionality of SCP. This feature is automatically enabled in SCP at the time of deployment.

#### Configure

You can configure the Ingress Rate Limiting feature using the CNC Console or REST API.

- **Configure using CNC Console:** For information about configuring the Ingress Rate Limiting feature, see [Configuring Ingress Rate Limiter Consumer Info](#) and [Configuring Ingress Rate Limiting](#).
- **Configure using REST API:** For information about configuring the Ingress Rate Limiting feature, see "Configuring Ingress Rate Limiting" and "Configuring Consumer NF Info" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

#### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.33.4 Egress Rate Limiting

The Egress Rate Limiting feature protects the registered producer NF instance from getting overloaded. With this feature, SCP secures the network when aggregated egress traffic towards an NF instance exceeds the allowed traffic rate limit.

If the traffic exceeds the allowed limit, then SCP performs alternate routing by default. In case alternate routing is not configured, SCP responds with an error code.

Operators can configure the error code. Otherwise, the default error code 503 is set.

To determine the destination of the request, SCP checks the API root and authority information in the request header. SCP also checks the service name and path to identify the service type in the request header. Considering this information, SCP provides the configuration for "egress allowed requests/sec" per NF type. This configuration is applicable for all NF instances of the NF type.

### Example of Egress Rate Limiting Configuration

You can configure Messages Per Second (MPS) for all NF instances of an NFType so that this configuration is applicable for all NF instances. You can configure MPS for single NF instance identified by FQDN.

There are 4 UDMs determined by SCP. The maximum traffic limit for all UDMs with the following exceptions is 400 MPS:

1. The maximum traffic limit for UDM3 is 500 MPS.
2. The maximum traffic limit for SDM service for all UDMs is 200 MPS.
3. The maximum traffic limit for UDM1 UECM service is 100 MPS.
4. The maximum traffic limit for UDM4 UEAU service is 600 MPS.

**Table 3-21 Example of Egress Rate Limiting Configuration**

| Exception | NFType | FQDN             | Service Name | MPS |
|-----------|--------|------------------|--------------|-----|
| NA        | UDM    | -                | -            | 400 |
| 1         | -      | Udm3.example.com | -            | 500 |
| 2         | -      | -                | Nudm_sdm     | 200 |
| 3         | -      | Udm1.example.com | Nudm_uecm    | 100 |
| 4         | -      | Udm4.example.com | Nudm_ueau    | 600 |

### Managing Egress Rate Limiting

#### Enable

The Egress Rate Limiting feature is a core functionality of SCP. This feature is automatically enabled in SCP at the time of deployment. To allow rate limit to occur, you must enable either per NF rate limit or make entries in the Egress table using the CNC Console.

#### Configure

You can configure the Egress Rate Limiting feature using the CNC Console or REST API.

- **Configure using CNC Console:** For information about configuring the Egress Rate Limiting feature, see [Configuring Egress Rate Limiting](#).
- **Configure using REST API:** For information about configuring the Egress Rate Limiting feature, see "Configuring Egress Rate Limiting" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

## Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

## Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

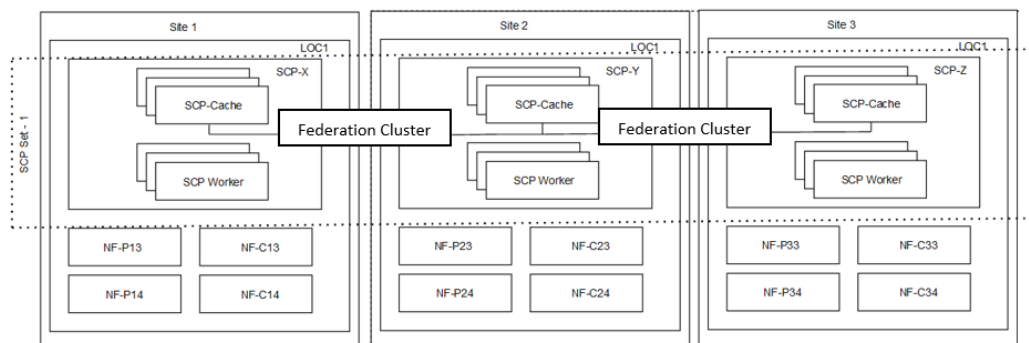
### 3.33.4.1 Global Egress Rate Limiting

The existing egress rate limiting functionality aggregates traffic rate for a target producer NF within one SCP instance across multiple pods of SCP-worker service. It does not aggregate the overall traffic rate towards the producer NF across multiple SCP instances. Therefore, the Global Rate Limiting feature is implemented so that a group of SCP instances coordinates among each other to ensure traffic rates for common destinations, that is, producer NFs, are aggregated and the egress rate limit is applied to the overall traffic rate.

The Global Egress Rate Limiting feature synchronizes and aggregates the egress rate data for multiple producer NFs among multiple SCP instances (up to three SCP instances). Based on the aggregated rate data, each SCP controls its traffic to ensure the global configured egress rate is achieved.

The SCP-cache microservice synchronizes egress rate data among multiple SCP instances. The participating SCP instances for the egress rate limiting aggregation details are configured using Helm as described in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*. SCP uses an Oracle product called Oracle Coherence which offers federated caching to link multiple clusters so that cache data is automatically synchronized between clusters.

**Figure 3-9 Role of SCP-Cache**



By default, the egress rate aggregation is disabled. After enabling the Global Egress Limiting feature using the `global_egress_ratelimit` parameter on the CNC Console, the egress rate aggregation uses `remoteScpOneEnabled` and `remoteScpTwoEnabled` parameters to enable rate

data synchronization and aggregation with the corresponding remote instances of SCP. If the rate aggregation and synchronization are disabled or the communication fails with a remote SCP instance, the Global Egress Rate Limiting feature does not consider that remote SCP as part of the Global Federation cluster. Therefore, Global Rate Limit Algorithm does not consider any message rate related updates from that remote SCP while applying the rate limit.

## Managing Global Egress Rate Limiting

### Enable

You can enable this feature by setting `global_egress_ratelimit` to `true`. For more information, see [Configuring SCP Features](#).

### Configuring Participating SCP for Global Egress Rate Limit

Perform the following configuration while deploying SCP.

1. If the following Helm parameters of the participating SCP instances are available, add the required Helm parameters in case a single instance of SCP is used or add all the parameters in case both the instances of SCP are used to the `custom-values.yaml` file:
  - `coherence.federation.remoteScpOne.fqdnOrIp`
  - `coherence.federation.remoteScpOne.port`
  - `coherence.federation.remoteScpOne.clusterName`
  - `coherence.federation.remoteScpOne.nfInstanceId`
  - `coherence.federation.remoteScpTwo.fqdnOrIp`
  - `coherence.federation.remoteScpTwo.port`
  - `coherence.federation.remoteScpTwo.clusterName`
  - `coherence.federation.remoteScpTwo.nfInstanceId`
2. Deploy SCP as described in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.
3. Enable global egress rate aggregation and control with the participating SCP instances using the CNC Console as described in [Configuring SCP Features](#).

Perform the following configuration if SCP is deployed.

1. Perform the same release upgrade using the following Helm parameters for the participating SCP instances in the `custom-values.yaml` file. Add the required parameters if one instance of SCP is used, otherwise add all the parameters if both the instances of SCP are used.
  - `coherence.federation.remoteScpOne.fqdnOrIp`
  - `coherence.federation.remoteScpOne.port`
  - `coherence.federation.remoteScpOne.clusterName`
  - `coherence.federation.remoteScpOne.nfInstanceId`
  - `coherence.federation.remoteScpTwo.fqdnOrIp`
  - `coherence.federation.remoteScpTwo.port`
  - `coherence.federation.remoteScpTwo.clusterName`
  - `coherence.federation.remoteScpTwo.nfInstanceId`

Only the `scp-cache` microservice restarts.

2. Enable global egress rate aggregation and control with the participating SCP instances using the CNC Console as described in [Configuring SCP Features](#).

## Configure

You can configure this feature using Helm and REST API.

- **Configure using Helm:** For information about Helm configurations, see "global Parameters" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

### Note

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

- **Configure using REST API:** For information about REST API configurations, see "Configuring Egress Rate Limiting and Global Egress Rate Limiting" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

## Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

## Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.33.5 Egress and Ingress Key Combinations

This section provides information about different key combinations and key formats required to configure ingress and egress rate limiting entries.

Operators can use these key combinations for aggregating traffic to apply rate limit. The key format is obtained from the JSON body of the Rate Limiting configuration request.

### Note

Operators must perform the search in the same sequence as mentioned in the following tables.

Table 3-22 Egress Key Combination

| Sequence | Key Combination    | Key Format                                                                                       |
|----------|--------------------|--------------------------------------------------------------------------------------------------|
| 1        | FQDN & ServiceType | FQDN_ServiceType                                                                                 |
| 2        | FQDN & NFType      | FQDN_NFType                                                                                      |
| 3        | FQDN               | FQDN                                                                                             |
| 4        | ServiceType        | NFInstanceID_serviceType<br><b>Note:</b> Look up NFInstanceID from Learnt NFProfiles using FQDN. |
| 5        | NFType             | NFInstanceID<br><b>Note:</b> Look up NFInstanceID from Learnt NFProfiles using FQDN.             |

Table 3-23 Ingress Key Combination

| Sequence | Key Combination | Key Format                                                                           |
|----------|-----------------|--------------------------------------------------------------------------------------|
| 1        | NfInstanceID    | NfInstanceID of the consumer NF.                                                     |
| 2        | FQDN            | FQDN                                                                                 |
| 3        | NFType          | NFInstanceID<br><b>Note:</b> Look up NFInstanceID from Learnt NFProfiles using FQDN. |

## 3.34 Support for Multus Container Network Interface

Multus Container Network Interface (CNI) is a plug-in that allows you to connect multiple network interfaces to pods in Kubernetes.

Each Kubernetes pod contains only one network interface. After integrating Multus CNI with SCP, you can create multiple interfaces in a pod and perform the following tasks:

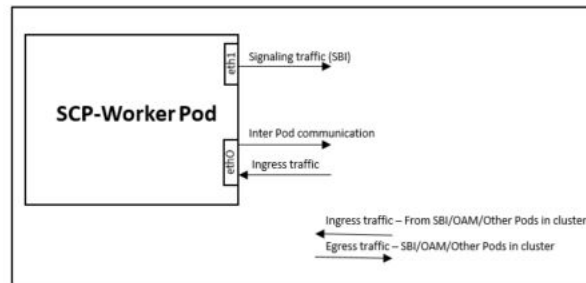
- Create multiple signaling interfaces for routing the signaling traffic
- Create different interfaces for Operations, Administration, and Maintenance (OAM) and Signaling (SIG) traffic to enable traffic segregation

This feature configures the pods to use different network interfaces for different types of traffic. These interface IPs and routing information, such as range of IPs and gateways, are provided by Network Attachment Definition (NAD) Kubernetes custom resource. Multus CNI configures the IP routing rules based on this routing information.

For more information about Multus CNI, see <https://github.com/k8snetworkplumbingwg/multus-cni>.

### Note

Default Pod IPs assigned by Kubernetes are used for establishing pod-to-pod and egress communication. When Multus CNI adds other network interfaces to pods, these interface IPs can be used for egress communication.

**Figure 3-10 Networking-Multus Support**

The diagram shows how support for Multus helps SCP to support multiple interfaces on egress traffic from the scp-worker pod.

#### **Note**

The Multus requirement is not applicable for SCP Control Pods.

The scp-worker pod is handling the following types of traffic:

- 5G SBI traffic
- Inter-pod communication traffic
- OAM traffic is communication traffic between observability components and scp-worker

The directions of this traffic are to and fro via SCP, and hence they are present in ingress and egress directions. There is no segregated ingress traffic. Only egress traffic is separated over multiple interfaces by dedicating Virtual network interface controllers (vNICs) to manage each type of traffic:

- Eth0 vNIC manages Egress (inter-pod communication traffic).
- Eth1 vNIC manages Egress 5G SBI traffic.

It is not required to separate OAM traffic from signaling traffic.

### **Managing Multus Container Network Interface**

#### **Enable**

The Multus CNI plug-in can be integrated with Service Communication Proxy (SCP) at the time of SCP installation.

#### **Configure**

To use this feature, complete the configuration as described in "Configuring Multus Container Network Interface" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

**Note**

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

**Observe**

There is no specific metrics and alerts required for Multus Container Network Interface.

**Maintain**

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.35 Support for Model C Indirect 5G SBI Communication

5G Service Based Interface (SBI) communication models are used to establish connections among NFs and NF services. These communication models facilitate consumer NFs to route service requests to producer NFs either directly or indirectly through Service Communication Proxy (SCP). For more information about different communication models, such as Model A, Model B, Model C, and Model D, see 3GPP TS 23.501 version 16.6.0 Release 16.

With the introduction of the Model C Indirect 5G SBI Communication format in SCP, the consumer NF sends NF discovery service requests to NRF. After receiving the discovery response with NF profiles, the consumer NF does the following:

- Selects an NF Set or a specific NF instance from the NF Set
- Sends a service request to SCP with the address of the selected service producer NF
- Creates multiple network interfaces for different subnet IPs

Where,

- NF Set is a group of interchangeable NF instances of the same type that supports the same services and the same Network Slices. NF instances in the same NF Set may be geographically distributed but have access to the same context data.
- NF instance is an instance of the NF that can be identified.
- NF Set Identifier (NF Set ID) is a globally unique identifier of a set of equivalent and interchangeable CP NFs from a given network that provides distribution, redundancy, and scalability.

Then, SCP selects an NF service instance and routes the service requests to the selected producer NF. In case of failure if reselection is required, SCP selects the producer NF instance based on the NF Set. The reselection is based on the binding header, if available.

**Support for Binding Headers in Model C Indirect 5G SBI Communication**

SCP supports the following 5G SBI custom headers in Model C Indirect 5G SBI Communication:



- **3gpp-Sbi-Binding:** This header contains a comma-delimited list of Binding Indications from an HTTP server for storage and use of HTTP clients. The absence of this parameter in a Binding Indication in a service request is interpreted as "callback".
- **3gpp-Sbi-Routing-Binding:** This header contains a Routing Binding Indication to direct service request to an HTTP server which has the targeted NF service resource context.

SCP does not update the value of the "3gpp-Sbi-Binding" header in the HTTP/2 request or response. It supports reading value of the "3gpp-Sbi-Routing-Binding" header in the service request and uses the binding level in the "3gpp-Sbi-Routing-Binding" header to perform routing.

#### Note

Binding level NF service Set and NF service instance are not supported.

### Support for Load Balancing and Alternate Routing in Model C Indirect 5G SBI Communication

When the target producer NF is unavailable, then SCP determines the NF Set ID of the target producer NF and performs alternate routing on the NF ID set instances in a sequence until SCP completes all the configured routing attempts.

SCP uses the NF set or NF instance for load balancing and alternate routing.

### Support for Reverse Lookup in Model C Indirect 5G SBI Communication

When forward routing fails due to unavailability of the producer NF or the message does not have the NF Set ID, SCP performs reverse lookup in learned NF profiles. It performs alternate routing by obtaining destination information from the Set IDs. Reverse Lookup occurs when "3gpp-Sbi-Discovery-Target-Nfset" and "3gpp-Sbi-Routing-Binding" headers are absent in the message.

### Model C Indirect 5G SBI Communication Response Headers

Additional response headers supported by Model C Indirect 5G SBI Communication in case of alternate routing are as follows:

- "3gpp-Sbi-Producer-Id"
- Either "3gpp-Sbi-Target-apiRoot" or Location header

#### Note

Load Balancing or Forward Routing from routing options can not be configured with Release 16 of Model C Indirect 5G SBI Communication because forward routing occurs based on the "3gpp-Sbi-Target-apiRoot" header. If the "3gpp-Sbi-Target-apiRoot" header is unavailable, then only load balancing occurs based on NF Set ID in the binding header.

## Managing Model C Indirect 5G SBI Communication

### Enable

You can enable the Model C feature by adding `- rel16` under `releaseVersion` in the `ocscp-custom-values-<scp release number>.yaml` file. For more information about enabling this feature, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

**Note**

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

**Configure**

You must complete the fetching routing information configuration as described in "Fetching Release 16 Routing Rules" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

**Observe**

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

**Maintain**

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.36 Multiple SCP Deployment in the Same Kubernetes Cluster

This feature allows operators to deploy multiple SCP instances in the same Kubernetes cluster. Each SCP instance is deployed in a different namespace and is independent of each other. These SCP instances can use the same cnDBTier with a unique database name or a dedicated cnDBTier during the installation. scpFqdn is included as part of the SCP logs, metrics, and alerts to identify and filter logs, metrics, and alerts at Grafana or Kibana when multiple SCP instances are deployed in the same Kubernetes cluster.

**Managing Multiple SCP Deployment in the Same Kubernetes Cluster****Enable**

Not applicable.

**Configure**

There is no specific configuration required for this feature. The following new dimensions are added to the respective metrics in the [Metrics](#) section:

- scpFqdn (for data plane)
- scp\_fqdn (for control plane)

**Observe**

There is no specific metrics and alerts required for this feature.

**Maintain**

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.37 Support for SCP Triplet Deployment

Using the Service Communication Proxy (SCP) Triplet Deployment model, operators can configure three SCP instances as mates for georedundancy. Each SCP instance in a triplet is configured to manage the overall traffic expected for the triplet so that when two SCP instances are unavailable, the single SCP instance can manage the overall traffic. For example, if the first and the second SCP instances are unavailable, then the third instance is dimensioned to manage the load of the first two instances.

With this feature, SCP can:

- configure two mated SCP.
- support forward routing, load balancing, and alternate routing to producers in its serving localities and serving localities of its mates.
- route the service request directly to any producer in its serving localities and serving localities of its mates.
- support inter-SCP routing to producers which are not in its serving localities and serving localities of its mates.
  - When SCP serving a particular locality is unavailable, then service requests are routed to mated SCPs based on priority.
  - When multiple SCPs with the same priority are serving the producer's locality, SCP supports load balancing.

### Managing SCP Triplet Deployment

#### Enable

Not applicable.

#### Configure

To use this feature, complete the configuration as described in "global Parameters" in *Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide*.

#### Note

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

#### Observe

For information about metrics, see [Metrics](#).

## Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.38 Alternate Routing based on the DNS SRV Records

Using the Alternate Routing based on the Domain Name System (DNS) Service (SRV) Records feature, SCP performs alternate routing by querying SRV records with the DNS server to find an alternate producer NF and route the service request.

### Note

- SCP uses either NF Set or DNS SRV Records to perform alternate routing.
- This feature is supported only in SCP Release 16 deployment with Model C Indirect 5G SBI Communication. For more information about Release 16, see 3GPP TS 23.501.

SCP performs the DNS SRV query for the FQDNs determined from NF profiles to find an alternate NF instance and route the services requests to the newly discovered alternate producer NF. These FQDNs are sourced from Network Repository Function (NRF) notifications received at SCP and from operator's configuration, which is statically configured through scpc-configuration as described in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

The DNS SRV Resource record known as Service Proto Name (SPN) is used to identify the target NF type. If there are multiple instances of the same alternate NF profiles in a DNS resolution response for handling the same service request, then the appropriate target producer NF is selected using priority and weight attributes provided in the DNSSRVRecord data model as described in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

This feature introduces the scpc-alternate-resolution microservice to perform the following tasks:

- Find alternate NF services by sending DNS SRV queries to the DNS server and receive the DNS SRV responses.
- Refresh DNS SRV records to get update in DNS SRV records.
- Provide DNS SRV records to scp-worker when required.

### DNS SRV Default Scheme

SCP obtains FQDNs from the NF profiles and creates alternate routing records for each FQDN. Alternate routes are obtained by querying the configured DNS server. To query the DNS server, SCP creates an SPN entry for each FQDN by determining the scheme, such as http or https, for each FQDN.

Example of an SPN entry is as follows:

```
_http._tcp.udm1svc.scpsvc.svc.cluster.local
```

In an NF profile, FQDNs are available at the profile level and service level. For service level FQDNs, the scheme is defined at the service level. However, for profile level FQDNs, the scheme is not defined in the profile. Earlier, SCP used "http" as the default scheme for profile level FQDNs when creating SPNs. However, for operators who use "https", this results in not getting alternate routes for the profile level FQDN from the DNS server.

Therefore, the following Helm configuration is introduced to determine the scheme to be used for SPN creation for profile level FQDNs:

```
dnsSrvSchemeConfig:  
  defaultScheme: "https"  
  exceptionList: [""]
```

defaultScheme is the default scheme used for creating Domain Name System (DNS) Service (SRV) Service Proto Name (SPN) from NF profile level FQDN. SCP also supports per NF type scheme selection. This is achieved by exceptionList, which defines the NF types that use a non-default scheme. For example, if defaultScheme is "https" and exceptionList has ["UDM", "AUSF"], then SPNs created from profile level FQDNs of UDM and AUSF will have "http" as the scheme, and all other NF types will have "https" as the scheme. For more information about defaultScheme and exceptionList, see "Global Parameters" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

#### Note

The default value in the Helm configuration indicates that the previously used value of "http" has been changed to "https".

## Managing Alternate Routing based on the DNS SRV Records

### Enable

This feature is enabled by setting the dnsSRVAlternateRouting parameter to true in the custom-values.yaml file. For more information, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

#### Note

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

### Configure

You can configure the Alternate Routing based on the DNS SRV Records feature using Helm, REST API, and the CNC Console.

- **Configure using Helm:**

- For information about configuring defaultScheme and exceptionList, see "Global Parameters" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.
- For information about configuring the scpc-alternate-resolution microservice parameters, see "scpc-alternate-resolution Parameter" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.
- **Configure using CNC Console:** For information about the **Routing Options** tab to enable alternate routing configuration and set alternate route modes, see [Configuring DNS SRV based Alternate Routing](#).
- **Configure using REST API:** For information about the alternatenfgroup parameter to manage the alternate NF group configuration data that is configured for the corresponding query parameters, see "Configuring Alternate NF Group" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.39 Support for Multiple Signaling Service IPs

In the previous release, SCP supported only one signaling IP from a given network. This IP was exposed to all NFs to establish 5G Service Based Interface (SBI) communications.

With the support for multiple signaling IPs, SCP can expose multiple signaling service IPs from the same or a different network to all NFs to accept 5G SBI signaling traffic (ingress connections).

### Note

SCP supports 8 signaling IPs.

This feature provides the flexibility to achieve maximum redundancy in the IP path. 5G NFs can have more than one SCP's destination IPs for the transport network to select different paths for each of the IPs. Therefore, a single SCP instance is available through more than one IP path if one of the transport network paths fails.

Using this feature, you can do the following:

- Improve resiliency in 5G core network during transport failure by enabling multiple signaling paths.
- Create dedicated signaling service paths by configuring multiple service signaling IPs.

## Managing Multiple Signaling IPs

### Enable

This feature is enabled automatically in SCP at the time of deployment.

### Configure

The `serviceSpecifications` Helm parameter is introduced as part of this feature. To use this feature, complete the configuration as described in "Configuration Parameters" in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

#### Note

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

To add or remove signaling services, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

### Observe

For information about metrics, see [Metrics](#).

### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.40 Egress Congestion Control Support at SCP

In the previous release, when Service Communication Proxy (SCP) receives a 5G Service Based Interface (SBI) message request from a consumer NF, SCP forwards the message request to a target producer NF. If the producer NF is overloaded, then SCP performs alternate routing to find another equivalent producer NF. In case no equivalent producer NF is available, then SCP sends an error response to the consumer NF with the configured error code. For more information about configuring error codes, see [Configuring SBI Message Priority and Error Profiles](#).

### Support for 3GPP SBI Message Priority

With the introduction of this feature, SCP uses the SBI message priority value present in the "3gpp-Sbi-Message-Priority" header to categorize a 5G SBI message request as high or low priority. The message request is prioritized based on the value of the "3gpp-Sbi-Message-Priority" header. By default, SCP considers 24 as the priority for the ingress message request if the message does not have the "3gpp-Sbi-Message-Priority" header. If the priority of the ingress message request is less than the value of the SBI Message Priority Discard From



parameter, which is defined in [Configuring SBI Message Priority and Error Profiles](#), then these messages are considered as high priority messages.

When SCP receives a high priority message request and the target producer NF is overloaded, SCP performs alternate routing to find an equivalent producer NF. If no equivalent producer NF is available, then SCP forwards the high priority message to the same target producer NF that is overloaded.

When SCP receives a low priority message request, SCP forwards the message request to a target producer NF. If the producer NF is overloaded, then SCP performs alternate routing to find another equivalent producer NF. In case no equivalent producer NF is available, then SCP sends an error response to the consumer NF with the configured error code.

### Egress Congestion Control based on Busy Producer NF

SCP, based on the response status codes 503, 429, and 307 with the Retry-After header in the response, removes the producer NF from its routing list for a period specified in the Retry-After header. This behavior is applicable if the Retry-After header is present in the response.

### Egress Congestion Control for Reported Load of NextHop SCP or SEPP

SCP protects the next-hop SCP or SEPP from congestion. SCP monitors the load reported by nexthop SCP or SEPP in the LCI header. When the load exceeds the threshold, congestion control steps are taken. Alternate routes or traffic throttling are utilized based on the request's priority.

### Egress Congestion Control based on Reported Producer NF Service Load

The NRF reports the load of a producer NF through a notification. After detecting that the producer NF load is at or above the alternate routing onset threshold but below the throttle onset threshold, SCP attempts to alternate route message requests designated for the producer NFs to other NFs wherever possible.

If message requests cannot be alternate routed, they are routed to the producer NF. The behavior continues until the producer NF load reported decreases below the abatement threshold. If the load reported by the NF exceeds the throttle onset threshold, all requests are alternate routed wherever possible and if requests cannot be alternate routed, they are rejected with a configurable error response code. SCP supports a configurable error response code that is to be sent when requests are being throttled and cannot be alternate routed. The default code is 503.

#### Note

Currently, if load is not present at service level, it is not picked from the NF profile level.

## Managing 3GPP SBI Message Priority for Egress Congestion Control based on Producer Load

### Enable

This feature is enabled automatically in SCP at the time of deployment.

### Configure

You can configure this feature using the CNC Console or REST API.



- **Configure using CNC Console:** For information about SBI message priority and error profile configurations, see [Configuring SBI Message Priority and Error Profiles](#).
- **Configure using REST API:** For information about message priority discard threshold and error code configurations in the `nfServiceLoadBasedCongestionControl` parameter, see "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

### Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.41 Support for Model D Indirect 5G SBI Communication with Delegated Discovery

5G Service Based Interface (SBI) communication models are used to establish connections among NFs and NF services. These communication models facilitate consumer NFs to route service requests to producer NFs either directly or indirectly through Service Communication Proxy (SCP). For more information about different communication models, such as Model A, Model B, Model C, and Model D, see 3GPP TS 23.501 version 16.6.0 Release 16.

Using the Model D Indirect 5G SBI Communication with Delegated Discovery feature, consumer NFs delegate the producer NF discovery procedure to SCP by adding discovery parameters to the service requests.

SCP performs NF discovery with NRF using the received discovery parameters. The NRF indicated in the `preferredNrfForOnDemandDiscovery` parameter is used for the discovery procedure, which specifies the NRF preferred by `scp-nrfproxy` for delegated discovery. When the indicated NRF is not available, SCP does alternate routing to the `NRFSet`, which has the `preferredNrfForOnDemandDiscovery` parameter.

When SCP receives service requests with NF discovery parameters by including "3gpp-Sbi-Discovery" headers for the target producer NF selection, then SCP:

- extracts "3gpp-Sbi-Discovery" headers from the ingress service requests and initiates the discovery procedure based on these headers. For more information about the "3gpp-Sbi-Discovery" header, see 3GPP TS 29.500 version 16.6.0.
- selects the producer NF instance from the discovery response based on priority and capacity.
- stores NF discovery responses using the cache-control directives from NRF in NF discovery response messages.
- removes all "3gpp-Sbi-Discovery" headers from the service requests and forwards the service requests to the selected target producer NF. In case of inter-SCP routing, SCP forwards all the "3gpp-Sbi-Discovery" headers to the next hop SCP.

- reselects with the use of the discovery headers and results from delegated discovery responses are used to do initial selection and reselection.

### Service Specific Discovery Request in Model D

The Model D discovery request that SCP sends to NRF has the 3gpp-sbi-discovery-service-names header. The path URI of the ingress message is used to extract the service name, such as nudm\_uecm. As a result, the rule creating takes less time since SCP just needs to parse a smaller NF profile. The NF profile returned by NRF contains the requested NF service-specific information only.

### NF Selection based on Preferred Locality

A consumer NF selects the target producer NF closest to it by setting the preferred locality to the value of the locality of the producer NF. When the preferred locality query parameter is present in the NF discovery service request, NRF prefers NF profiles with a locality attribute that matches the preferred locality. NRF returns additional NFs in the response that does not match the preferred target NF location. NRF sets a lower priority for any additional NFs on the response that does not match the preferred target NF location than those matching the preferred target NF location.

SCP configures preferred locality query parameters based on the received "3gpp-Sbi-Discovery-preferred-locality" header in the service request. SCP assigns its own locality as a preferred-locality for NF discovery if the assignPreferredLocality parameter is enabled and the "3gpp-Sbi-Discovery-preferred-locality" header is absent in ingress service requests. SCP overrides the "3gpp-Sbi-Discovery-preferred-locality" header received in the service request and uses its own locality as preferred locality for NF discovery if the overridePreferredLocality parameter is enabled and the "3gpp-Sbi-Discovery-preferred-locality" header is present in ingress service requests. SCP controls the forwarding of assigned or overridden value of "3gpp-Sbi-Discovery-preferred-locality" headers to next hop SCP.

Model D Indirect 5G SBI Communication supports the following routing functionalities as described in [Support for Model C Indirect 5G SBI Communication](#):

- Binding Headers
- Load Balancing and Alternate Routing
- Reverse Lookup

### Load Balancing Support for Delegated Discovery

Users can change the preferred NRF instance ID or NRF Set ID for delegated discovery at runtime using the REST API. If only NRF nfSetId is configured, then SCP does load balancing for the matching NRFs selected by nfSetId. For more information, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

### Managing Model D Indirect 5G SBI Communication

#### Enable

You can enable the Model D feature by setting modeId\_routing to true. For more information, see [Configuring SCP Features](#).

#### Note

You can enable this feature if SCP is deployed with Release 16.

## Configure

You can configure this feature using Helm, REST API, and the CNC Console.

- **Configure using Helm:** For information about configuring the scp-nrfproxy microservice parameters, nrfProxyService, and nrfProfiles.customInfo.preferredNrfForOnDemandDiscovery, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

### Note

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

- **Configure using CNC Console:** For information about configuring this feature, see:
  - [Configuring SCP Features](#) to enable the feature and cache discovery responses.
  - [Configuring Global Options](#) to verify the **Forward Nf Discovery Headers** status.
  - [Configuring Routing Options](#) to manage the "3gpp-Sbi-Discovery-preferred-locality" header.
- **Configure using REST API:** For information about the REST API configurations, see "Configuring System Options" and "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

## Observe

For information about metrics, see [Metrics](#).

## Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

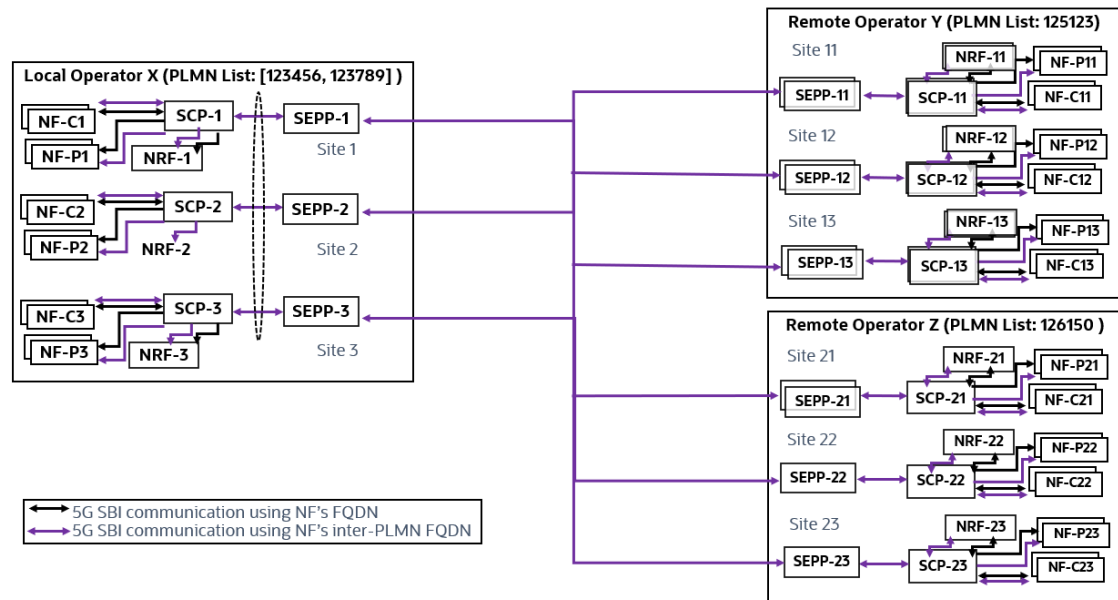
In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.42 Support for 5G SBI Roaming

3GPP specifies Local Breakout (LBO) and Home Routing (HR) roaming architectures. SCP can be used for indirect communications such as Model C or Model D between NFs within Visited Public Land Mobile Network (VPLMN) or Home Public Land Mobile Network (HPLMN) or within both VPLMN and HPLMN.

The following image depicts the 5G system roaming architecture in the case of a home routed scenario with service-based interfaces within the Control Plane. For more information, see 3GPP TS 23.501 v16.6.0.

**Figure 3-11 Local and Remote Routing**

Local PLMN consumer NFs can be V-SMF, V-AMF, or V-PCF, and so on. Remote PLMN producer NFs can be H-SMF, H-UDM, or H-PCF, and so on.

This feature enables 5G SBI indirect communication for 5G SBI roaming signaling traffic, which includes roaming ingress traffic to local operator's network and egress traffic to remote operator's network.

The PLMN network ID for a mobile network identifies the roaming location uniquely. The ID contains Mobile Country Code (MCC) and Mobile Network Code (MNC) to identify a mobile network operator.

If an NF wants to be discovered by other NFs in a different PLMN, it registers inter PLMN FQDN in NRF. The format of inter PLMN FQDN is as follows:

<labels separated by dots>.5gc.mnc<MNC>.mcc<MCC>.3gppnetwork.org

Example of of Inter PLMN FQDN UDM belonging to PLMN MNC 12 and MCC 345:

udm.5gc.mnc012.mcc345.3gppnetwork.org

#### **Note**

Telescopic FQDN is not supported in this release.

Intra-PLMN (non-roaming) traffic is routed based on 5G NF topology determined from NRF using FQDN (local) present in NFs. 5G SBI roaming traffic received from SEPP, that is, ingress to local operator network site and with inter-PLMN or self constructed FQDN, is routed using inter-PLMN FQDN present in NFs.

If SCP receives a "3gpp-Sbi-Target-apiRoot" HTTP header in the ingress service request, it determines the target PLMN from the inter PLMN FQDN specified in this header. If the "3gpp-Sbi-Target-apiRoot" HTTP header is not present, SCP performs delegated discovery for NF selection based on the received "3gpp-Sbi-Discovery" headers.

To support the 5G SBI roaming subscriber inter-PLMN traffic routing for different remote PLMNs, SCP identifies whether the ingress 5G SBI service request is for local PLMN IDs or remote PLMN IDs. To differentiate between intra-PLMN and inter-PLMN service requests, SCP uses local supported PLMN IDs.

For a network, local supported PLMN IDs include SCP supported PLMN IDs. Other than locally supported PLMN IDs, all PLMN IDs are considered as remote PLMN IDs by SCP. A network consists of multiple PLMN IDs, and network deployment is based on PLMN IDs.

SCP determines the SEPP topology from NRF or locally configured SEPP profile at SCP. SCP selects a SEPP instance based on PLMN serving the target NF. SCP performs load balancing and alternate routing between SEPP instances based on priority and capacity available in the SEPP profile.

To use InterPLMN routing with Oracle NRF, you must:

- deploy NRF with the following attribute in its deployment file:  
whiteListNFForSendingInterPlmnFQDN: "SCP\*".  
Where, "SCP\*" is regex.
- enable the scp\_user\_agent\_info REST API parameter to add "User-Agent" header in the SCP originated messages towards NRF so that the value of "User-Agent" header in userAgentHeaderFormat must match with the regex provided in the NRF deployment file for the whiteListNFForSendingInterPlmnFQDN attribute.

## Managing Support for 5G SBI Roaming

### Enable

You can enable this feature by setting `interplmn_routing` to `true`. For more information, see [Configuring SCP Features](#).

### Configure

You can configure this feature using Helm, REST API, and the CNC Console.

- **Configure using Helm:** For information about Helm configurations, see *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

#### Note

You can configure the required Helm parameters for this feature if you have performed a fresh installation of SCP or upgraded SCP within the same release version, for example, 1.15.1 to 1.15.1.

- **Configure using CNC Console:** For information about configuring NF instance IDs, see [Configuring SEPP Inter PLMN Routing](#).
- **Configure using REST API:** For information about the REST API configurations, see "Configuring SCP Features" and "Configuring SEPP InterPlmn Info" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

**Observe**

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

**Maintain**

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.43 Routing Options Enhancements for Next Hop SCP and Notification or Callback Messages

The existing configuration of routing options supports 3GPP defined 5G NF services types, such as nudm-uecm, nudm-sdm, nsmsf-sms, and so on. However, there is no routing option defined for the following:

- 5G SBI notification or callback requests
- Inter-SCP or next hop SCP routing

With the introduction of this feature, the existing 5G SBI message routing option is enhanced to support:

- 5G SBI notification or callback message requests: SCP uses the "3gpp-sbi-callback" header to identify whether a 5G SBI request is a notification or callback.
- Inter-SCP or next hop SCP routing: When a consumer SCP routes a 5G SBI service request to the next hop SCP, the consumer SCP must have configurable routing options for SCP to SCP interface for each 3GPP defined 5G NF Service types, such as nudm-uecm, nudm-sdm, nsmsf-sms, and so on, if more than one SCP instance is involved in routing the 5G SBI service request. A new parameter known as nextHopSCP is introduced to the existing routing configurations to support this functionality.

This feature provides flexibility to configure inter-SCP or next hop SCP routing options for all services.

SCP derives an incoming message type from both "3gpp-sbi-callback" header and servicename in path to identify if it is a notification or callback request, or service request.

SCP uses the nextHopSCP routing configuration when routing messages towards the next hop SCP. The nextHopSCP routing parameters are set in SCP to define the message processing time to get a response from the producer NF instance in the same network or from another SCP instance in a different region.

### Identification of 5G SBI Notification or Callback Messages

SCP identifies whether the ingress message request is a notification or callback, or service specific request based on the "3gpp-sbi-callback" header and the servicename in path present in the Uniform Resource Identifier (URI).

The following table describes different scenarios to identify a message request based on the availability of the "3gpp-sbi-callback" header and servicename in path.

Table 3-24 Identifying a Message Request

| 3gpp-sbi-callback | servicename in path | Description                                                                                                                                                                                                                    | Expected Routing at SCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Present           | Absent              | The message request is considered as a 5G SBI notification or callback.<br>Routing option configured for "5g-sbi-notification" is applicable.<br>For more information about "5g-sbi-notification", see 3GPP TS 29.500 v16.6.0. | The expected notification message routing is as follows: <ul style="list-style-type: none"> <li>If the 3gpp-Sbi-Routing-Binding header is present, then the alternate routing as per Model C, Model D, and interPLMN traffic routing feature support at SCP.</li> <li>If an alternate routing configuration is configured at SCP, then the alternate routing as per DNSSRV or route group configuration is supported at SCP.</li> <li>If both alternate notification endpoint selection information is unavailable, SCP cannot perform notification message alternate routing.</li> </ul> |
| Present           | Present             | The message request is considered as a 5G SBI notification or callback.<br>Routing option configured for "5g-sbi-notification" is applicable.                                                                                  | The expected notification message routing is as follows: <ul style="list-style-type: none"> <li>If the 3gpp-Sbi-Routing-Binding header is present, then the alternate routing as per Model C, Model D, and interPLMN traffic routing feature support at SCP.</li> <li>If an alternate routing configuration is configured at SCP, then the alternate routing as per DNSSRV or route group configuration is supported at SCP.</li> <li>If both alternate notification endpoint selection information is unavailable, SCP cannot perform notification message alternate routing.</li> </ul> |
| Absent            | Absent              | The message request is considered as a 5G SBI notification or callback.<br>Routing option configured for "5g-sbi-notification" is applicable.                                                                                  | The expected notification message routing is as follows: <ul style="list-style-type: none"> <li>If the 3gpp-Sbi-Routing-Binding header is present, then the alternate routing as per Model C, Model D, and interPLMN traffic routing feature support at SCP.</li> <li>If an alternate routing configuration is configured at SCP, then the alternate routing as per DNSSRV or route group configuration is supported at SCP.</li> <li>If both alternate notification endpoint selection information is unavailable, SCP cannot perform notification message alternate routing.</li> </ul> |



Table 3-24 (Cont.) Identifying a Message Request

| 3gpp-sbi-callback | servicename in path | Description                                                                                                                                   | Expected Routing at SCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Absent            | Present             | The message request is considered as a 5G SBI service specific request.<br>Routing option configured to specific 5G NF service is applicable. | The expected service request message routing is as follows: <ul style="list-style-type: none"> <li>• If the 3gpp-Sbi-Routing-Binding header is present, then the alternate routing as per Model C, Model D, and interPLMN traffic routing feature support at SCP.</li> <li>• If an alternate routing configuration is configured at SCP, then the alternate routing feature as per DNSSRV or route group configuration is supported at SCP.</li> <li>• If both alternate notification endpoint selection information is unavailable, SCP will be unable to perform alternate routing based on reverse lookup feature support at SCP.</li> </ul> |

## Managing Routing Options Enhancements for Next Hop SCP and Notification or Callback Messages

### Enable

This feature is enabled automatically at the time of SCP deployment.

### Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using REST API:** For information about the REST API configurations, see "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
- **Configure using CNC Console:** For information about configuring NF instance IDs, see [Configuring the nextHopSCP Routing Option](#).

### Observe

For information about metrics, see [Metrics](#).

### Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).



## 3.44 Support for Alternate Routing Using Static Configuration

5G Service Based Interface (SBI) communication models establish connections among NFs and NF services. These communication models facilitate consumer NFs to route service requests to producer NFs directly or indirectly through Service Communication Proxy (SCP).

If the target producer NF is unavailable, SCP determines the NF Set ID of the target producer NF and performs alternate routing on the NF Set ID instances in a sequence until SCP completes all the configured routing attempts. In the absence of NF Set, SCP allows operators to configure FQDNs and use the Domain Name System (DNS) Service (SRV) method to find the equivalent NFs. In case the DNS SRV method is not availed by operators, then static configuration is used for alternate routing.

With the introduction of the static configuration, SCP allows operators to configure a pair or combination of primary NFs and their alternate NFs to define alternate producer NFs, which can be used in alternate NF selection when routing attempt to the primary NF fails.

### Managing Support for Alternate Routing Using Static Configuration

#### Enable

By default, this feature is disabled. To enable alternate routing using static configuration, you must complete the configuration as described in the following configuration section.

#### Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about CNC Console configurations, see [Configuring Routing Options](#) and [Configuring Route Groups](#).
- **Configure using REST API:** For information about configuring REST APIs, see "Configuring Route Groups" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

#### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.45 Support for Thread Watchdog

The Thread Watchdog feature enables SCP to monitor whether any SCP microservice threads are stuck or nonresponsive at regular intervals. If the thread watchdog reports any thread as nonresponsive or stuck, then the pod's liveness fails. If the pod's liveness failure count exceeds the failure threshold value, then the pod is restarted. If a thread doesn't respond within a specified duration, it is marked as nonresponsive or stuck. This time interval is configurable.

The failure threshold for the thread watchdog is also configurable. It determines how often the watchdog attempts to retry in case the watchdog detects a thread stuck or nonresponsiveness before declaring whether a thread is stuck or nonresponsive. Pod liveness fails when the watchdog failure count exceeds the configured threshold. These values are tuned and are not recommended to be changed.

### Managing Support for Thread Watchdog

#### Enable

This feature is enabled automatically in SCP at the time of deployment. To disable this feature, set the `enableThreadWatchDog` parameter to `false` as described in "Configuring SCP Services" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

#### Configure

You can configure this feature using REST API parameters as described in "Configuring SCP Services" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*. To view thread watchdog configurations on the CNC Console, see [Configuring SCP Services](#).

#### Observe

There is no specific metric and alert required for this feature.

#### Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

## 3.46 Observability Enhancements for SCP Inter-microservice Connectivity

In the previous releases, SCP microservices communicated with each other to perform various tasks, however, there was no mechanism to determine communication failures between any two SCP microservices.

This enhancement enables SCP to improve the SCP observability by introducing observability parameters to monitor inter-microservices communication failures.

SCP microservices communicate with each other through Hypertext Transfer Protocol (HTTP). To monitor any communication failure between SCP microservices, SCP observability services are enhanced with a new metric and an alert. This observability enhancement checks inter-microservice connectivity at regular intervals. If there is any communication failure, it raises an alert based on the threshold configurations. The alert is automatically cleared when the connection is restored.

### Managing Observability Enhancements for SCP Inter-microservice Connectivity

#### Enable

This enhancement is automatically enabled in SCP at the time of deployment.

## Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using CNC Console:** For information about CNC Console configurations, see [Configuring SCP Services](#).
- **Configure using REST API:** For information about configuring using REST APIs, see "Configuring SCP Services" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

## Observe

For information about alerts and metrics, see [Alerts](#) and [Metrics](#).

## Maintain

If you encounter alerts at system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

# 3.47 Load Control based on the Load Control Information Header

In the previous release, SCP was only relying on the producer NF's load information obtained from Network Repository Function (NRF) through NF status notifications, as SCP has subscribed for load status with NRF. This process might delay the availability of the instantaneous load information value at SCP.

With the introduction of Load Control based on the Load Control Information (LCI) Header feature, SCP has enhanced the existing load control functionality by enabling a direct exchange of the load information between 5G NFs and SCP using the "3gpp-Sbi-Lci" HTTP header.

When Service Communication Proxy (SCP) receives a "3gpp-Sbi-Lci" HTTP header, SCP calculates the effective available capacity based on the load reported by the peer NFs in LCI header or NF status notification from NRF. When SCP receives a 5G Service Based Interface(SBI) message request from a consumer NF, then SCP forwards the message request to a selected target NF based on the priority and effective available capacity. If the load of the producer NF is equal to or above the throttle onset threshold percent, SCP doesn't consider that producer NF for routing; instead, it goes for alternate routing options to other equivalent producer NFs.

SCP can also convey its own load control information to its peers so that the 5G NFs can take appropriate action based on its implementation. Thus, Load Control Information assists the receiver 5G NF in target NF reselection and load balancing.

## Managing Load Control based on the Load Control Information Header

### Enable

To enable the Load Control based on the Load Control Information Header feature, set the **Ici** option to true on the CNC Console. For more information, see [Configuring SCP Features](#).

## Configure

You can configure this feature using REST API and the CNC Console.

- **Configure using REST API:** For information about the REST API configurations, see "Configuring Load Control Information" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
- **Configure using CNC Console:** For information about configuring NF instance IDs, see [Configuring SCP Features](#).

## Observe

For information about metrics, see [Metrics](#).

## Maintain

If you encounter alerts at the system level, see the [Alerts](#) section for resolution steps.

In case the alerts persist, perform the following tasks:

1. **Collect the logs:** For information about how to collect logs, see *Oracle Communications Cloud Native Core, Service Communication Proxy Troubleshooting Guide*.
2. **Raise a service request:** For information about how to raise a service request, see [My Oracle Support](#).

# 3.48 Support for Three-site Georedundancy

Geographical Redundant (Georedundant) deployments ensure high availability and redundancy of NFs. SCP supports a three-site georedundancy deployment of cnDBTier to ensure service availability when one of the SCP sites is down.

When the primary SCP is available, NFs send service requests to the primary SCP. When SCP at the primary site is unavailable, NFs redirect service requests to the secondary SCP or tertiary SCP until the primary SCP's active status is restored.

The SCP database consists of the following:

- **Configuration Data:** The configuration data is exclusive for a given SCP instance. Therefore, an exclusive logical database is created and used by an SCP instance to store its configuration data. You can configure SCP instance specific configurations using RESTful config API exposed by SCPC-Configuration microservice through the CNC Console.
- **Routing Data:** This is the routing rules data that SCP determines from NRF in 5G Core network topology.
- **Status Data:** This data provides the status of upgrade or rollback.

In a three-site deployment, each SCP instance uses its database. The data gets replicated to all other sites of the cnDBTier cluster so that the data is available on all the cnDBTier cluster sites in case of a cnDBTier instance failure. SCP data gets replicated between the georedundant sites by using cnDBtier replication services. cnDBtier can be supported in the following modes:

- **Two-site cnDBtier georeplication mode:** The database backup from one of the sites can be used for fault recovery of SCP.
- **Three-site cnDBtier georeplication mode:** The database backup from one of the sites can be used for fault recovery of SCP.

- One-site cnDBTier deployment mode: The georeplication is unavailable.

For more information about database replication in a georedundant environment, see *Oracle Communications Cloud Native Core cnDBTier User Guide*.

## 3.49 Automated Test Suite Support

SCP provides Automated Test Suite (ATS) for validating the functionalities. ATS allows you to execute SCP test cases using an automated testing tool, and then compares the actual results with the expected or predicted results. In this process, there is no intervention from the user. For more information about installing and configuring ATS, see *Oracle Communications Cloud Native Core, Automated Test Suite Guide*.

# 4

## Configuring Service Communication Proxy using the CNC Console

This chapter provides information about how to configure and modify different services in Service Communication Proxy (SCP) using the Oracle Communications Cloud Native Configuration Console (CNC Console).

The REST API configurations can also be performed using the CNC Console.

### 4.1 Support for Multiclustert Deployment

The CNC Console supports both single and multiple cluster deployments.

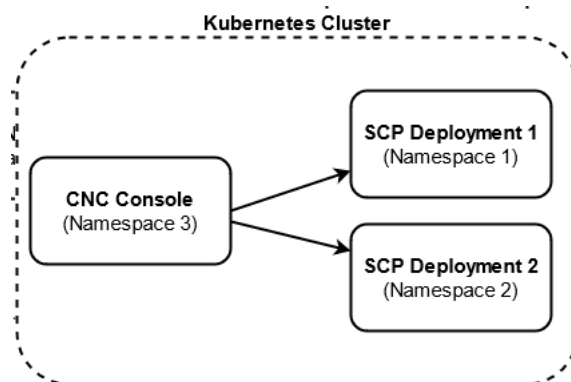
In a single cluster deployment, the CNC Console can manage NFs and Oracle Communications Cloud Native Environment (OCCNE) common services deployed in the local Kubernetes clusters.

In a multiclustert deployment, the CNC Console can manage NFs and OCCNE common services deployed in the remote Kubernetes clusters. For more information about single and multiple cluster deployments, see *Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide* .

With the support of multiclustert deployment, a single instance of the CNC Console can configure two or multiple instances of SCP deployments if both CNC Console and SCP instances are deployed in the same Kubernetes cluster with different namespaces.

The following image represents a Kubernetes cluster with one instance of CNC Console and two instances of SCP. The single instance of the CNC Console is configuring two instances of SCP with different namespaces.

**Figure 4-1 Support for Multiclustert Deployment**



### 4.2 CNC Console Interface

This section provides an overview of the CNC Console to configure SCP features.

You can use SCP integrated with the CNC Console after logging in to CNC Console. To log in to the CNC Console, you must make the following updates to the hosts file at the C:\Windows\System32\drivers\etc location.

1. In the Windows system, open the hosts file in the notepad as an Administrator and append the following set of lines at the end:

```
<CNCC Node IP> cncc-iam-ingress-gateway.cncc.svc.cluster.local
<CNCC Node IP> cncc-core-ingress-gateway.cncc.svc.cluster.local
```

Example:

```
10.75.212.88 cncc-iam-ingress-gateway.cncc.svc.cluster.local
10.75.212.88 cncc-core-ingress-gateway.cncc.svc.cluster.local
```

#### Note

The IP Address in the above lines may change when deployment cluster changes.

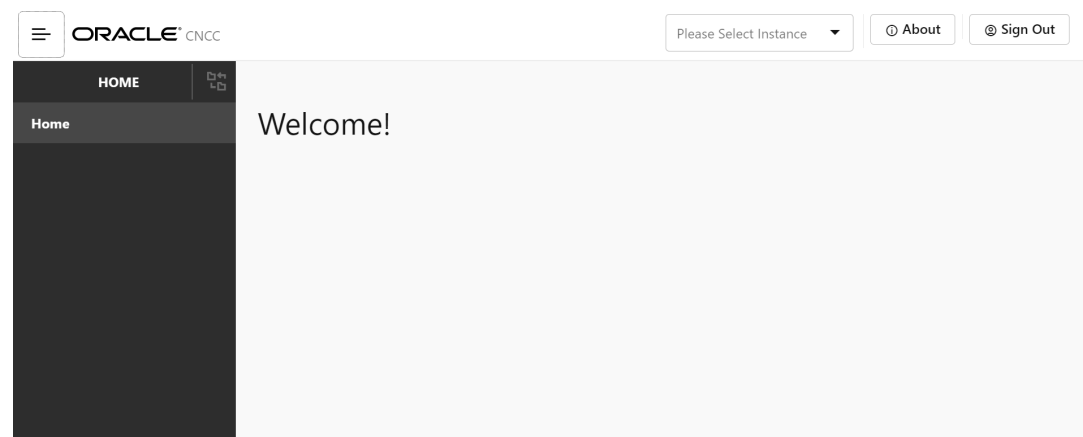
2. Save and close the hosts file.  
Before logging in to the CNC Console, create a CNC user and password. Log in to the CNC Console using the same credentials. For information about creating a CNC Console user and password, see *Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide*.

### Logging in to the CNC Console and Selecting an SCP Instance

Perform the following procedure to log in to the CNC Console and select the required SCP instance to configure SCP features.

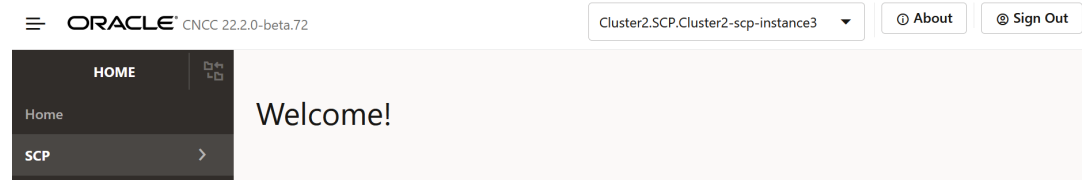
1. Open any web browser.
2. Enter the URL: http://<host name>:<port number>.  
Where, <host name> is cncc-iam-ingress-ip and <port number> is cncc-iam-ingressport.
3. Enter the login credentials.
4. Click **Log in**.  
The CNC Console Home page appears.

**Figure 4-2 CNC Console Welcome Screen**



5. In the upper pane, from the **Please Select Instance** drop-down list, select the required SCP instance.  
The SCP tab appears in the left navigation pane.

**Figure 4-3 Select NF Instance**



The **Please Select Instance** drop-down list provides NF instances to configure corresponding NF features. You must select an appropriate SCP instance to configure SCP features. Alternatively, you can click one of the following interface elements on the Welcome screen:

- **About:** This element provides the CNC Console product name and version.
- **Sign Out:** This element exits the CNC Console.

## 4.2.1 Configuring SCP Features

This section provides information about enabling the following features of SCP:

### Note

You must log in to the CNC Console while performing the procedures described in the subsequent subsections.

- Configuring Enhanced NF Status Processing
- Configuring Global Egress Rate Limiting
- Configuring Support for 5G SBI Roaming
- Configuring Mediation
- Configuring Model D Indirect 5G SBI Communication
- Configuring SCP User Agent Info
- Configuring Message Feed
- Configuring Load Control Information (LCI)
- Configuring Host Preference for Egress Message Requests
- Configuring CCA Header Validation
- Configuring Location Header Update for Host Mismatch
- Configuring Support for OAuth2.0
- Configuring SCP Health Check API
- NRF Configuration using DNS SRV Resolution
- Configuring Overload Control Based on the Overload Control Information Header



- Configuring Enhanced NFProfile Processing

### 4.2.1.1 Configuring Enhanced NF Status Processing

Perform the following procedure to enable the support for creating or retaining SCP routing rules for NF Profiles with NF Status as SUSPENDED.

**Note**

The Enhanced NF Status Processing feature is applicable only when nnrf-nfm (NRF Management) service is used as an audit service for SCP.

1. In the left navigation pane, click the **SCP** tab, and then click the **SCP Features** tab.
2. From the SCP Features list, click **Enhanced Nf Status Processing**.
3. In the Enhanced NF Status section, click **Edit**.

Figure 4-4 Editing Enhanced Nf Status Processing

Enhanced NF Status

Feature Name:

enhanced\_nf\_status\_processing

Enabled:

Enabled  
false

Feature Specific Config

Enhanced Suspended State Routing:

Enhanced Suspended State Routing  
UDM

Suspended State Routing:

Suspended State Routing  
PCF

4. Set **Enabled** to true.  
By default, this option is set to false.
5. In the **Feature Specific Config** section, configure the following fields as required:
  - **Enhanced Suspended State Routing:** Enter the list of valid NF types for Mode 3 routing.
  - **Suspended State Routing:** Enter the list of valid NF types for Mode 2 routing.
6. Click **Save**.

### 4.2.1.2 Configuring Global Egress Rate Limiting

Perform the following procedure to configure global egress rate limiting.

1. In the left navigation pane, click the **Global Egress Rate Limiting** tab.
2. In the Global Egress Rate Limit section, click **Edit**.  
The Edit Global Egress Rate Limit screen appears.

Figure 4-5 Enabling the Global Egress Rate Limiting

## Edit Global Egress Rate Limit

|                      |                                         |
|----------------------|-----------------------------------------|
| <b>Feature Name:</b> | Feature Name<br>global_egress_ratelimit |
| <b>Enabled:</b>      | <input type="checkbox"/>                |

**Feature Specific Config**

|                               |                                |
|-------------------------------|--------------------------------|
| <b>Remote ScpOne Enabled:</b> | Remote ScpOne Enabled<br>false |
| <b>Remote ScpTwo Enabled:</b> | Remote ScpTwo Enabled<br>false |

- Set **Enabled** to true.  
By default, this option is set to false.
- In the Feature Specific Config section, configure the following fields:
  - Remote ScpOne Enabled:** Set this field to true if you want to enable egress rate aggregation with the SCP instance as defined in the `coherence.federation.remoteScpOne` parameter of the `ocscp-custom-values.yaml` file. By default, this value is set to false.
  - Remote ScpTwo Enabled:** Set this field to true if you want to enable egress rate aggregation with the SCP instance as defined in the `coherence.federation.remoteScpTwo` parameter of the `ocscp-custom-values.yaml` file. By default, this value is set to false.
- Click **Save**.

### 4.2.1.3 Configuring Support for 5G SBI Roaming

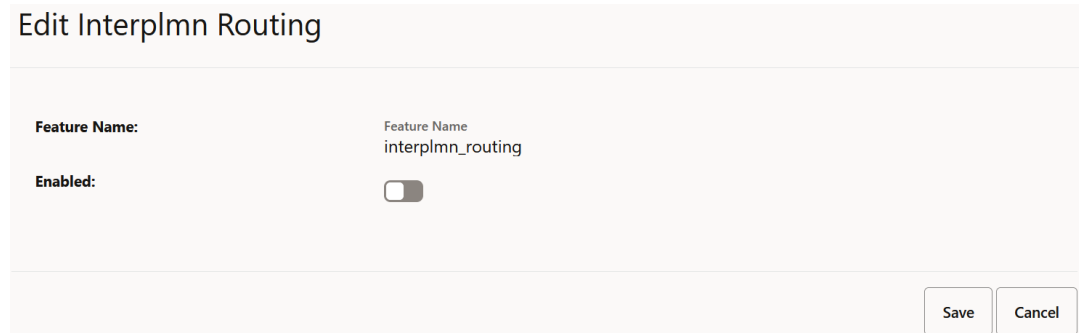
Perform the following procedure to configure support for 5G SBI roaming.

#### Note

Ensure that one local and one remote PLMNs are configured before enabling this feature. To configure a remote PLMN, see [Configuring SEPP Inter PLMN Routing](#). A local PLMN is configured at the time of SCP deployment or by editing the **CUSTOM\_ORACLE\_SCP** NF type as described in [Configuring NF Rule Profile](#).

1. In the left navigation pane, click the **Interplmn Routing** tab.
2. In the Interplmn Routing section, click **Edit**.  
The Edit Interplmn Routing screen appears.

**Figure 4-6 Inter PLMN Routing**



Feature Name: interplmn\_routing

Enabled: ☐

Save Cancel

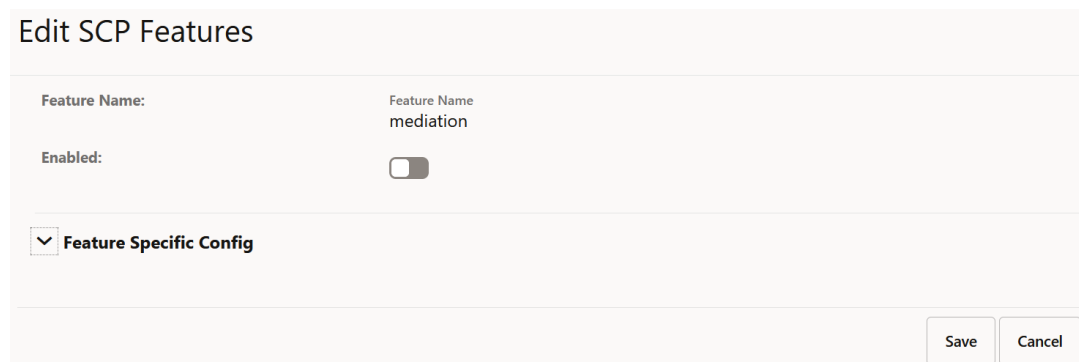
3. Set **Enabled** to true.  
By default, this option is set to false.
4. Click **Save**.

#### 4.2.1.4 Configuring Mediation

Perform the following to configure mediation.

1. In the left navigation pane, click the **Mediation** tab.
2. In the Mediation section, click **Edit**.  
The Edit Mediation screen appears.

**Figure 4-7 Enable Mediation**



Feature Name: mediation

Enabled: ☐

Feature Specific Config

Save Cancel

3. Set **Enabled** to true.  
By default, this option is set to false.
4. Click **Save**.

#### 4.2.1.5 Configuring Model D Indirect 5G SBI Communication feature

Perform the following to configure Model D indirect 5G SBI communication feature.

1. In the left navigation pane, click the **Modeld Routing** tab.

2. In the Modeld Routing section, click **Edit**.

**Figure 4-8 Enabling ModelID Routing**

| Modeld Routing                  |                                        | Edit | Refresh |
|---------------------------------|----------------------------------------|------|---------|
| Feature Name:                   | Feature Name<br>modeld_routing         |      |         |
| Enabled:                        | Enabled<br>false                       |      |         |
| ▼ Feature Specific Config       |                                        |      |         |
| Caching:                        | Caching<br>true                        |      |         |
| enforceReqSpecificSvcDiscovery: | enforceReqSpecificSvcDiscovery<br>true |      |         |

The Edit Modeld Routing screen appears.

3. Set **Enabled** to true.  
By default, this option is set to false.
4. Set **Caching** to true or false to enable or disable caching to store discovery responses. By default, this option is set to true.
5. Set **enforceReqSpecificSvcDiscovery** to true or false to enable or disable NF Service specific Discovery Requests when possible. By default, this option is set to true.
6. Click **Save**.

### 4.2.1.6 Configuring SCP User Agent Info

Perform the following to configure SCP User Agent Info.

1. In the left navigation pane, click the **SCP User Agent Info** tab.
2. In the SCP User Agent Info section, click **Edit**.  
The SCP User Agent Info screen appears.

**Figure 4-9 SCP User Agent Info**

| SCP User Agent Info       |                                                      | Edit | Refresh |
|---------------------------|------------------------------------------------------|------|---------|
| Feature Name:             | Feature Name<br>scp_user_agent_info                  |      |         |
| Enabled:                  | Enabled<br>false                                     |      |         |
| ▼ Feature Specific Config |                                                      |      |         |
| User Agent Header Format: | User Agent Header Format<br>NFType-NFInstanceID FQDN |      |         |

3. Set **Enabled** to true.  
By default, this option is set to false.

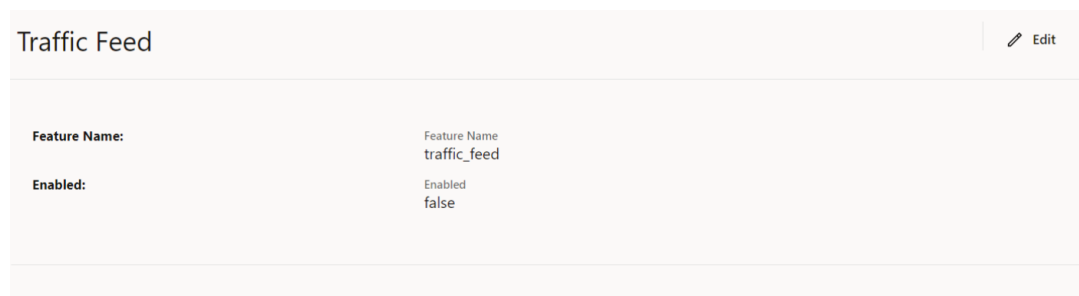
4. Expand the Feature Specific Config option, in the **User Agent Header Format** field, select the required format to set the "User-Agent" header format.  
For more information about the "User-Agent" header formats, see "Configuring SCP Features" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
5. Click **Save**.

### 4.2.1.7 Configuring Message Feed

Perform the following to configure message feed.

1. In the left navigation pane, click the **Traffic Feed** tab.
2. In the Traffic Feed section, click **Edit**.  
The Traffic Feed screen appears.

**Figure 4-10 Message Feed**



| Traffic Feed  |                              | Edit |
|---------------|------------------------------|------|
| Feature Name: | Feature Name<br>traffic_feed |      |
| Enabled:      | Enabled<br>false             |      |

3. Set **Enabled** to true.  
By default, this option is set to false.
4. Click **Save**.

### 4.2.1.8 Configuring Load Control Information (LCI)

Perform the following procedure to enable configuring load control information (LCI).

1. In the left navigation pane, click the **LCI** tab.
2. In the LCI section, click **Edit**.

**Figure 4-11 Editing LCI**

The screenshot shows the 'Edit LCI' configuration interface. At the top, there's a 'Feature Name' field containing 'lci' and an 'Enabled' toggle switch. Below this is a section titled 'Feature Specific Config' which contains several configuration options, each with a toggle switch and a text input field:

- SCP LCI Conveyance Enable:** Toggle switch, input field shows 3600.
- Relay Peer Lci:** Toggle switch, input field shows 25.
- SCP LCI Conveyance Interval:** Input field shows 3600.
- SCP LCI Minimum Load Change:** Input field shows 25.
- SCP LCI Conveyance Minimum Load Threshold:** Input field shows 25.
- SCP LCI Conveyance to Unknown peer:** Toggle switch, input field shows 900.
- Peer LCI Processing Minimum Load Change:** Input field shows 25.
- Unknown peer LCI Expiry time:** Input field shows 900.

At the bottom right, there are 'Save' and 'Cancel' buttons.

3. Set Enabled to true.  
By default, this option is set to false.
4. In the **Feature Specific Config** section, complete the following configurations:

**Note**

All the parameters are mandatory to configure the LCI feature.

- **SCP LCI Conveyance Enable:** Set to true to enable SCP to add its LCI in request and response.
- **Relay Peer Lci:** Set to true to allow SCP to forward the received LCI header from producer NF.
- **SCP LCI Conveyance Interval:** Enter a value from 100 milliseconds to 3600000 milliseconds to report the SCP LCI update interval.
- **SCP LCI Minimum Load Change:** Enter a value from 0 to 25 to report the minimum delta value when reporting LCI based on load change.
- **SCP LCI Conveyance Minimum Load Threshold:** Enter a value from 0 to 60 to set a minimum load change threshold to trigger the generation of an LCI header and its reporting to peers if allowed.

**Note**

If the SCP load value is less than the configured SCP LCI Conveyance Minimum Load Threshold value, SCP sends its load value as 0%.

- **SCP LCI Conveyance to Unknown peer:** Set to true to allow SCP to send its LCI to an unknown peer NF, a peer NF that is not registered with SCP.

**Note**

- SCP sends its LCI in all the messages that go to peer NFs that are not registered with SCP.
- If the SCP load value is less than the configured SCP LCI Conveyance Minimum Load Threshold value, SCP sends its load value as 0%.

- **Peer LCI Processing Minimum Load Change:** Enter a value from 0 to 25 to define a minimum load change threshold in peer NF's load as indicated in LCI, which can trigger a re-evaluation of routing rules.
- **Unknown peer LCI Expiry time:** Enter a value between 30 seconds to 900 second to set the minimum number of seconds required to remove an unknown peer's LCI from cache.

5. Click **Save**.

### 4.2.1.9 Configuring Host Preference for Egress Message Requests

Perform the following procedure to configure host preference for egress message requests.

1. In the left navigation pane, click the **Egress Host Preference** tab.
2. In the Egress Host Preference section, click **Edit**.

**Figure 4-12 Editing Egress Host Preference**

The screenshot displays the 'Editing Egress Host Preference' configuration page. It is organized into three main sections: Request, Response, and Fqdn Resolution.

- Request Section:** Contains three dropdown menus:
  - Api Root Header Present:** Set to 'PASSTHROUGH'.
  - Api Root Header Not Present:** Set to 'IP'.
  - SCP Generated NRF Message:** Set to 'IP'.
- Response Section:** Contains one dropdown menu:
  - Headers:** Set to 'FOLLOWREQUEST'.
- Fqdn Resolution Section:** Contains two dropdown menus:
  - Fqdn:** Set to 'NFPROFILE'.
  - InterPlmn Fqdn:** Set to 'DNS'.

3. Set **Enabled** to true.  
By default, this option is set to false.
4. In the **Feature Specific Config** section, to configure the host preference, set the following fields as described in the following table:

Table 4-1 Host Preference

| Field Name                         | Description                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Api Root Header Present</b>     | This parameter indicates the host preference (":authority" header) for egress message requests if the 3gpp-Sbi-Target-apiRoot header is present in the ingress message request.<br>You can set this field to PASSTHROUGH to use the same type of host in egress message requests as received through ingress message requests.<br>Default value: PASSTHROUGH<br>Range: IP, FQDN, or PASSTHROUGH |
| <b>Api Root Header Not Present</b> | This parameter indicates the host preference (":authority" header) for egress message requests if the 3gpp-Sbi-Target-apiRoot header is absent in ingress message requests.<br>Default value: IP<br>Range: IP or FQDN                                                                                                                                                                           |
| <b>SCP Generated NRF Message</b>   | This parameter indicates the host preference (":authority" header) for SCP generated NRF messages.<br>Default value: IP<br>Range: IP or FQDN                                                                                                                                                                                                                                                    |
| <b>Fqdn</b>                        | This parameter indicates the resolution preference of egress message requests host FQDN if present.<br>Default value: NFPROFILE<br>Range: DNS or NFPROFILE                                                                                                                                                                                                                                      |
| <b>InterPlmn Fqdn</b>              | This parameter indicates the resolution preference of egress message requests inter-plmn FQDN if present.<br>Default value: DNS<br>Range: DNS or NFPROFILE                                                                                                                                                                                                                                      |

5. Click **Save**.

#### 4.2.1.10 Configuring CCA Header Validation

Perform the following option to configure CCA Header validation.

1. In the left navigation pane, click the **CCA Header Validation** tab.
2. In the CCA Header Validation section, click **Edit**.



Figure 4-13 Edit CCA Header Validation

Oracle CNCC 23.2.0 Cluster1.SCP.Cluster1-scp-instance1 About Sign Out

CCA Header Validation Edit Refresh

Feature Name: cca\_header\_validation  
Enabled: false

Feature Specific Config

Validations:

| Type    | Error Profile Name   | Product NF Type |                 |
|---------|----------------------|-----------------|-----------------|
| subject | ccaVerificationError |                 | Add Edit Delete |

tls\_cert\_san

preferred\_validation\_order: preferred\_validation\_order  
URI-ID-URN,DNS-ID,IP-ADDRESS,URI-ID-APIROOT

max\_entries\_to\_process: max\_entries\_to\_process  
30

- Set Enabled to true.  
By default, this option is set to false.
- In the **Feature Specific Config** section, to configure the validations, set the following fields as described in the following table:

Table 4-2 Validations

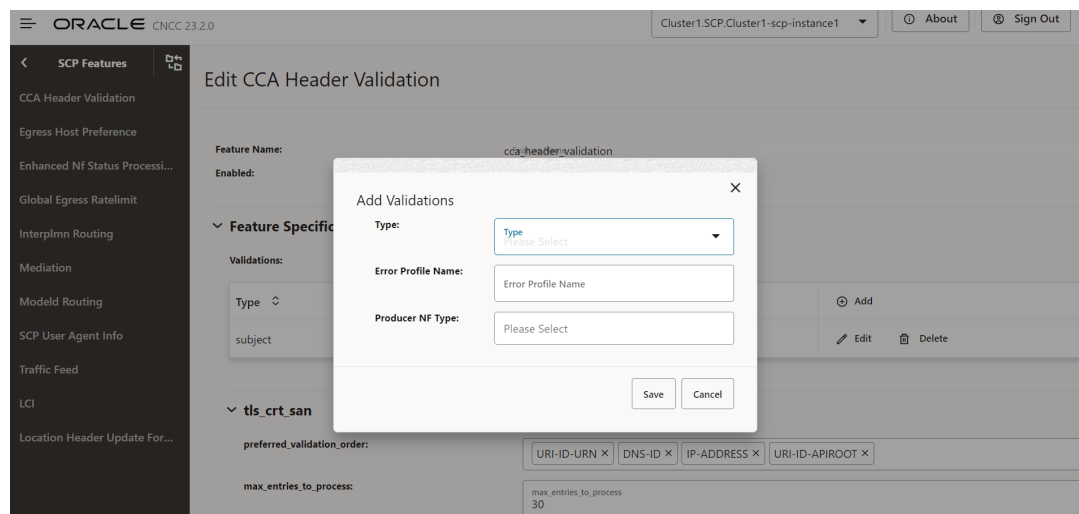
| Field Name                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                       | <p>Type of validation:</p> <ul style="list-style-type: none"> <li>headerPresence: SCP checks the presence of the 3gpp-Sbi-Client-Credentials header in the ingress request. <ul style="list-style-type: none"> <li>Validation will pass if the header is present.</li> <li>Validation will fail if the header is not present.</li> </ul> </li> <li>subject: SCP checks the NF instance ID from the "sub" parameter in the 3gpp-Sbi-Client-Credentials header with the NF instance ID from the list of SANs in the client's TLS certificate. SANs directly have the NF Instance Id or the client's other identity, like the FQDN or IP address, which will be used to get the NF Instance Id. If the 3gpp-Sbi-Client-Credentials header is not present, then this validation will not be performed. <ul style="list-style-type: none"> <li>Validation will pass if the NF instance ID from the "sub" parameter matches the NF instance ID from the SAN.</li> <li>Validation will fail if the NF instance ID from the "sub" parameter doesn't match the NF instance ID from the SAN.</li> </ul> </li> </ul> |
| Error Profile Name         | The error profile name is used to generate an error response if the corresponding validation fails. Error profiles can be configured using the REST API: /ocscp/scpc-configuration/{version}/errorProfileConfig.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Product NF Type            | Default Value: Null                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| preferred_validation_order | <p>An order format-wise from which the SCP picks SAN from the client's TLS certificate for verification of the "subject" type of validation.</p> <p><b>Note:</b> Applicable only when validation type "subject" is selected.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Table 4-2 (Cont.) Validations

| Field Name                          | Description                                                                                                                                                         |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>max_entries_to_process</code> | Maximum number of SANs from the client's TLS certificate that SCP picks for validation.<br><b>Note:</b> Applicable only when validation type "subject" is selected. |

- Click **Add** to add validations:

Figure 4-14 Add Validations

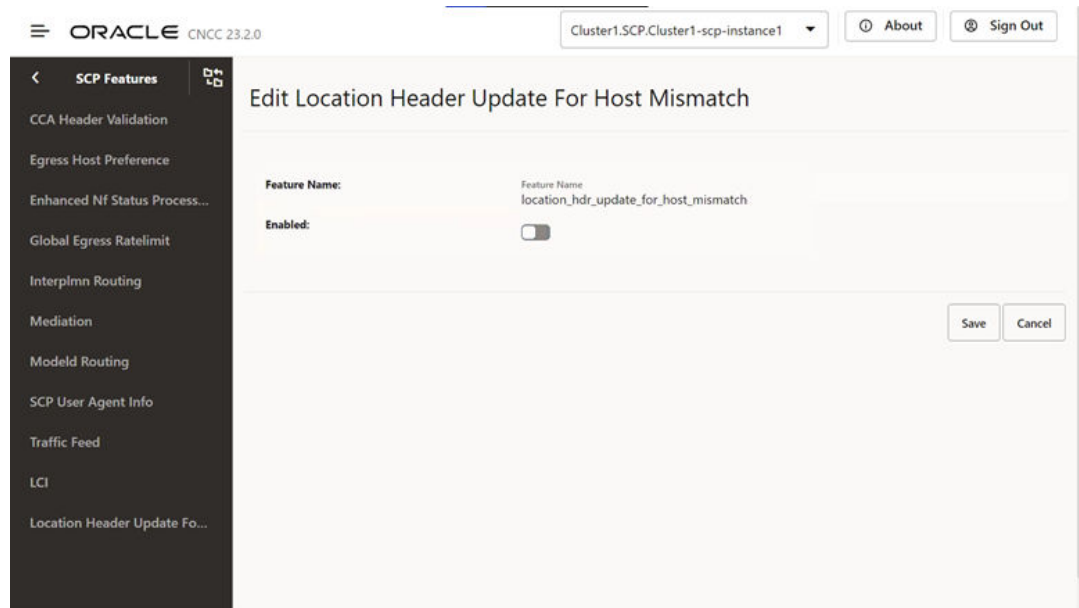


- Click **Save**.

#### 4.2.1.11 Configuring Location Header Update for Host Mismatch

Perform the following the procedure to configure location header update for host mismatch.

- In the left navigation pane, click the **Location Header Update For Host Mismatch** tab.
- In the Location Header Update For Host Mismatch section, click **Edit**.

**Figure 4-15 Edit Location Header Update For Host Mismatch**

3. Set Enabled to true.  
By default, this option is set to false.
4. Click **Save**.

#### 4.2.1.12 Configuring Support for OAuth2.0

Perform the following the procedure to configure support for OAuth2.0.

1. In the left navigation pane, click the **OAuth2 Support** tab.
2. In the OAuth2 Support section, click **Edit**.

Figure 4-16 OAuth2 Support

|                                    |                                   |
|------------------------------------|-----------------------------------|
| Feature Name:                      | Feature Name                      |
| Enabled:                           | <input type="checkbox"/>          |
| <b>Feature Specific Config</b>     |                                   |
| SCP Access Token Capability:       | SCP Access Token Capability       |
| Access Token Conveyance:           | <input type="checkbox"/>          |
| OAuth2 Access Token Validation:    | <input type="checkbox"/>          |
| Access Token Validation Types:     | Access Token Validation Types     |
| Access Token Refresh Guard Time:   | Access Token Refresh Guard Time   |
| Access Token Validity Guard Time:  | Access Token Validity Guard Time  |
| Access Token Clean Up Post Expiry: | Access Token Clean Up Post Expiry |
| Access Token History Size:         | Access Token History Size         |
| Access Token Cache Size:           | Access Token Cache Size           |
| Requester Info:                    | Requester Info                    |

- Set Enabled to true.  
By default, this option is set to false.
- In the **Feature Specific Config** section, complete the following configurations:

Table 4-3 Configure Access Token

| Field Name                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCP Access Token Capability | <p>This field indicates Access token support for the listed indirect communication modes at SCP. (ENUM).</p> <p>Possible values: [INDIRECT_COM_WITH_DELEG_DISC, INDIRECT_COM_WITHOUT_DELEG_DISC]</p> <ul style="list-style-type: none"> <li>INDIRECT_COM_WITH_DELEG_DISC: SCP initiates access token request toward NRF in delegated discovery service request.</li> <li>INDIRECT_COM_WITHOUT_DELEG_DISC: SCP is expected to forward the service request with or without access token as per configuration at SCP. SCP is not expected to initiate access token request toward NRF.</li> </ul> |

Table 4-3 (Cont.) Configure Access Token

| Field Name                               | Description                                                                                                                                                                                                                                                                                                    |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Access Token Conveyance</b>           | This field conveys acquired access token in the "3gpp-Sbi-Access-Token" header in service response to consumer NFs. <ul style="list-style-type: none"> <li>Default value: true</li> <li>Range: true or false</li> </ul>                                                                                        |
| <b>OAuth2 Access Token Validation</b>    | This field enables or disables validation of OAuth2 access token from consumer NFs. <ul style="list-style-type: none"> <li>Default value: Disabled</li> <li>Range: Disabled or Enabled</li> </ul>                                                                                                              |
| <b>Access Token Validation Types</b>     | This field configures the list of required validation types in the network. <ul style="list-style-type: none"> <li>Default value: empty as default</li> <li>Range: Disabled or Enabled</li> </ul>                                                                                                              |
| <b>Access Token Refresh Guard Time</b>   | This field initiates proactive refresh of cached access token when the configured time expires. The proactive refresh occurs if the relevant SBI messages are in exchange. <ul style="list-style-type: none"> <li>Default value: 60000ms</li> <li>Range: 100ms - 300000ms</li> </ul>                           |
| <b>Access Token Validity Guard Time</b>  | This field indicates the time before the access token expiry when SCP considers not to use the existing access token and obtains new access token in the service request forwarded to producer NFs. <ul style="list-style-type: none"> <li>Default value: 30000ms</li> <li>Range: 100ms - 300000ms</li> </ul>  |
| <b>Access Token Clean Up Post Expiry</b> | This field indicates the duration to purge the token from cache. <ul style="list-style-type: none"> <li>Default value: 900000ms</li> <li>Range: 0ms - 3600000ms</li> </ul>                                                                                                                                     |
| <b>Access Token History Size</b>         | This field indicates the number of access tokens signature history to identify whether the access token initiated by SCP or not. <ul style="list-style-type: none"> <li>Default value: 10 records</li> <li>Range: 0 - 20 records</li> </ul>                                                                    |
| <b>Access Token Cache Size</b>           | This field indicates the number of access tokens that can be cached in SCP. <ul style="list-style-type: none"> <li>Default value: 50000 records</li> <li>Range: 5000 - 100000 records</li> </ul>                                                                                                               |
| <b>Requester Info</b>                    | This field indicates access token requester (consumer NF) Info to generate the access token request. <ul style="list-style-type: none"> <li>Prioritized list of default values: <ol style="list-style-type: none"> <li>DISCOVERY-HEADERS</li> <li>CCA-HEADER</li> <li>USER-AGENT-HEADER</li> </ol> </li> </ul> |
| <b>Cache Enabled</b>                     | This option enables or disables caching of access tokens. <ul style="list-style-type: none"> <li>Default value: true</li> <li>Range: true or false</li> </ul>                                                                                                                                                  |

5. Click **Save**.

#### 4.2.1.13 Configuring SCP Health Check API

Perform the following the procedure to configure SCP health check API.

1. In the left navigation pane, click the **Health Check** tab.
2. In the Health Check section, click **Edit**.

Figure 4-17 Health Check

Feature Name: health\_check

Enabled: ☒

✓ **Feature Specific Config**

✓ **SCP Health API**

Success Response Type: Success Response Type  
200\_WITH\_EMPTY\_PAYLOAD

✓ **Overload**

Average SCP Load Threshold Value: Average SCP Load Threshold Value  
75

Overload Response Profile: Overload Response Profile  
healthCheckErrorProfile

✓ **Next Hop SCP**

SCP Health Check Service Enabled: ☐

Request Timeout: Request Timeout  
1000

Polling Interval: Polling Interval  
1000

3. Ensure that Enabled is set to true. This is the default configuration.
4. In the **Feature Specific Config** section, you can modify the following configurations:

Table 4-4 Configure Health Check API

| Field Name                       | Description                                                                                                                                                                                                                              |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Success Response Type            | This field indicates successful responses for a healthy SCP. <ul style="list-style-type: none"> <li>• Default value: 200StatusCodeAndEmptyPayload</li> <li>• Range: 200WithPayload, 200WithEmptyPayload, and 204WithNoContent</li> </ul> |
| Average SCP Load Threshold Value | This field provides the overall average SCP load threshold value. <ul style="list-style-type: none"> <li>• Default value: 75%</li> <li>• Range: 75% - 90%</li> </ul>                                                                     |

Table 4-4 (Cont.) Configure Health Check API

| Field Name                              | Description                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Overload Response Profile</b>        | This field indicates the error profile configuration for the health query response in the exception conditions. <ul style="list-style-type: none"> <li>Default value: healthCheckErrorProfile. For more information about this option, see "Configuring Error Profiles" in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> </ul> |
| <b>SCP Health Check Service Enabled</b> | This option enables or disables the SCP health check API feature in inter-scp scenarios. <ul style="list-style-type: none"> <li>Default value: false</li> <li>Range: true or false</li> </ul>                                                                                                                                                                                               |
| <b>Request Timeout</b>                  | This field indicates the timer to monitor the waiting time for health check response in inter-scp scenarios. <ul style="list-style-type: none"> <li>Default value: 1000ms</li> <li>Range: 300ms -60000ms</li> </ul>                                                                                                                                                                         |
| <b>Polling Interval</b>                 | This field indicates the duration to control the periodicity of health check requests in inter-scp scenarios. <ul style="list-style-type: none"> <li>Default value: 1000ms</li> <li>Range: 300ms -60000ms</li> </ul>                                                                                                                                                                        |
| <b>Consecutive Error Response</b>       | This field indicates the total number of consecutive failure responses that leads to failover in inter-scp scenarios. <ul style="list-style-type: none"> <li>Default value: 3</li> <li>Range: 1 - 20</li> </ul>                                                                                                                                                                             |
| <b>Consecutive Success Response</b>     | This field indicates the total number of consecutive successful responses that leads to fallback in inter-scp scenarios. <ul style="list-style-type: none"> <li>Default value: 3</li> <li>Range: 1 - 20</li> </ul>                                                                                                                                                                          |

- Click **Save**.

#### 4.2.1.14 NRF Configuration using DNS SRV Resolution

Perform the following procedure to NRF configuration using DNS SRV resolution.

- In the left navigation pane, click the **NRF Bootstrap Info** tab.
- In the NRF Bootstrap Info section, click **Edit**.

Figure 4-18 Edit NRF Bootstrap Info

The screenshot shows the 'Edit NRF Bootstrap Info' configuration page. It includes the following fields and controls:

- Feature Name:** nrf\_bootstrap\_info
- Enabled:** A toggle switch currently set to 'Off'.
- Feature Specific Config:** A section with a dropdown menu for 'Source' set to 'DNS\_SRV' and a toggle switch for 'DeRegister Scp During Migration' set to 'On'.
- Buttons:** 'Save' and 'Cancel' buttons at the bottom right.

- Set Enabled to true.  
By default, this option is set to false.

4. In the **Feature Specific Config** section, enter the following input for the following configurations:

**Table 4-5 Configure NRF Source Configuration**

| Field Name                          | Description                                                                                                                                                                                                                                                                                  |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Source</b>                       | This field is used to select whether the NRF Configuration Using DNS SRV Resolution feature should be enabled or disabled. SCP will enable the feature if the source is DNS_SRV.<br>The default value is DNS_SRV.                                                                            |
| <b>deRegisterScpDuringMigration</b> | In the migration from static to DNS SRV task, if static and DNS SRV NRF configurations are the same, then this parameter will be used to deregister SCP with the old or static NRFset. <ul style="list-style-type: none"><li>• Default value: false</li><li>• Range: true or false</li></ul> |

5. Click **Save**.

#### 4.2.1.15 Configuring Overload Control Based on the Overload Control Information Header

Perform the following procedure to configure overload control based on the overload control information header.

1. From the SCP Features list, click the OCI tab.
2. On the OCI page, click the **Edit** icon.



Figure 4-19 Edit OCI

## Edit OCI

Feature Name:

Feature Name  
oci

Enabled:

☐

Feature Specific Config

olcHSupportInd:

☒

SCP OCI Conveyance Interval:

SCP OCI Conveyance Interval  
2,000

SCP OCI Recovery Validity Period:

SCP OCI Recovery Validity Period  
3,600

Next Hop SCP OCI Enabled:

☒

3. In the Edit OCI section, set **Enabled** to true.  
By default, this option is set to false.

**Figure 4-20 Enabling OCI**

Next Hop SCP OCI Rule Name:

Next Hop SEPP OCI Enabled: ☒

Next Hop SEPP OCI Rule Name:

▼ **scpOciConveyance**

enable: ☒

▼ **unknownPeer**

request: ☒

response: ☒

Save Cancel

4. To configure OCI, in the Feature Specific Config section, set the following fields:

**Table 4-6 Configure OCI**

| Field Name                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| olcHSupportInd                   | This option indicates that SCP supports the Overload Control Information (OCI) feature based on the 3gpp-Sbi-Oci header. By default, this option is enabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| SCP OCI Conveyance Interval      | This field indicates the interval for reporting SCP OCI to peer NFs. For every interval until the validity period, the last sent OCI is reported to peer NF irrespective of any change to SCP OCI. Sending SCP OCI periodically ensures that the peer NF has not missed an earlier reported SCP OCI. The same OCI header as sent on the last OCI threshold change or validity period expiry is sent. <ul style="list-style-type: none"> <li>Default value: 2000 milliseconds</li> <li>Range: 2000 to 3600000 milliseconds</li> </ul> <b>Note:</b> OCI is sent to peer NFs only if there is a message for that NF. |
| SCP OCI Recovery Validity Period | This field indicates the validity period to send OCI headers to peers when SCP recovers from an overloaded state. SCP sends OCI to peers with reduction metric as 0. <ul style="list-style-type: none"> <li>Default value: 3600 seconds</li> <li>Range: 5 to 3600 seconds</li> </ul>                                                                                                                                                                                                                                                                                                                              |
| Next Hop SCP OCI Enabled         | This option enables or disables the OCI feature between SCP instances and SCP scope OCI. By default, this option is enabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Next Hop SCP OCI Rule Name       | If the Next Hop SCP OCI Enabled option is enabled, the OCI feature enforcement is done based on the ociConfigRule REST API configuration with the name provided as the value for this option. By default, this value is NextHopScpOciRuleName.                                                                                                                                                                                                                                                                                                                                                                    |
| Next Hop SEPP OCI Enabled        | This option enables or disables OCI enforcement between SCP and SEPP interfaces and SEPP scope OCI. By default, this option is enabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Table 4-6 (Cont.) Configure OCI**

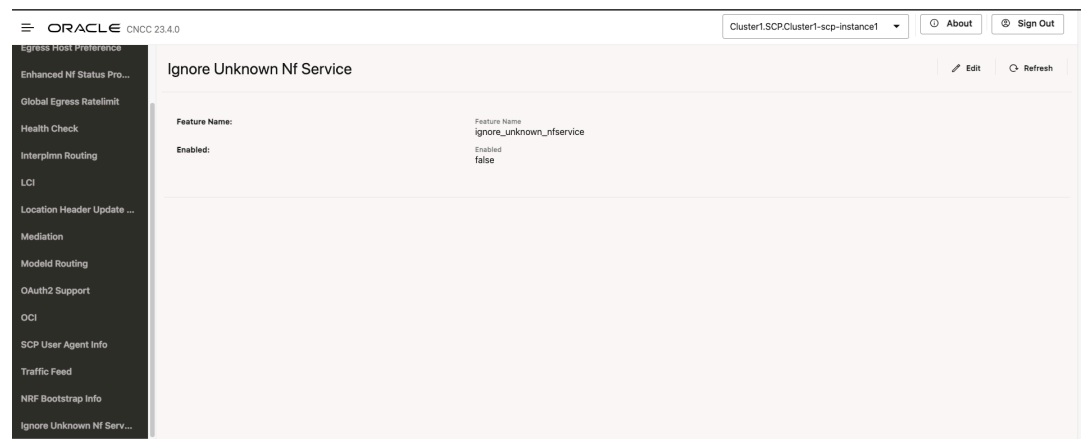
| Field Name                  | Description                                                                                                                                                                                                                                                                   |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Next Hop SEPP OCI Rule Name | If the Next Hop SEPP OCI Rule Name option is enabled, the OCI feature enforcement is done based on the ociConfigRule REST API configuration with the name provided as the value for this option.<br>By default, this value is NextHopSeppOciRuleName.                         |
| scpOciConveyance            | If this option is set to true, SCP starts conveying the 3gpp-Sbi-Oci header based on self-overload information.<br>By default, this option is enabled.                                                                                                                        |
| unknownPeer<br>• request    | If this field is set to true, SCP starts conveying the 3gpp-Sbi-Oci header based on self-overload information to requests to unknown peers. For unknown peers, identification of peer NFs is done based on the message request's FQDN.<br>By default, this option is enabled. |
| unknownPeer<br>• response   | If this option is set to true, SCP starts conveying the 3gpp-Sbi-Oci header based on self-overload information to responses to unknown peers. If this parameter is set to true, SCP adds self-OCI header in every response message.<br>By default, this option is disabled.   |

- Click **Save**.

### 4.2.1.16 Configuring Enhanced NFProfile Processing

Perform the following procedure to enable the NFProfile Processing enhancements supported by SCP using Cloud Native Configuration Console (CNC Console).

- In the left navigation pane, click the **Ignore Unknown Nf Service** tab.  
The Ignore Unknown Nf Service page appears.

**Figure 4-21 Ignore Unknown Nf Service**

- On the Ignore Unknown Nf Service page, click the **Edit** icon.
- In the **Edit Ignore Unknown Nf Service** section, set **Enabled** to true.  
By default, this option is set to false.

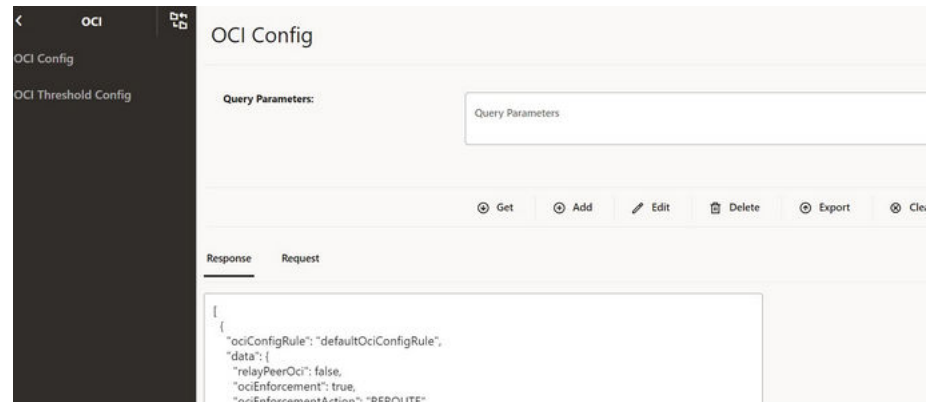
## 4.2.2 Configuring OCI

Perform the following procedure to retrieve, modify, and remove OCI configuration data.

- From the left navigation pane, click the **SCP** tab, and then click the **OCI** tab.

2. From the left navigation pane, click the **OCI Config** tab.
3. In the OCI Config section, click **Get** to retrieve OCI configuration data based on the query parameters.

Figure 4-22 OCI Config



4. To add a new request, click **Add** and enter the request body information in the **Request** field.
5. Click **Submit**.

The request body message appears in the **Response** field.

To edit, export, delete, or clear the data, click the required buttons as described in the following table:

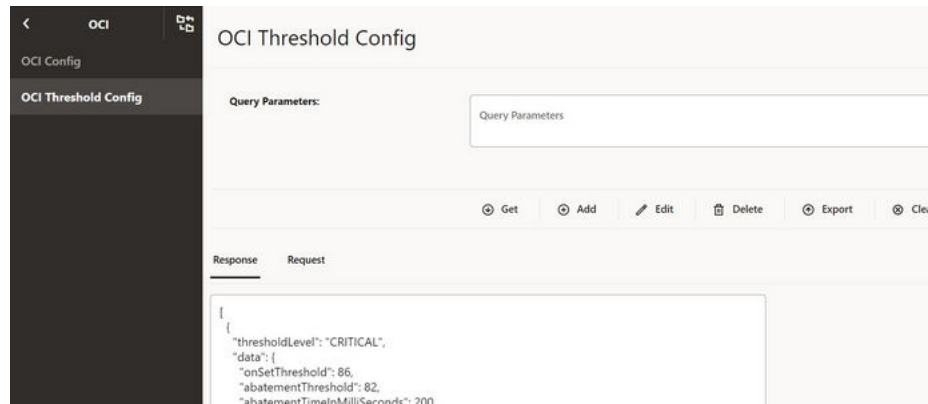
Table 4-7 Button and Field Descriptions of OCI

| Button and Field Names  | Description                                                                                                   |
|-------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Query Parameters</b> | Allows to enter parameters to retrieve, add, and update OCI configuration data based on the query parameters. |
| <b>Get</b>              | Retrieves OCI configuration data. You can modify this data using the <b>Edit</b> button.                      |
| <b>Add</b>              | Adds new message requests in the <b>Request</b> field.                                                        |
| <b>Edit</b>             | Modifies any existing data by updating mandatory query parameters in the <b>Query Parameters</b> field.       |
| <b>Delete</b>           | Removes any message request.                                                                                  |
| <b>Export</b>           | Exports existing records in the JSON format.                                                                  |
| <b>Clear</b>            | Refreshes the existing screen by removing the data.                                                           |

## 4.2.3 Configuring OCI Threshold Levels

Perform the following procedure to retrieve, modify, and remove OCI threshold configuration data.

1. From the left navigation pane, click the **SCP** tab, and then click the **OCI** tab.
2. From the left navigation pane, click the **OCI Threshold Config** tab.
3. In the OCI Threshold Config section, click **Get** to retrieve OCI threshold configuration data based on the query parameters.

**Figure 4-23 OCI Threshold Config**

4. To add a new request, click **Add** and enter the request body information in the **Request** field.
5. Click **Submit**.

The request body message appears in the **Response** field.

To edit, export, delete, or clear the data, click the required buttons as described in the following table:

**Table 4-8 Button and Field Descriptions of OCI Threshold Configuration**

| Button and Field Names  | Description                                                                                                             |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Query Parameters</b> | Allows to enter parameters to retrieve, add, and update OCI threshold configuration data based on the query parameters. |
| <b>Get</b>              | Retrieves OCI threshold configuration data. You can modify this data using the <b>Edit</b> button.                      |
| <b>Add</b>              | Adds new message requests in the <b>Request</b> field.                                                                  |
| <b>Edit</b>             | Modifies any existing data by updating mandatory query parameters in the <b>Query Parameters</b> field.                 |
| <b>Delete</b>           | Removes any message request.                                                                                            |
| <b>Export</b>           | Exports existing records in the JSON format.                                                                            |
| <b>Clear</b>            | Refreshes the existing screen by removing the data.                                                                     |

## 4.2.4 Viewing cnDBTier APIs in CNC Console

Perform the following procedure to view the cnDBTier version, status of cnDBTier clusters, and georeplication status on the CNC Console.

### **Note**

The following cnDBTier APIs are read only.

1. From the left navigation pane, click the **SCP** tab, and then click the **cnDBTier** tab.
2. Click the **Backup List** to view the list of completed backups along with Backup ID, Backup size, and Creation Timestamp.  
The **Backup List** screen is displayed.

**Table 4-9 Backup List**

| Fields              | Description                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------|
| Backup Details      | This field displays information such as backup Id, backup size, and backup creation timestamp. |
| Site Name           | This field displays the name of the current site to which SCP is connected.                    |
| Backup Id           | This field displays the ID of the stored backup.                                               |
| Backup Size (bytes) | This field displays the size of the stored backup.                                             |
| Creation TimeStamp  | This field displays the time recorded when the backup was stored.                              |

3. Click the **cnDBTier Version** to view the version.

**Table 4-10 cnDBTier Version Attributes**

| Fields           | Description                                             |
|------------------|---------------------------------------------------------|
| cnDBTier Version | This field displays the cnDBTier version.               |
| NDB Version      | This field displays the network database (NDB) version. |

4. Click the **Database Statistics Report** to view the available database.

**Table 4-11 Database Statistics Report**

| Fields                    | Description                                                             |
|---------------------------|-------------------------------------------------------------------------|
| Database Count            | This field displays the number of available database.                   |
| Database Tables Count     | This field displays the available database names and their table count. |
| Database Name             | This field displays the database name.                                  |
| Table Count               | This field displays the table count for each database.                  |
| Database Table Rows Count | This field displays the table rows present in each table.               |

Click on **View** icon available next to the database name to view the **View Database Table Rows Count** screen.

**Table 4-12 View Database Table Rows Count**

| Fields        | Description                                                                   |
|---------------|-------------------------------------------------------------------------------|
| Database Name | This field displays the database name.                                        |
| Tables        | This field displays the table names and the corresponding rows in each table. |
| Table Name    | This field displays the table name.                                           |
| Row Count     | This field displays the table rows present in each table.                     |

5. Click the **Geo Replication Status** to view the local site and remote site name to which SCP is connected.

**Table 4-13 GeoReplication Status**

| Fields                     | Description                                                                                                                                                                  |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local Site Name            | This field displays the local site name to which SCP is connected.                                                                                                           |
| Remote Site Name           | This field displays the remote site name.                                                                                                                                    |
| Replication Status         | This field displays the replication status with corresponding sites.                                                                                                         |
| Seconds Behind Remote Site | This field displays the number of seconds that the last record read by the local site is behind the latest record written by the remote site for all the replication groups. |

- a. Click the **View** icon in the **Actions** menu to view the **View Geo Replication Status** screen.

**Table 4-14 Geo Replication Status**

| Fields                       | Description                                                                                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Replication Group Delay      | This field displays the number of seconds that the last record read by the local site is behind the latest record written by the remote site for individual replication groups. |
| Replication Channel Group Id | This field displays the ID of the replication channel group.                                                                                                                    |

- b. Click the **View** icon to view the **Replication Group Delay** attributes.

**Table 4-15 View Replication Group Delay**

| Fields                | Description                                                                     |
|-----------------------|---------------------------------------------------------------------------------|
| Channel Details       | This field displays the channel details such as Remote Replication IP and Role. |
| Remote Replication IP | This field displays the IP of the remote replication channel.                   |
| Role                  | This field displays the role of the replication channel IP.                     |

6. Click the **HeartBeat Status** to view the connectivity between local site and remote site name to which SCP is connected.

**Table 4-16 HeartBeat Status Details**

| Fields                       | Description                                                                                                                      |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Site Name                    | This field displays the name of the current site to which SCP is connected.                                                      |
| HeartBeat Details            | This field displays information such as the remote site name, heartbeat status, heartbeat lag, and replication channel group id. |
| Remote Site Name             | This field displays the remote site name.                                                                                        |
| Heartbeat Status             | This field displays the connectivity status with corresponding sites.                                                            |
| Heartbeat Lag                | This field displays the lag or latency in seconds it took to synchronize between sites.                                          |
| Replication Channel Group Id | This field displays the ID of the replication channel group.                                                                     |

7. Click the **Local Cluster Status** to view the local cluster status for the current site:

**Table 4-17 Local Cluster Status**

| Fields         | Description                                                                 |
|----------------|-----------------------------------------------------------------------------|
| Site Name      | This field displays the name of the current site to which SCP is connected. |
| Cluster Status | This field displays the local cluster status for the current site.          |

8. Click the **On Demand Backup** to create a new backup and view the status of initiated on-demand backups.

**Table 4-18 On Demand Backup Details**

| Fields                 | Description                                                                 |
|------------------------|-----------------------------------------------------------------------------|
| Site Name              | This field displays the name of the current site to which SCP is connected. |
| DR Status              | This field displays the status of DR.                                       |
| Backup Id              | This field displays the ID of the stored backup.                            |
| Backup Status          | This field displays the status of backup.                                   |
| Remote Transfer Status | The field displays the status of remote transfer.                           |
| Initiate Backup        | The field displays whether the backup is initiated or not.                  |

- a. Click the **Edit** icon.  
The **Edit** On Demand Backup screen appears.

**Note**

The **Edit** mode is available only for Initiate Backup.

- b. Enable the Initiate Backup option click **Save**.  
A confirmation message "Save successfully" appears.
- c. Click the **Cancel** to navigate back to the On Demand Backup screen.
- d. Click the **Refresh** to reload the On Demand Backup screen.

## 4.2.5 Configuring NRF SRV

Perform the following procedure to configure NRF using DNS SRV Resolution.

1. From the left navigation pane, navigate to **SCP** and click the **NRF SRV Configuration** tab.
2. In the NRF SRV FQDN section, click the **Add** button to create the new NRF SRV configuration for the given NRF SRV FQDN.  
You can configure the NRF configurations at run time, and this NRF SRV FQDN shall be mapped to target NRF FQDNs. SCP uses this NRF SRV FQDN to query the DNS SRV server to get the actual target NRF FQDNs. NRF SRV FQDN



**Figure 4-24 Add NRF SRV Configuration**

The screenshot shows the 'Add NRF SRV Configuration' interface. On the left is a dark sidebar with navigation links: Routing Options, Routing Config Set, Routing Options Configura..., SBI Message Priority, SCP Features, SCP Profile, SCP Service Configurat..., SEPP Info, Service Groups, Topology Source Info, Traffic Feed, Upgrade Status, **NRF SRV Configuration**, SCP Feature Status, and NfinstanceId And Servicel... The main area is titled 'Add NRF SRV Configuration'. It contains the following fields: 'NRF SRV FQDN' (text input), 'NF SetId List' (text input), 'Perform Subscription' (toggle switch), 'Perform Audit' (toggle switch), 'Register Scp' (toggle switch), 'ApiPrefix' (text input), 'Scheme' (dropdown menu), and a 'PLMN List' table. The table has columns for 'MCC' and 'MNC', each with a dropdown arrow, and an 'Add' button. Below the table, it says 'No data to display.'

- To configure the NRF SRV, enter the input for the following fields:

**Table 4-19 NRF SRV Configuration**

| Field Name                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NF SetId List</b>        | This is the SetId list for this NRF SRV configuration.<br>You can configure multiple nfSetIds, but the NRF profile and rule creation will only take into account the nfSetId from the 0th index.<br>This setId must be unique for each NRF SRV configuration; that is, this setId must not be present in any other NRF SRV configuration.                                                                                                                                                                               |
| <b>Perform Subscription</b> | This field allows to decide whether NRF from this NRF SRV should be used for a subscription or not.<br>The possible values are true or false.                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Perform Audit</b>        | This field allows to decide whether NRF from this NRF SRV should be used for a audit or not.<br>The possible values are true or false.                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Register SCP</b>         | This field allows to decide whether to register SCP with the NRF from the NRF Set.<br>The possible values are true or false.                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Scheme</b>               | This field is used for the URI Scheme. The supported value is http/https.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>PLMN List</b>            | This field indicates the list of NRFs serving Public Land Mobile Network (PLMN). A PLMN has a unique PLMN code, which consists of a MCC (Mobile Country Code) and an MNC (Mobile Network Code).<br>Click the <b>Add</b> button to add MCC and MNC, respectively.                                                                                                                                                                                                                                                        |
| <b>Versions</b>             | This field lists the NFServiceVersion.<br>Configuring multiple API versions is permissible, but at least one entry in the version list must have its apiVersionInUri set to "v1." This is because SCP currently utilizes "v1" for its self-generated requests towards NRF. <ul style="list-style-type: none"> <li>Click the <b>Add</b> button to add NFServiceVersion.</li> <li>The supported value of apiVersionInUri is v1/v2.</li> <li>The apiFullVersion should be in format x.y.z., for example, 1.0.0.</li> </ul> |
| <b>apiPrefix</b>            | This field is used in the URI while communicating with NRF.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

Table 4-19 (Cont.) NRF SRV Configuration

| Field Name             | Description                                                                                                                                                                                |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>serviceNames</b>    | Indicates the service name of the NRF SRV configuration.<br>The nnrf-nfm and nnrf-disc are mandatory for NRF SRV configurations.<br>The supported value is nnrf-nfm/nnrf-disc/nnrf-oauth2. |
| <b>isInterPlmnFqdn</b> | This field allows you to choose whether or not to map the NRF from this NRF SRV resolution to the InterPlmn Fqdn.                                                                          |

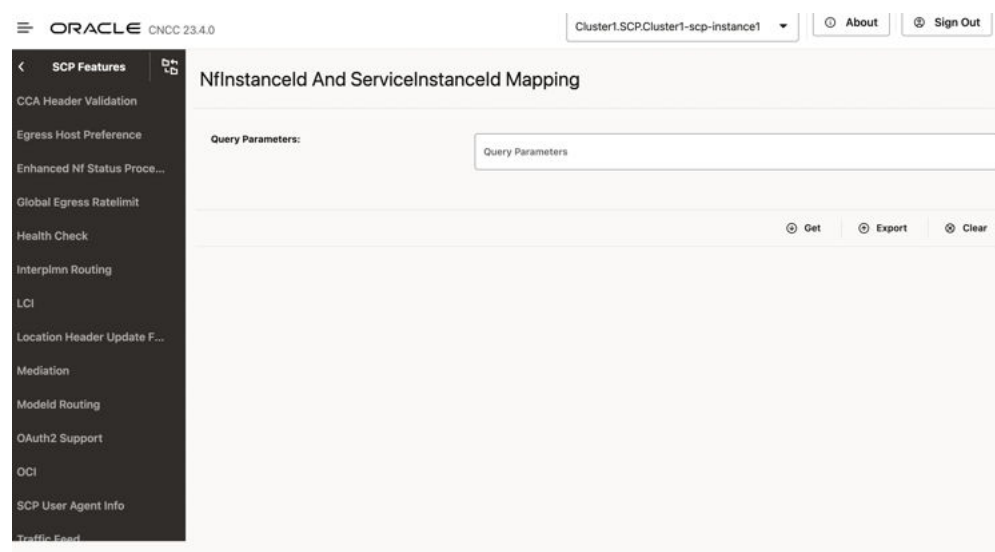
4. In the NRF SRV FQDN section, click the **Edit** icon to update the existing NRF SRV configuration.
5. Click **Save**.

### 4.2.5.1 Mapping NFinstanceId and ServiceInstanceId

Perform the following procedure to map the NRF FQDN InstanceId.

1. In the left navigation pane, click the **SCP** tab, and then click the **SCP Features** tab.
2. From the SCP Features list, click **NFinstanceId And ServiceInstanceId Mapping**.
3. In the NFinstanceId And ServiceInstanceId Mapping section, click **Get** to retrieve the NRF FQDN and corresponding instanceId mapping details.

Figure 4-25 NFinstanceId And ServiceInstanceId Mapping



4. To retrieve, export, or clear the data, click the required buttons as described in the following table:

Table 4-20 Buttons and Descriptions of Mapping NRF FQDN InstanceId

| Button and Field Names  | Description                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------------------|
| <b>Query Parameters</b> | Allows to enter parameters to retrieve and update data required for mapping NRF FQDN InstanceId. |

Table 4-20 (Cont.) Buttons and Descriptions of Mapping NRF FQDN InstanceId

| Button and Field Names | Description                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Get</b>             | Retrieves the NRF FQDN and corresponding instanceId mapping details. You can modify this data using the <b>Edit</b> button. |
| <b>Export</b>          | Exports existing records in the JSON format.                                                                                |
| <b>Clear</b>           | Refreshes the existing screen by removing the data.                                                                         |

## 4.2.6 Configuring NRF

Perform the following procedure to configure NRF preferred by SCP for access token requests.

1. From the left navigation pane, click the SCP tab, and then click the NRF Configuration tab.
2. In the NRF CONFIGURATION section, click **Get** to retrieve NRF configuration information.

Figure 4-26 NRF Configuration

The screenshot displays the 'NRF CONFIGURATION' page. At the top, there's a header 'NRF CONFIGURATION'. Below it, a 'Query Parameters' section contains a text input field labeled 'Query Parameters'. To the right of this field are four buttons: 'Get', 'Edit', 'Export', and 'Clear', each with a circular icon. Below the buttons, there are two tabs: 'Response' and 'Request'. The 'Request' tab is currently selected, showing a large empty text area for configuration details.

3. To edit, export, or clear the data, click the required buttons as described in the following table:

Table 4-21 Button and Field Descriptions of NRF Configuration

| Button and Field Names  | Description                                                                                             |
|-------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Query Parameters</b> | Allows to enter parameters to retrieve, add, and update NRF configuration data.                         |
| <b>Get</b>              | Retrieves NRF configurations. You can modify this data using the <b>Edit</b> button.                    |
| <b>Edit</b>             | Modifies any existing data by updating mandatory query parameters in the <b>Query Parameters</b> field. |
| <b>Export</b>           | Exports existing records in the JSON format.                                                            |
| <b>Clear</b>            | Refreshes the existing screen by removing the data.                                                     |

### Note

This configuration is only applicable to the OAuth service.

## 4.2.7 Configuring Upgrade and Rollback Event

Perform the following procedure to fetch upgrade and rollback event information.

1. From the left navigation pane, click the **SCP** tab, and then click the **Upgrade Status** tab.
2. On the Upgrade Status page, the following columns display upgrade and rollback events:

**Figure 4-27 Upgrade and Rollback Events**

**Table 4-22 Upgrade and Rollback Events**

| Column Name               | Description                                                                                                                                                                                                                                               |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Service Name</b>       | Displays the names of the services, such as SCPC-Audit, SCPC-Configuration, SCPC-Notification, and so on.                                                                                                                                                 |
| <b>Event</b>              | Displays the names of the upgrade and rollback events, such as Pre_Upgrade_Started, Pre_Upgrade_Completed, Pre_Upgrade_Failed, and so on.                                                                                                                 |
| <b>Source Release</b>     | Displays the source release version for performing upgrade and rollback. The convention to identify a release is as follows: <ul style="list-style-type: none"> <li>• 1.12.0 is identified as 101200</li> <li>• 1.14.0 is identified as 101400</li> </ul> |
| <b>Target Release</b>     | Displays the target release version for performing upgrade and rollback. The convention to identify a release is as follows: <ul style="list-style-type: none"> <li>• 1.15.0 is identified as 101500</li> <li>• 22.1.0 is identified as 221000</li> </ul> |
| <b>Creation Timestamp</b> | Displays the time of creation of the event, for example, creationTimestamp": "2021-05-26T01:17:15.000+00:00                                                                                                                                               |

## 4.2.8 OAuth2.0 Configurations

This section provides information about configuring access token granularity and requests for NF types or NF service instances.

You must log in to the CNC Console while performing the procedures described in the subsequent subsections. Using these procedures, you can perform the followings tasks:

- Configure access token granularity
- Configure OAuth2.0 Local PLMN

### 4.2.8.1 Configuring Access Token Granularity

Perform the following procedure to configure access token granularity and access token requests for NFType, specific NF, or NF instance ID.

1. From the left navigation pane, click the SCP tab, and then click the OAuth Services tab.
2. From the left navigation pane, click the **Access Token Granularity Configuration** tab.
3. In the Access Token Granularity Configuration section, click **Get** to retrieve access token granularity configurations data based on the query parameters.

**Figure 4-28 Access Token Granularity**

Access Token Granularity Configuration

Query Parameters:

Query Parameters

Get Add Edit Delete Export Clear

Response Request

```
{
  "ruleName": "Config1",
  "data": {
    "requesterPimnlds": [
      {
        "mcc": "325",
        "mnc": "13"
      },
      {
        "mcc": "326",
        "mnc": "14"
      }
    ]
  }
}
```

4. To add a new request, click **Add** and enter the request body information in the **Request** field.
5. Click **Submit**.  
The request body message appears in the **Response** field.
6. To edit, export, delete, or clear the data, click the required buttons as described in the following table:

**Table 4-23 Button and Field Descriptions of Access Token Granularity**

| Button and Field Names  | Description                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Query Parameters</b> | Allows to enter parameters to retrieve, add, and update access token granularity configuration data based on the query parameters. |
| <b>Get</b>              | Retrieves access token granularity configuration data. You can modify this data using the <b>Edit</b> button.                      |
| <b>Add</b>              | Adds new message requests in the <b>Request</b> field.                                                                             |
| <b>Edit</b>             | Modifies any existing data by updating mandatory query parameters in the <b>Query Parameters</b> field.                            |
| <b>Delete</b>           | Removes any message request.                                                                                                       |
| <b>Export</b>           | Exports existing records in the JSON format.                                                                                       |
| <b>Clear</b>            | Refreshes the existing screen by removing the data.                                                                                |

## 4.2.8.2 Configuring OAuth2.0 Local PLMN Required

Perform the following procedure to configure local PLMN OAuth2.0.

1. From the left navigation pane, click the SCP tab, and then click the OAuth Services tab.
2. From the left navigation pane, click the OAuth2Required Configuration tab.
3. In the OAuth2Required Configuration section, click **Get** to retrieve OAuth2Required configurations data based on the query parameters.

**Figure 4-29 OAuth2Required Configuration**

4. To add a new request, click **Add** and enter the request body information in the **Request** field.
5. Click **Submit**.

The request body message appears in the **Response** field.

6. To edit, export, delete, or clear the data, click the required buttons as described in the following table:

**Table 4-24 Button and Field Descriptions of OAuth2Required Configuration**

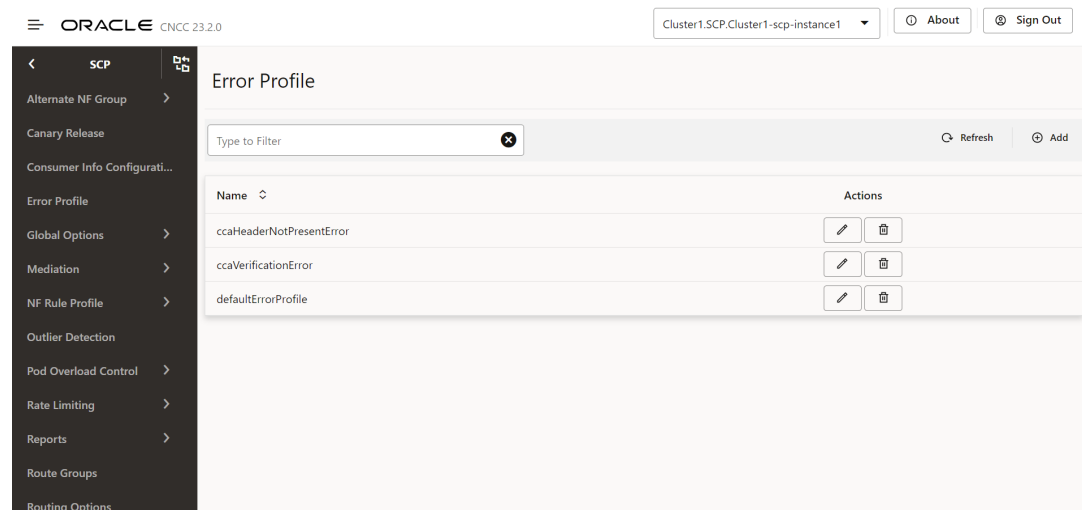
| Button and Field Names  | Description                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Query Parameters</b> | Allows to enter parameters to retrieve, add, and update OAuth2Required configuration data based on the query parameters. |
| <b>Get</b>              | Retrieves OAuth2Required configuration data. You can modify this data using the <b>Edit</b> button.                      |
| <b>Add</b>              | Adds new message requests in the <b>Request</b> field.                                                                   |
| <b>Edit</b>             | Modifies any existing data by updating mandatory query parameters in the <b>Query Parameters</b> field.                  |
| <b>Delete</b>           | Removes any message request.                                                                                             |
| <b>Export</b>           | Exports existing records in the JSON format.                                                                             |
| <b>Clear</b>            | Refreshes the existing screen by removing the data.                                                                      |

## 4.2.9 Configuring Error Profile

Perform the following procedure to configure different error profiles, which can be used to build "ProblemDetails" sent in the response body to the consumer.

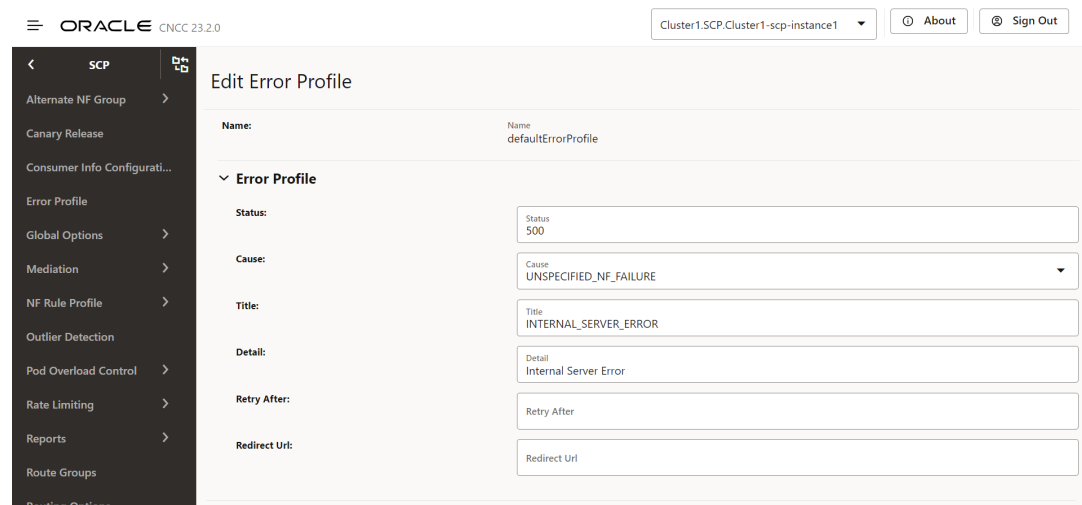
1. From the left navigation pane, click the **SCP** tab, and then click the **Error Profile** tab.

**Figure 4-30 Error Profile**



2. Click **Edit** icon from the **Actions** column for the error profiles that must be modified. The **Edit Error Profile** screen appears.

**Figure 4-31 Edit Error Profile**



3. If the required cause is not available in the **Cause** drop-down list, select **CUSTOM** to customize the cause:

Figure 4-32 Customize the Cause

The screenshot shows the 'Edit Error Profile' interface. On the left is a dark sidebar with a navigation menu. The main area is light gray and contains the form. The form has a header 'Edit Error Profile' and a sub-header 'Error Profile'. Below this are several input fields: 'Name' (defaultErrorProfile), 'Status' (500), 'Cause' (CUSTOM), 'Custom Cause' (Custom Cause), 'Title' (INTERNAL\_SERVER\_ERROR), 'Detail' (Internal Server Error), 'Retry After', and 'Redirect Url'. A 'Required' label is visible next to the 'Custom Cause' field.

4. Make the required modifications for the following parameters:

Table 4-25 Edit Error Profile

| Field        | Description                                                                                      |
|--------------|--------------------------------------------------------------------------------------------------|
| Status       | HTTP Status Code                                                                                 |
| Cause        | The list of error causes that are specific to the occurrence of the problem.                     |
| Custom Cause | User defined custom cause. This field will be used only if cause field value is set to "CUSTOM". |
| Title        | If this field is null, a standard HTTP status code description is added.                         |
| Detail       | If present, the same data is used; otherwise, the application can add it optionally.             |
| Retry After  | Indicates the number of seconds after client should retry.                                       |
| Redirect URL | Indicates the AbsoluteURL of the resource to which the message is redirected to.                 |

For information about configuring error profiles, see "Configuring Error Profile" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

5. Click **Save**.

## 4.2.10 Configuring Canary Release

Following is the procedure to configure Canary Release parameters:

1. From the left navigation menu, navigate to **SCP** and then select **Canary Release**.
2. Click **Edit** from the **Actions** column for the required service that must be modified. The **Edit Canary Release** Screen appears.



Figure 4-33 Canary Release

SCP

Canary Release

Global Options

Mediation

Message Priority

NF Rule Profile

Rate Limiting

Reports

Routing Options

SCP Profile

Service Groups

Topology Source Info

Canary Release

Type to Filter

Refresh

| Service Name         | Canary Release Flag | API Full Version | Canary Traffic (%) | Actions |
|----------------------|---------------------|------------------|--------------------|---------|
| n5g-eir-eic          | false               | 2.0.0            | 5                  |         |
| namf-comm            | false               | 2.0.0            | 5                  |         |
| namf-evts            | false               | 2.0.0            | 5                  |         |
| namf-loc             | false               | 2.0.0            | 5                  |         |
| namf-mt              | false               | 2.0.0            | 5                  |         |
| nausf-auth           | false               | 2.0.0            | 5                  |         |
| nausf-someprotection | false               | 2.0.0            | 5                  |         |

3. Make the required modifications for the following parameters:
- a. **Canary Release Flag:** Enable/Disable the flag using toggle.

b. **API Release Version:** Provide the release version of the API.

c. **Canary Traffic:** Set the value for the traffic that should be distributed to Canary Release.

Figure 4-34 Edit Canary Release

7.0

AboutSign Out

Edit Canary Release

Help

Service Name:

Service Name

n5g-eir-eic

Canary Release Flag:

☐

API Full Version:

API Full Version

2.0.0

Canary Traffic (%):

Canary Traffic (%)

5

Save

Cancel

For more information about the configuration parameters, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

4. Click **Save**.
5. Click **Refresh** to view the updated values on the screen.

## 4.2.11 Configuring Global Options

Perform the following procedure to configure global options.

### Logging Config

1. From the left navigation menu, navigate to **SCP** and select **Global Options**.
2. Select **Logging Config**.
3. Click **Edit** from the top right side to edit or update Logging Config parameters.

**Figure 4-35 Logging Config**

| Service                   | Application Log Level |                      |
|---------------------------|-----------------------|----------------------|
| scp-cache                 | WARN                  | <a href="#">View</a> |
| scp-nrfproxy              | WARN                  | <a href="#">View</a> |
| scpc-alternate-resolution | INFO                  | <a href="#">View</a> |
| scp-worker                | WARN                  | <a href="#">View</a> |
| scpc-notification         | INFO                  | <a href="#">View</a> |
| scp-nrfproxy-oauth        | WARN                  | <a href="#">View</a> |

4. Select **Service Type** from the drop-down list to select any one of the following service type:
  - **scpc-audit**
  - **scpc-alternate-resolution**
  - **scpc-subscription**
  - **scpc-configuration**
  - **scpc-notification**
  - **scp-worker**
  - **scp-cache**
  - **scp-nrfproxy**
5. Select the **Application Log Level** from the drop-down list to set the constraints of the log. The description of each logging level is as follows:

**Table 4-26 Logging Level**

| Logging Level | Description                                                                                                               |
|---------------|---------------------------------------------------------------------------------------------------------------------------|
| DEBUG         | A log level used for events considered to be useful during software debugging when more granular information is required. |
| INFO          | The standard log level indicating that something happened, the application entered a certain state, and so on.            |

Table 4-26 (Cont.) Logging Level

| Logging Level | Description                                                                                                                                                                                                                                                                                     |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WARN          | Indicates that something unexpected happened in the application, a problem, or a situation that might disturb one of the processes. But that doesn't mean that the application has failed. The WARN level should be used in situations that are unexpected, but the code can continue the work. |
| ERROR         | The log level that should be used when the application reaches an issue preventing one or more functionalities from properly functioning.                                                                                                                                                       |

- Click **Add** provided under **Package Log Level** section to specify the name of the package and its log level.
- Click **Save**.

### Note

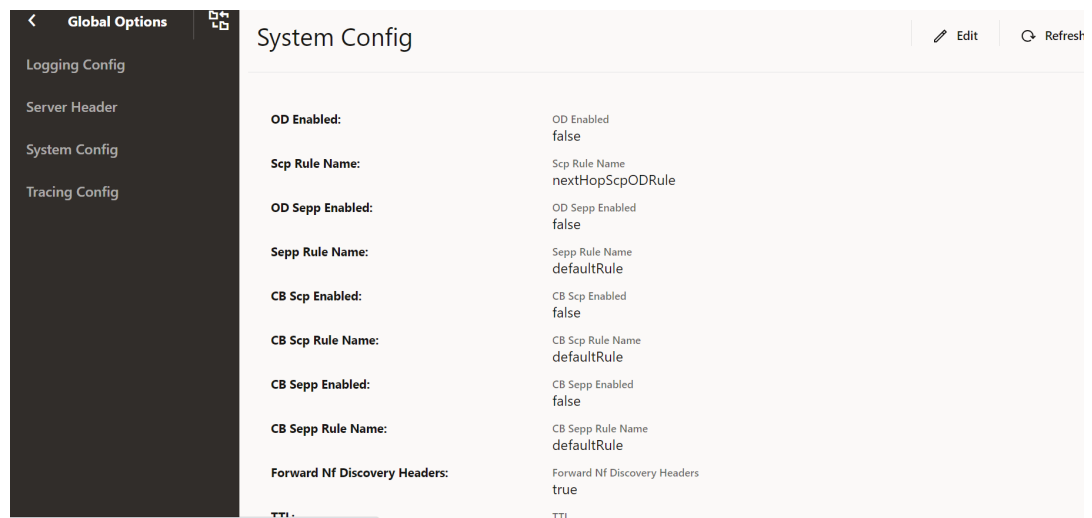
You can also **Edit** and **Delete** the packages under **Package Log Level**.

## System Config

Perform the following procedure to edit the system config parameters.

- From the left navigation menu, navigate to **SCP** and select **Global Options**.
- Select **System Config**.
- Click **Edit** from the top right side to edit or update **System Config** parameters.

Figure 4-36 System Config



- Update the attributes as described in "Configuring SystemOptions" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

**Note**

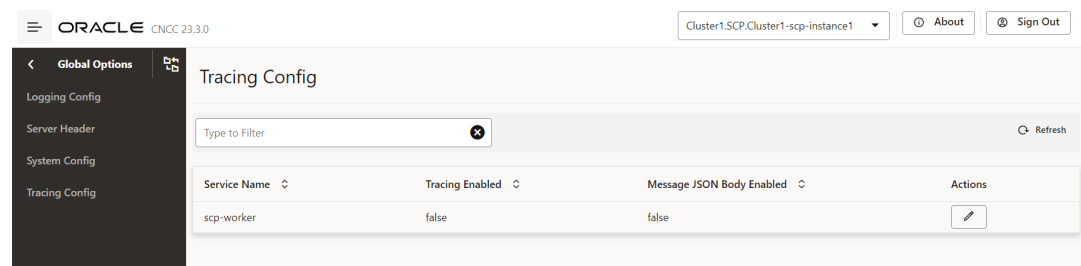
Ensure that **Forward Nf Discovery Headers** is set to true to forward discovery headers to Nexthop SCP as part of the Model D Indirect 5G SBI Communication feature.  
The default value is true.

- Click **Save** after performing the modifications.

**Tracing Config**

Perform the following procedure to edit tracing config options.

- From the left navigation menu, navigate to **SCP** and select **Global Options**.
- Select **Tracing Config**.
- Click **Edit** from the top right side to edit or update **Tracing Config** options.

**Figure 4-37 Tracing Config**

- Set the following switches as required:

- Tracing Enabled**
- Message JSON Body Enabled**

For information about tracing parameters, see "Updating HELM Configurable Parameters with REST APIs" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

- Click **Save** after performing the modifications.

## 4.2.12 Configuring Mediation

Perform the following procedure to configure trigger points for defining the filter criteria for a message to decide whether to invoke mediation or not.

- From the left navigation pane, click the **SCP** tab, and then click the **Mediation** tab. Trigger Points and Routing Options tabs appear.
- To configure trigger points for defining the filter criteria for a message, in the left navigation pane, click the **Trigger Points** tab.
- In the Trigger Points section, click **Add** and configure the fields as described in the following table:

Table 4-27 Trigger Points Field Description

| Field                    | Description                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Group Id                 | Indicates the group ID for which mediation configuration is required.<br>The Mediation configuration for a specific group is applicable to the mediation requests or responses received only from the same group. The HTTP Mediation service consumer NFs, which requires the same mediation rules, can be grouped together using this group ID. |
| Rule Name                | Indicates the unique rule name for each mediation configuration that is consdered as a primary key.                                                                                                                                                                                                                                              |
| Service Name             | Indicates the service of NFType for which mediation configuration is required.                                                                                                                                                                                                                                                                   |
| NF Type                  | Indicates the NFType for which mediation configuration is required.                                                                                                                                                                                                                                                                              |
| Http Methods             | Indicates the HTTP methods such as GET, POST, PUT, PATCH, DELETE,and OPTION.                                                                                                                                                                                                                                                                     |
| Mediation Trigger Points | Indiacates the list of trigger points to be enabled if matches one or more of the following: requestIngress, requestEgress, responseIngress, and responseEgress.                                                                                                                                                                                 |
| Match                    | Indicates the list of match blocks to be satisfied for the rule to be activated.<br>The list of match blocks have OR semantics.<br>Minimum number of blocks = 1<br>Maximum number of blocks = 20                                                                                                                                                 |
| Add                      | Adds HTTP headers and JSON body criteria                                                                                                                                                                                                                                                                                                         |

4. In the Match section, click **Add**.  
The Add Match dialog box appears.

Figure 4-38 Add Match

Add Match

Header:

|                     |          |       |
|---------------------|----------|-------|
| Name ↑↓             | Value ↑↓ | ⊕ Add |
| No data to display. |          |       |

Body:

|                     |          |       |
|---------------------|----------|-------|
| Name ↑↓             | Value ↑↓ | ⊕ Add |
| No data to display. |          |       |

SaveCancel

5. In the Header section, click **Add** to set the header details as follows:
  - **Name:** Enter a name for the header.
  - **Value:** Enter a value of the header.
  - **Match Type:** Select a range type from the **Match Type** drop-down list.
6. In the Range section, if the header type has a numeric value, enter the range of that value in **Start** and **End** fields.
7. Click one of the following buttons:
  - **Remove:** To discard the changes made to the Range section.
  - **Save:** To save the changes.
8. In the Body section, click **Add Body** to set the JSON body details as follows:
  - **Name:** Enter a name for the body.
  - **Value:** Enter a value for the header.
  - **Match Type:** Select a range type from the **Match Type** drop-down list.
9. In the Range section, if the header type has a numeric value, enter the range of that value in **Start** and **End** fields.
10. Click one of the following buttons:
  - **Remove:** To discard the changes made to the Range section.
  - **Save:** To save the changes.
  - **Cancel:** To reset all the fields.

### 4.2.12.1 Configuring Routing Options for Mediation

Perform this procedure to configure routing options with Mediation.

1. From the left navigation pane, click the **SCP** tab, and then click the **Routing Options** tab.
2. In the Routing Options section, click **Edit**.

The Edit Routing Options screen appears.

Figure 4-39 Edit Routing Options

### Edit Routing Options

**App Name:** mediation

▼ **Routing Options**

**Retry:** ☒

**Max Retry Attempts:**

**Response Timeout:**

**Exception Error Responses:**

| Status Code ↕ | Action ↕            | ⊕ Add                                                                                                                                                                               |
|---------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DEFAULT       | continue_processing |  Edit  Delete |

3. In the Routing Options section, set **Retry** to true to enable retry attempt.
4. In the **Max Retry Attempts** field, enter a value to set the number of retry attempts.
5. In the **Response Timeout** field, enter a time interval to respond to a message request.
6. In the Exception Error Responses section, click **Add** to add exception error responses.

This option enables you to send an error message to the consumer NF or process the message request to the producer NF when the Mediation service is unavailable. By default, this status code is DEFAULT.

7. In the Add Exception Error Responses dialog box, configure the fields as described in the following table:

Table 4-28 Add Exception Error Responses

| Field              | Description                                                                                                                                                                                                                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Status Code</b> | Indicates the list of status codes that matches with the status code received from the application, the required action specified by action field is taken.<br>This value can be any HTTP Status Codes, HTTP Status with other defined custom status (RESPONSE_TIMEOUT and CONNECTION_FAILURE)                          |
| <b>Action</b>      | Indicates the action to be taken when the above mentioned status code is received.<br>It can have the following values: <ul style="list-style-type: none"> <li>• senderror: Sends the error code to the consumer NF.</li> <li>• errorcontinueprocessing: Continues processing the message in case of errors.</li> </ul> |
| <b>Error Code</b>  | Indicates configurable error codes to be sent by SCP to consumer NFs.<br>It is a valid HTTP status code or allowed custom code.                                                                                                                                                                                         |
| <b>Error Cause</b> | Indicates the error cause that is specific to the occurrence of the problem.                                                                                                                                                                                                                                            |
| <b>Error Title</b> | Indicates the title of the error.                                                                                                                                                                                                                                                                                       |

Table 4-28 (Cont.) Add Exception Error Responses

| Field             | Description                                                                      |
|-------------------|----------------------------------------------------------------------------------|
| Error Description | Indicates an explanation specific to the occurrence of the problem.              |
| Retry After       | Indicates the retry interval.                                                    |
| Redirect Url      | Indicates the AbsoluteURL of the resource to which the message is redirected to. |

8. Click **Save**.

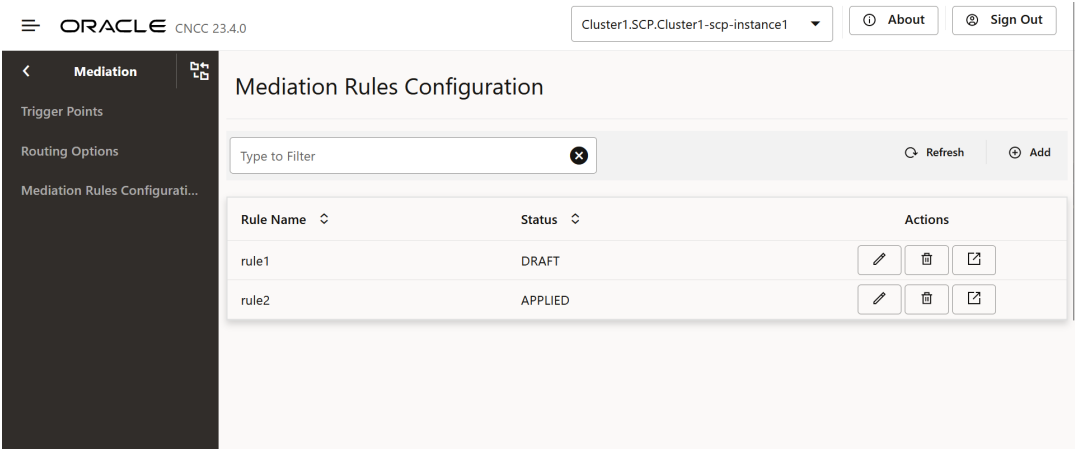
4.2.12.2 Configuring Mediation Rules

Perform this procedure to configure mediation rules.

1. From the left navigation pane, click the **SCP** tab, and then click the **Mediation Rules Configuration** tab.

The Mediation Rules Configuration screen with a list of rules saved in database appears.

Figure 4-40 Mediation Rules Configuration



2. Click the **View** icon to view the mediation rules.
3. Click the **Add** to create a mediation rule.

The Add Mediation Rule screen allows you to configure the fields to create new rules as described in the following table:

Table 4-29 Add Mediation Rules

| Field     | Description                                                                                                                                                                                               |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rule Name | Indicates the name of the rule.<br>This value should be unique.                                                                                                                                           |
| Format    | Indicates the Format in which the rules are defined, such as DRL.                                                                                                                                         |
| Status    | Indicates the status of the rule.<br>It can have the following values: <ul style="list-style-type: none"><li>• DRAFT</li><li>• APPLIED</li></ul> The status must always be in DRAFT to create a new rule. |



Table 4-29 (Cont.) Add Mediation Rules

| Field                 | Description                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Mediation Mode</b> | Indicated whether the rule applies to mediation active or mediation test. <ul style="list-style-type: none"> <li>Mediation Active allows actual messages to be manipulated according to configured mediation rules.</li> <li>Mediation Test executes the mediation rule on message copy instead of the actual message and verifies the behavior of the mediation rule.</li> </ul> |
| <b>Code</b>           | Indicates the configurable drool expression that matches the request/response headers and body sent by SCP.                                                                                                                                                                                                                                                                       |
| <b>State</b>          | Indicates the state. The value of State must be SAVE to create a new rule.                                                                                                                                                                                                                                                                                                        |

**Note**

Special characters are not supported and can lead to a compilation error.

- Click the **Edit** icon to edit the existing rule.

The Edit Mediation Rule screen allows you to configure the fields as described in the following table:

Table 4-30 Edit Mediation Rules

| Field                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Rule Name</b>      | Indicates the name of the rule.<br>This value should be unique.                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Format</b>         | Indicates the Format in which the rules are defined, such as DRL.                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Status</b>         | Indicates the status of the rule.<br>It can have the following values: <ul style="list-style-type: none"> <li>DRAFT</li> <li>APPLIED</li> </ul> The following fields are allowed to be modified in DRAFT status: <b>Mediation Mode</b> , <b>Code</b> , and <b>State</b> . The valid values for state are SAVE, CLONE, COMPILE, and APPLY.<br>The <b>Mediation Mode</b> can only be modified in APPLIED status. The valid values for state are SAVE, CLONE, or DRAFT. |
| <b>Mediation Mode</b> | Indicated whether the rule applies to mediation active or mediation test. <ul style="list-style-type: none"> <li>Mediation Active allows actual messages to be manipulated according to configured mediation rules.</li> <li>Mediation Test executes the mediation rule on message copy instead of the actual message and verifies the behavior of the mediation rule.</li> </ul>                                                                                    |
| <b>Code</b>           | Indicates the configurable drool expression that matches the request/response headers and body sent by SCP.                                                                                                                                                                                                                                                                                                                                                          |
| <b>State</b>          | Indicates the action to be applied to the rule.<br>The default value is SAVE<br><b>Note:</b> The DRAFT state is an invalid transition that could lead to an error.                                                                                                                                                                                                                                                                                                   |
| <b>New Rule Name</b>  | Indicates the new name of the rule.<br>This field appears when a CLONE state is selected.                                                                                                                                                                                                                                                                                                                                                                            |

- Click the **Delete** icon to delete the existing rule.

The status of the rule must always be in DRAFT to delete an existing rule.

- Click **Save**.

## 4.2.13 Configuring NF Rule Profile

Perform the following procedure to configure NF Rule Profile parameters.

1. From the left navigation, navigate to **SCP**, and then click **NF Rule Profile**.
2. In the NF Rule Profile section, click **Add**.

**Figure 4-41 Add NF Rule Profile**

**Add NF Rule Profile** Help

**NF Instance Id:**

NF Instance Id

**NF Type:**

NF Type

**NF Status:**

NF Status

**FQDN:**

FQDN

**Inter PLMN FQDN:**

Inter PLMN FQDN

**IPv4 Addresses:**

IPv4 Addresses

**Priority:**

Priority

**Locality:**

Locality

**servingScope:**

servingScope

**NSI List:**

NSI List

**NF Service Persistence:**

☐

**▼ AUSF Info**

**Group Id:**

Group Id

**Routing Indicators:**

Routing Indicators

**▼ SUPI Ranges**

| Start | End |                    |
|-------|-----|--------------------|
|       |     | <span>⊕ Add</span> |

No data to display.

Add Remove

3. Add the following parameters for all the NF Info:
  - **Group Id:** Identity of the NF info.
  - **Routing Indicators:** List of Routing Indicator information.
  - Click **Add** to add the SUPI Ranges.

- Click **Save** to save the SUPI Ranges.
  - Click **Remove** if you want to remove the NF Info.
  - Click **Add** to add the NF info details.
4. Click **Save** to save the NF Rule Info.
  5. Click **Refresh** to view the updated values on the screen.
  6. To configure a local PLMN, in the PLMN List section, click **Add** and enter the required Mobile Country Code (MCC) and Mobile Network Code (MNC) values in the displayed fields.

#### Viewing or Editing the Default Notification Subscriptions

Perform the following procedure to view or edit the default notification subscription which are present under NF service level or NF profile level:

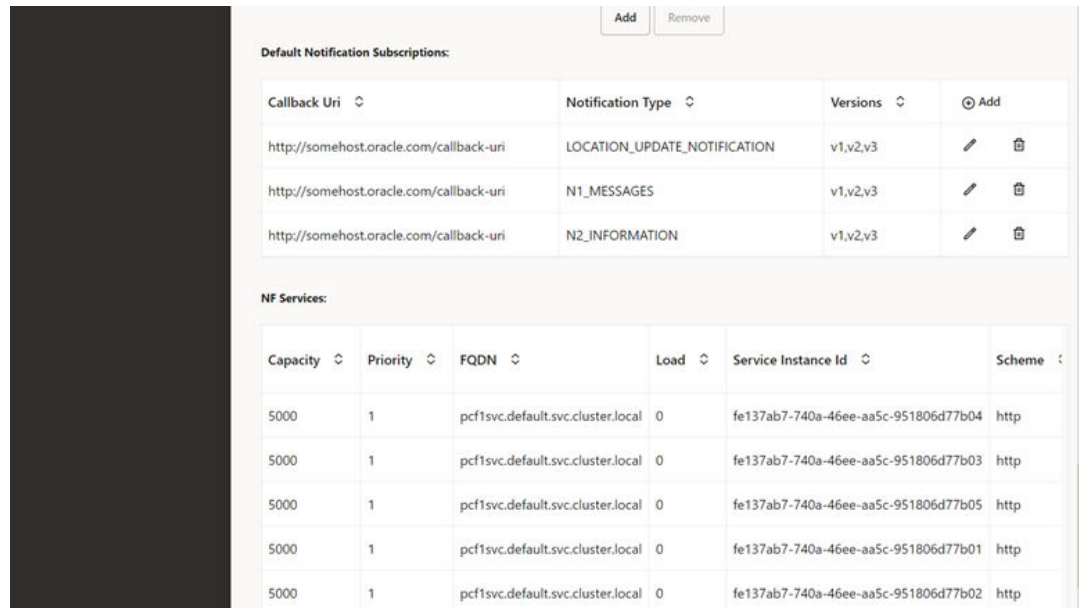
1. From the left navigation, navigate to SCP, and then click **NF Rule Profile Configuration**.
2. In the NF Rule Profile Configuration section, click **Edit** from Actions. The **Edit NF Rule Profile Configuration** screen appears.

**Figure 4-42 Edit NF Rule Profile Configuration**

The screenshot displays the 'Edit NF Rule Profile Configuration' interface. The left sidebar contains a navigation menu with 'NF Rule Profile' and 'NF Rule Profile Data'. The main content area shows the configuration form with the following fields and values:

| Field            | Value                                                  |
|------------------|--------------------------------------------------------|
| NF Instance Id:  | NF Instance Id<br>3faf2bbc-6e4a-2828-a507-a14ef8e1bc7b |
| NF Type:         | NF Type<br>NRF                                         |
| NF Status:       | NF Status<br>REGISTERED                                |
| FQDN:            | FQDN                                                   |
| Inter PLMN FQDN: | Inter PLMN FQDN<br>nrf-5g.mnc215.mcc410.oracle.com     |
| IPV4 Addresses:  | IPV4 Addresses                                         |
| Priority:        | Priority<br>10                                         |
| Capacity:        | Capacity<br>10000                                      |
| Load:            | Load                                                   |

3. In the Default Notification Subscription section, click the **Edit** icon for the required callback URI that must be modified. The **Edit Default Notification Subscription** screen appears.

**Figure 4-43 Default Notification Subscription**


The screenshot displays the 'Default Notification Subscriptions' section in the CNC Console. It features a table with columns for 'Callback Uri', 'Notification Type', 'Versions', and an 'Add' button. Below this is the 'NF Services' section, which includes a table with columns for 'Capacity', 'Priority', 'FQDN', 'Load', 'Service Instance Id', and 'Scheme'.

| Callback Uri                            | Notification Type            | Versions | Add |
|-----------------------------------------|------------------------------|----------|-----|
| http://somehost.oracle.com/callback-uri | LOCATION_UPDATE_NOTIFICATION | v1,v2,v3 |     |
| http://somehost.oracle.com/callback-uri | N1_MESSAGES                  | v1,v2,v3 |     |
| http://somehost.oracle.com/callback-uri | N2_INFORMATION               | v1,v2,v3 |     |

| Capacity | Priority | FQDN                              | Load | Service Instance Id                  | Scheme |
|----------|----------|-----------------------------------|------|--------------------------------------|--------|
| 5000     | 1        | pcf1svc.default.svc.cluster.local | 0    | fe137ab7-740a-46ee-aa5c-951806d77b04 | http   |
| 5000     | 1        | pcf1svc.default.svc.cluster.local | 0    | fe137ab7-740a-46ee-aa5c-951806d77b03 | http   |
| 5000     | 1        | pcf1svc.default.svc.cluster.local | 0    | fe137ab7-740a-46ee-aa5c-951806d77b05 | http   |
| 5000     | 1        | pcf1svc.default.svc.cluster.local | 0    | fe137ab7-740a-46ee-aa5c-951806d77b01 | http   |
| 5000     | 1        | pcf1svc.default.svc.cluster.local | 0    | fe137ab7-740a-46ee-aa5c-951806d77b02 | http   |

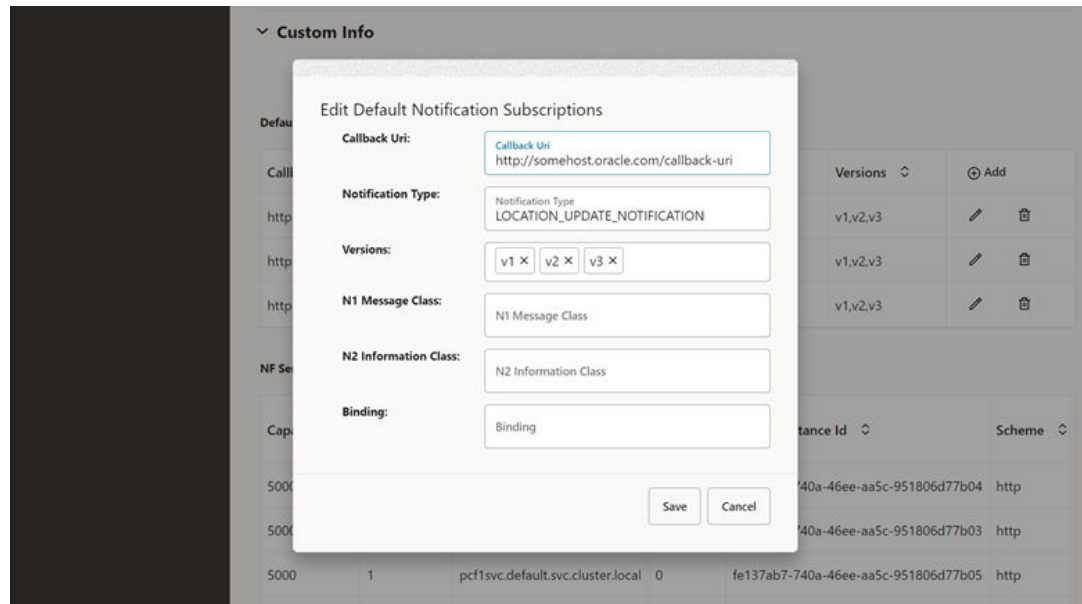
4. Make the required modifications for the following fields:

**Table 4-31 Default Notification Subscriptions**

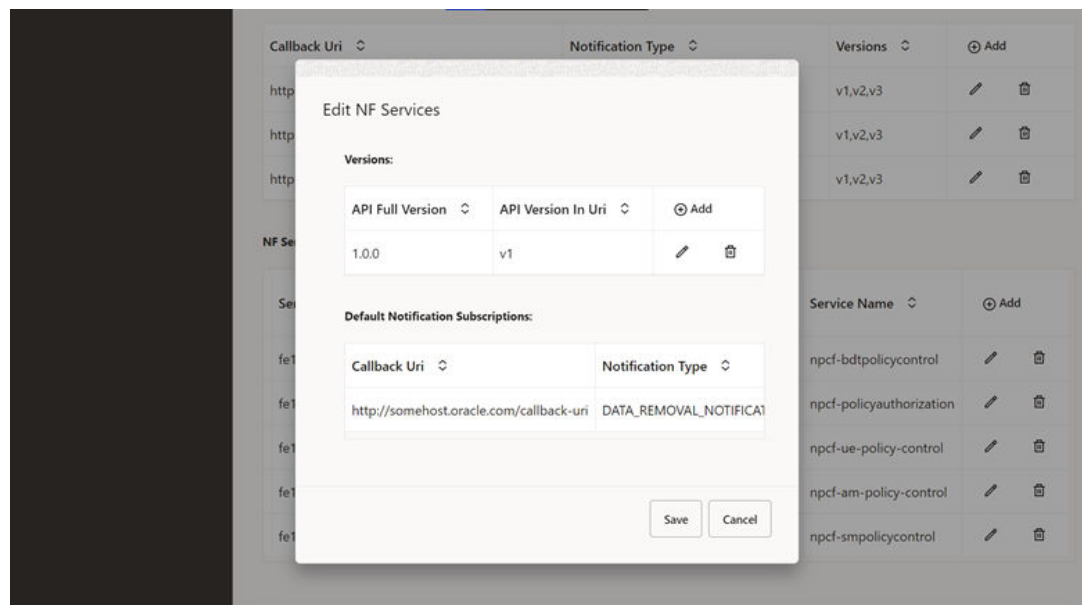
| Attribute name       | Description                                                                                                                                                                                                                                                      |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Callback Uri         | This attribute contains a default notification endpoint to be used by a NF service producer towards an NF service consumer that has not explicitly registered a callback URI with the NF service producer, for example, as a result of an implicit subscription. |
| Notification Type    | Type of notification for which the corresponding callback URI is provided.                                                                                                                                                                                       |
| Versions             | API versions, for example, v1, are supported for the default notification type.                                                                                                                                                                                  |
| N1 Message Class     | If the notification type is N1_MESSAGES, this IE must be present to identify the class of N1 messages to be notified.                                                                                                                                            |
| N2 Information Class | If the notification type is N2_INFORMATION, this IE must be present to identify the class of N2 information to be notified.                                                                                                                                      |
| Binding              | When present, this IE contains the value of the binding indication for the default subscription notification, which is the value part of the 3gpp-Sbi-Binding header. See the note for details.                                                                  |

### Note

When delivering a notification for a default subscription to a specific NF consumer but the latter is not reachable, a NF service producer uses the binding indication for default subscription to reselect an alternative NF service consumer instance. For example, an AMF notifies corresponding uplink LPP or NRPPa messages through a default subscription to the LMF instance that previously sent downlink LPP or NRPPa messages during a location procedure. If the original LMF instance is not reachable, the AMF selects an alternative LMF instance using the binding indication and delivers the notification to the selected LMF instance.

**Figure 4-44 Edit Default Notification Subscriptions**

5. In the NF service section, click the **Edit** icon to edit or add the API full versions.

**Figure 4-45 Edit NF Services**

6. Click **Save** to save the NF Rule Info.
7. Click **Refresh** to view the updated values on the screen.

## 4.2.14 Configuring Routing Options

Perform the following procedure to configure Routing Options parameters.

1. From the left navigation menu, navigate to **SCP**, and then click the **Routing Options** tab.
2. In the Routing Options section, click **Edit** from the Actions column for the required service that must be modified.

The Edit Routing Options screen appears.

**Figure 4-46 Edit Routing Options**

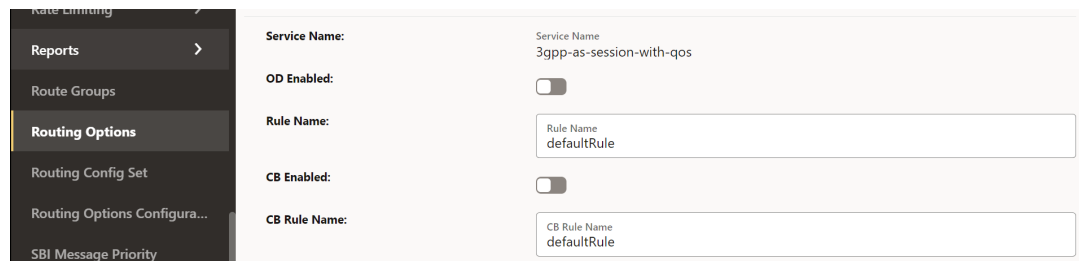
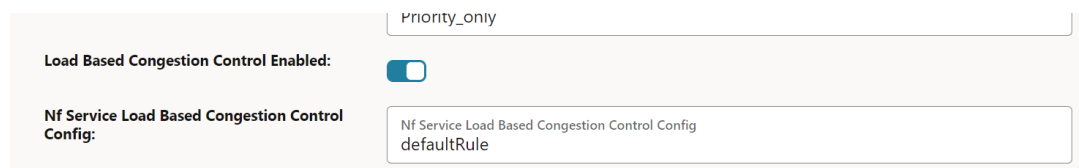


**Figure 4-47 Load based congestion control enabled**



3. Enter or modify the required values as described in "Configuring Routing Options" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

**Note**

Ensure that the following options are set as required to manage the "3gpp-Sbi-Discovery-preferred-locality" header as part of the Model D Indirect 5G SBI Communication feature:

- **Assign Preferred Locality**
- **Override Preferred Locality**
- **Forward Revised Preferred Locality**

4. In the Reroute Condition List, configure the list of error codes for rerouting:
  - Click **Add** to add new status code.
  - Click **Edit** or **Delete** icon to edit or remove any existing error code from the reroute condition list.
5. In the Alternate Route section, set the **Mode** of the specific services as required:
  - a. **NF\_SET**: SCP performs alternate routing based on the Model C Indirect 5G SBI Communication format. This is the default mode.
  - b. **DNS\_SRV**: SCP performs alternate routing based on the DNS SRV query.
  - c. **NF\_SET\_FOLLOWED\_BY\_DNSSRV**: SCP performs alternate routing based on the NF Set, followed by DNS SRV.
  - d. **STATIC\_CONFIG**: SCP performs alternate routing based on the static configuration.
  - e. **NF\_SET\_FOLLOWED\_BY\_STATIC\_CONFIG**: SCP performs alternate routing based on NF Set, and then using static configuration.

6. Click **Save**.
7. Click **Refresh** to view the updated values on the screen.

## 4.2.15 Configuring SCP Profile

Following is the procedure to configure SCP Profile parameters:

### Editing SCP Profile

1. From the left navigation menu, navigate to **SCP** and then select **SCP Profile**.



Figure 4-48 SCP Profile

SCP Profile

FQDN:

FQDN

NF Instance Id:

NF Instance Id

NF Status:

NF Status

NF Type:

NF Type

Locality:

Locality

NF Service Persistence:

NF Service Persistence  
false

Custom Info

Remaining Localities:

Remaining Localities

Serving Localities:

Serving Localities

Mate SCP Info

NF Services

| Capacity | FQDN | Load | Port | Priority | Scheme |
|----------|------|------|------|----------|--------|
| ↕        | ↕    | ↕    | ↕    | ↕        | ↕      |

No data to display.

2. Click **Edit** under **NF Services** section. The **Edit SCP Profile** Screen appears. For more information about configuration parameters, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

 **Note**

To add a new location to Remaining Localities and Serving Localities, type the new location name, and then click **Enter**.

 **Note**

Use **Edit** or **Delete** buttons available in the next column to update or delete the NF services.

### 4.2.16 Configuring Service Groups Parameters

Following is the procedure to configure Service Groups parameters:

1. From the left navigation menu, navigate to **SCP** and then select **SCP Groups**.

**Figure 4-49 Service Groups**

Service Groups

Type to Filter

Refresh

| NF Type | Service Name              | Actions                                                                               |
|---------|---------------------------|---------------------------------------------------------------------------------------|
| CHF     | nchf-convergedcharging    |  |
| CHF     | nchf-spendinglimitcontrol |  |

2. Click **Edit** from **Actions** to modify the service groups. The **Edit Service Groups** Screen appears.

 **Note**

You can enter Primary and Secondary Region Localities in the respective field.

3. Click **Save** to save the **Service Groups**.
4. Click **Refresh** to view the updated values on the screen.

### 4.2.17 Configuring Topology Source Info

Following is the procedure to configure Topology Group Info parameters:

1. From the left navigation menu, navigate to **SCP** and then select **Topology Source Info**.

Figure 4-50 Topology Source Info

Topology Source Info

Help

Type to Filter

Refresh

| NF Type           | Status | Actions |
|-------------------|--------|---------|
| 5G_EIR            | NRF    |         |
| AF                | NRF    |         |
| AMF               | NRF    |         |
| AUSF              | NRF    |         |
| BSF               | NRF    |         |
| CHF               | NRF    |         |
| CUSTOM_ORACLE_SCP | NRF    |         |
| GMLC              | NRF    |         |
| LMF               | NRF    |         |

- 2. Click **Edit** from the **Actions** column for the required service that must be modified. The **Edit Topology Source Info** Screen appears.
- 3. Update the **Status** of the specific **NF Type** in the **Edit Topology Source Info** as per your requirement.

Figure 4-51 Edit Topology Source Info

Edit Topology Source Info

Help

NF Type:

NF Type

5G\_EIR

Status:

Status

LOCAL

Save

Cancel

- 4. Click **Save** to save the **Topology Source Info**.
- 5. Click **Refresh** to view the updated values on the screen.

4.2.18 Fetching Routing Rules

Following is the procedure to retrieve a collection of routing rules configured at SCP:

- 1. From the left navigation menu, navigate to **SCP** and then select **Reports**.
- 2. Select **Routing Rules**. The **Routing Rules** screen is displayed as follows:

**Figure 4-52 Routing Rules**

The screenshot shows the 'Routing Rules' interface. At the top, there's a header 'Routing Rules'. Below it, there's a section labeled 'Query Parameters:' with a text input field containing the text 'Query Parameters'. At the bottom right, there are three buttons: 'Get' (with a downward arrow icon), 'Export' (with an upward arrow icon), and 'Clear' (with an 'X' icon).

3. Enter the **Query Parameters** in the field.
4. Click **Get** to fetch the response data. The data is displayed in the **Response** pane.

**Figure 4-53 Response data**

The screenshot shows the 'Routing Rules' interface with the 'Response' pane active. The 'Query Parameters' field still contains 'Query Parameters'. The 'Get' button is now highlighted with a dashed border. Below the buttons, the 'Response' pane displays a JSON object:

```
[
  {
    "spec": {
      "hosts": [
        "api"
      ],
      "http": [
        {
          "match": {
            "uri": {
              "prefix": "/"
            },
            "app_name": "END_NODE"
          }
        }
      ]
    }
  }
]
```

**Note**

In case the response data is above the configured display limit, a message is displayed stating *"Response data has crossed the configured display limit (5 MB), please click on **Export** to download it as a file."*. Currently, the display limit cannot be modified, it is set to 5 MB.

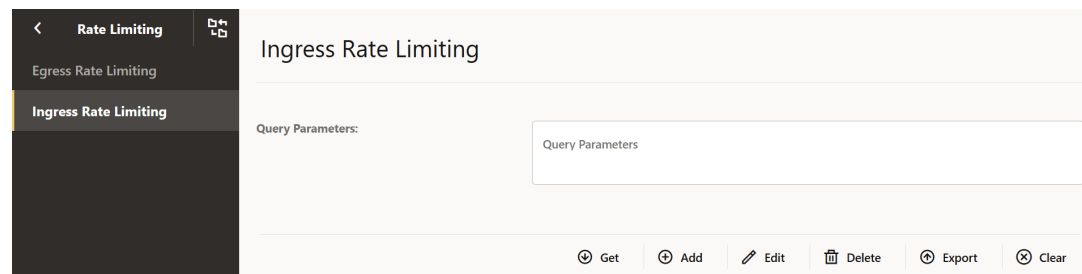
5. Click **Export** to download of the response data file.
6. Click **Clear** to clear the response data.

## 4.2.19 Configuring Ingress Rate Limiting

Following is the procedure to configure ingress rate limiting parameters:

1. From the left navigation menu, navigate to **SCP** and then select **Rate Limiting**.
2. Select **Ingress Rate Limiting**. The screen is displayed.

**Figure 4-54 Ingress Rate Limiting**



3. Enter the **Query Parameters** in the field.
4. Click **Get** to fetch the response data. The data is displayed in the **Response** pane.

### Note

In case the response data is above the configured display limit, a message is displayed stating "Response data has crossed the configured display limit (5 MB), please click on **Export** to download it as a file.". Currently, the display limit cannot be modified, it is set to 5 MB.

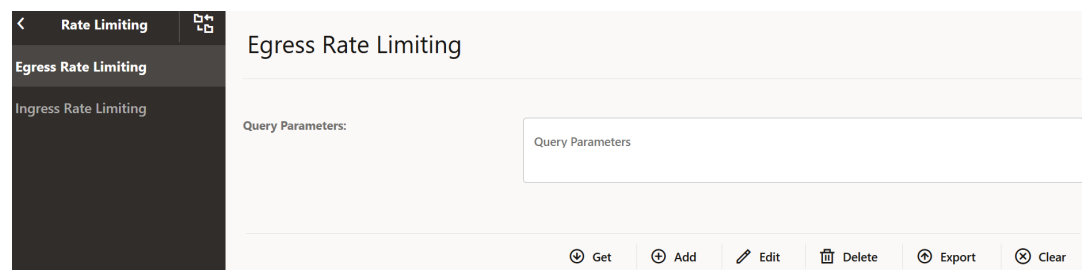
5. Click **Add** to add the ingress rate limiting configuration using the Request Body.
6. Click **Edit** to edit the Request Body of the ingress rate limiting configuration.
7. Click **Delete** to delete the ingress rate limiting configuration based on the query parameters.

## 4.2.20 Configuring Egress Rate Limiting

Following is the procedure to configure egress rate limiting parameters:

1. From the left navigation menu, navigate to **SCP** and then select **Rate Limiting**.
2. Select **Egress Rate Limiting**. The screen is displayed.

**Figure 4-55 Egress Rate Limiting**



3. Enter the **Query Parameters** in the field.
4. Click **Get** to fetch the response data. The data is displayed in the **Response** pane.

#### Note

In case the response data is above the configured display limit, a message is displayed stating "Response data has crossed the configured display limit (5 MB), please click on **Export** to download it as a file.". Currently, the display limit cannot be modified, it is set to 5 MB.

5. Click **Add** to add the egress rate limiting configuration using the Request Body.
6. Click **Edit** to edit the Request Body of the egress rate limiting configuration.
7. Click **Delete** to delete the egress rate limiting configuration based on the query parameters.

## 4.2.21 Configuring Server Header

Perform the following procedure to configure server header parameters to include server header in the producer NF error responses.

1. From the left navigation pane, click the **SCP** tab, and then click the **Global Options** tab.
2. Click the **Server Header** tab.
3. In the Server Header section, click **Edit**.

The Edit Server Header screen appears.

**Figure 4-56 Edit Server Header**

| Configuration Item                        | Value                                               |
|-------------------------------------------|-----------------------------------------------------|
| Enable Enhance Server Header Behavior:    | Enable Enhance Server Header Behavior<br>false      |
| Side Car Proxy Server Header:             | Side Car Proxy Server Header<br>en*y                |
| Add Server Header In Producer Response:   | Add Server Header In Producer Response<br>true      |
| Enable Enhance Server Header Behavior V2: | Enable Enhance Server Header Behavior V2<br>true    |
| Side Car Proxy Server Header Status Code: | Side Car Proxy Server Header Status Code<br>503,4xx |

4. To enable the enhanced server header behavior introduced in SCP 1.15.0, set **Enable Enhance Server Header Behavior** to true.

By default, this option is disabled. For information about server header configurations, see "Configuring Server Header" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

5. In the **Side Car Proxy Server Header** field, enter the strings to identify server header values if error response is generated by side car proxy.

A sample value is envoy.

6. To enable addition of server header in producer NF generated error responses, set **Enable Enhance Server Header Behavior** to true.

By default, this option is disabled.

7. To enable the enhanced server header behavior introduced in SCP 23.1.0, set **Enable Enhance Server Header Behavior V2** to true.
8. Enter status codes in the **Side Car Proxy Server Header Status Code** field.
9. Click **Save**.

## 4.2.22 Configuring Pod Overload Control Policies

Perform the following procedure to configure pod overload policies to control and discard request messages sent to scp-worker.

For more information about pod overload policies, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

1. From the left navigation pane, navigate to **SCP** and click **Pod Overload Control**, and then click **Worker**.
2. To configure Pod Overload Control Policy, in the left navigation pane, click the **Overload Control Policy** tab.
  - a. In the Overload Control Policy section, click **Get** to retrieve the scp-worker Pod Overload Control Policy data configured based on the threshold level.

**Figure 4-57 Overload Control Policy**

Overload Control Policy

Query Parameters:

Get Add Edit Delete Export Clear

Response Request

```
{
  "thresholdLevel": "CRITICAL",
  "data": {
    "cpuOverloadConfig": {
      "onSetThreshold": 95,
      "abatementThreshold": 92,
      "abatementTimeInMilliseconds": 90
    },
    "pendingTransactionOverloadConfig": {
      "onSetThreshold": 95,
      "abatementThreshold": 92,
      "abatementTimeInMilliseconds": 50
    }
  }
}
```

- b. To add a new request, click **Add** and enter the request body information in the **Request** field.
- c. Click **Submit**.  
The request body message appears in the **Response** field.
- d. To edit, export, delete, or clear the data, click the required buttons as described in the following table:

**Table 4-32 Buttons and Field Descriptions on Overload Control Policy page**

| Button and Field Names | Description                                                                                   |
|------------------------|-----------------------------------------------------------------------------------------------|
| Query Parameters       | Allows to enter parameters to retrieve, add, and update different pod overload policies data. |

**Table 4-32 (Cont.) Buttons and Field Descriptions on Overload Control Policy page**

| Button and Field Names | Description                                                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Get</b>             | Retrieve the scp-worker Pod Overload Policy data configured based on the threshold level. You can modify this data using the <b>Edit</b> button. |
| <b>Add</b>             | Adds new message requests in the <b>Request</b> field.                                                                                           |
| <b>Edit</b>            | Modifies any existing data by updating mandatory query parameters in the <b>Query Parameters</b> field.                                          |
| <b>Delete</b>          | Removes any message request.                                                                                                                     |
| <b>Export</b>          | Exports existing records in the JSON format.                                                                                                     |
| <b>Clear</b>           | Refreshes the existing screen by removing the data.                                                                                              |

3. To configure Pod Overload Action Policy, in the left navigation pane, click the **Overload Action Policy** tab.
  - a. In the Overload Action Policy section, click **Get** to retrieve the scp-worker Pod Overload Action Policy data configured based on the threshold level.
  - b. To add a new request, click **Add** and enter the request body information in the **Request** field.
  - c. Click **Submit**.  
The request body message appears in the **Response** field.
  - d. To edit, export, delete, or clear the data, click the required buttons as described in [Table 4-32](#).
4. To configure Pod Overload Discard Policy, in the left navigation pane, click the **Overload Discard Policy** tab.
  - a. In the Overload Discard Policy section, click **Get** to retrieve the scp-worker Pod Overload Discard Policy data configured based on the threshold level.
  - b. To add a new request, click **Add** and enter the request body information in the **Request** field.
  - c. Click **Submit**.  
The request body message appears in the **Response** field.
  - d. To edit, export, delete, or clear the data, click the required buttons as described in [Table 4-32](#).

## 4.2.23 Configuring SBI Message Priority

Perform the following procedure to configure Service Based Interface (SBI) Message Priority parameters supported by the Pod Overload Control feature. You can retrieve SCP\_SBI Message Priority configured in SCP and modify the data. Also, add a new SBI message request.

For more information about SBI Message Priority parameters, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

1. From the left navigation pane, navigate to **SCP** and click the **SBI Message Priority** tab.
2. In the **SBI Message Priority** section, click **Get** to retrieve the SCP\_SBI Message Priority configured in SCP.



**Figure 4-58 SBI Message Priority**

3. To add a new SBI message request, click **Add** and enter the request body information in the **Request** field.
4. Click **Submit**.  
The request body message appears in the **Response** field.
5. To edit, export, delete, or clear the data, click the required buttons as described in the following table:

**Table 4-33 Buttons and Field Descriptions of SBI Message Priority**

| Button and Field Names  | Description                                                                                                      |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Query Parameters</b> | Allows to enter parameters to retrieve, add, and update SBI message priority information.                        |
| <b>Get</b>              | Retrieves the SCP_SBI Message Priority configured in SCP. You can modify this data using the <b>Edit</b> button. |
| <b>Add</b>              | Adds new message requests in the <b>Request</b> field.                                                           |
| <b>Edit</b>             | Modifies any existing data by updating mandatory query parameters in the <b>Query Parameters</b> field.          |
| <b>Delete</b>           | Removes any message request.                                                                                     |
| <b>Export</b>           | Exports existing records in the JSON format.                                                                     |
| <b>Clear</b>            | Refreshes the existing screen by removing the data.                                                              |

## 4.2.24 Configuring DNS SRV based Alternate Routing

This section provides information to enable different options to use the Alternate Routing based on the DNS SRV Records feature.

You must log in to the CNC Console while performing the procedures described in the subsequent subsections. Using these procedures, you can perform the followings tasks:

- Set the routing mode.
- Configure the default Time To Live (TTL) value.
- Refresh the DNS SRV records in DB.

- Add and fetch DNS SRV records from DB.

### 4.2.24.1 Configuring Routing Modes

Perform the following procedure to enable alternate routing and set the routing mode to NF Set, DNS SRV, or both when the forward routing fails.

1. From the left navigation pane, navigate to **SCP** and click the **Routing Options** tab.  
The Routing Options screen appears with the list of services.
2. To set alternate route modes, in the **Actions** column, click the **Edit** icon for the corresponding service name.

**Figure 4-59 Setting Alternate Routing Mode**

3. In the **DNS SRV Based Alternate Route** section, set the **Mode** of the selected specific services as required:
  - **NF\_SET**: SCP performs alternate routing based on the Model C Indirect 5G SBI Communication format. This is the default mode.
  - **DNS\_SRV**: SCP performs alternate routing based on the DNS SRV query.
  - **NF\_SET\_FOLLOVED\_BY\_DNSSRV**: SCP performs alternate routing based on NF Set and then with DNS SRV.
4. Click **Save**.

### 4.2.24.2 Configuring the Default TTL Value

Perform the following procedure to configure the default Time To Live (TTL) value.

1. From the left navigation pane, navigate to **SCP** and click the **Global Options** tab.
2. To configure the **TTL** value, click the **System Config** tab.
3. In the **System Config** section, click the **Edit** icon and set the **TTL** value as required.  
By default, this value is set to 900s. The range is between 30s to 86400s.

**Figure 4-60** Setting TTL Value

4. Click **Submit**.

### 4.2.24.3 Configuring Alternate NF Group

Perform the following procedure to add and fetch DNS SRV records from DB.

1. From the left navigation pane, navigate to **SCP** and click the **Alternate NF Group** tab.
2. To configure DNS records using query parameters, click the **Configuration** tab.
3. In the **Configuration** section, click **Add** to add query parameters in the **Request** field.

**Figure 4-61** Alternate NF Group Options

4. Click **Submit**.  
Query parameters automatically appear in the **Response** field.
5. Click **Get** to view all the records of the query parameter in the **Response** field.
6. To export, delete, or clear the data, click the required buttons as described in the following table:

Table 4-34 Configuration Query Parameters

| Button and Field Names  | Description                                                                                                                                                                                                                 |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Query Parameters</b> | FQDN of an NF profile.<br>Example:<br>serviceProtoName=_http._tcp.pcf4svc.scpsvc.svc.cluster.local&apiPrefix=USEast                                                                                                         |
| <b>Get</b>              | Fetches DNS SRV records from DB.                                                                                                                                                                                            |
| <b>Add</b>              | Adds DNS SRV records to DB by querying the DNS server with the combination of apiPrefix and Service Proto Name.<br>Example:<br>{ "apiPrefix": "USEast", "serviceProtoName": "_http._tcp.pcf2svc.scpsvc.svc.cluster.local" } |
| <b>Delete</b>           | Removes a particular record from DB based on Service Proto Name (SPN).<br>Example:<br>serviceProtoName=_http._tcp.udm1svc.scpsvc.svc.cluster.local                                                                          |
| <b>Export</b>           | Exports DNS SRV records in the JSON format.                                                                                                                                                                                 |
| <b>Clear</b>            | Resets all the fields in the <b>Configuration</b> section.                                                                                                                                                                  |
| <b>Response</b>         | Displays the required DNS SRV records.                                                                                                                                                                                      |
| <b>Request</b>          | Allows you to add a query parameter when you click the <b>Add</b> button.                                                                                                                                                   |

- Click **Submit**.

#### 4.2.24.4 Configuring Refresh DNS SRV Data

Perform the following procedure to refresh the DNS SRV records in DB.

- From the left navigation pane, navigate to **SCP** and click the **Alternate NF Group** tab.
- To refresh DB records, click the **Refresh DNS SRV Data** tab in the left navigation pane.
- Click **Refresh**.
- In the **Request** field, enter one of the following parameters:

Table 4-35 Request Parameters

| Parameter                | Description                                                                                                                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| { "spnlist": [ ] }       | This parameter refreshes only specific records that are provided within []. For example:<br>{ "spnlist": [ "_http._tcp.pcf4svc.scpsvc.svc.cluster.local", "_http._tcp.nf1stub.scpsvc.svc" ] } |
| { "refreshAll": "true" } | This parameter refreshes all the records.                                                                                                                                                     |

- Click **Submit**.

#### 4.2.25 Configuring SBI Message Priority and Error Profiles

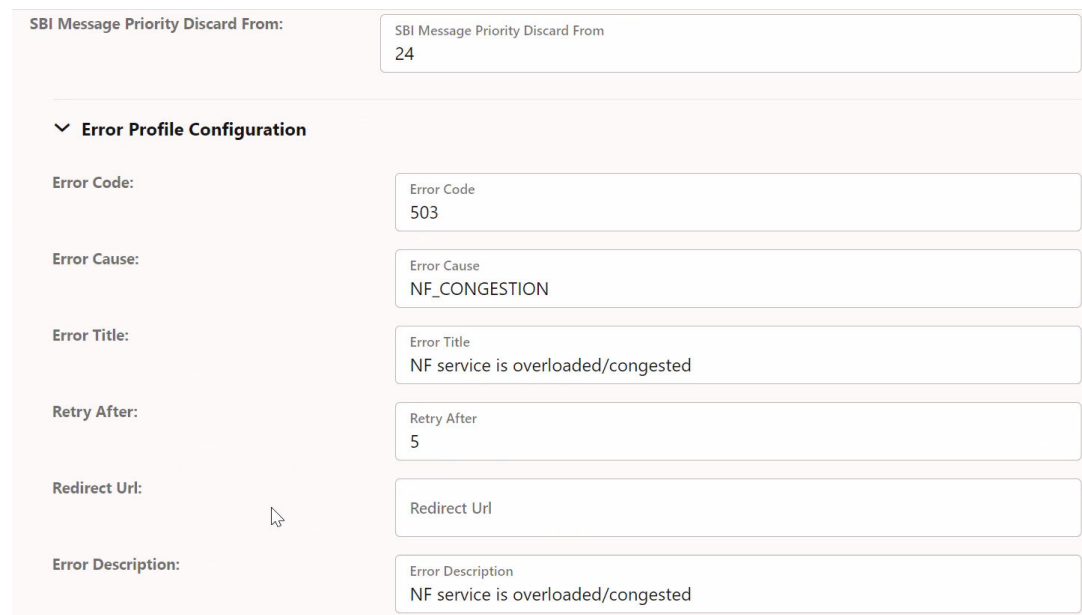
Perform the following procedure to configure values for determining the priority of ingress messages and create error profiles.

1. From the left navigation pane, navigate to **SCP** and click the **Routing Options** tab.
2. In the Routing Options section, select a service name from the Service Name column and click the corresponding edit icon.
3. In the NFService Load Based Congestion Control section, in the **SBI Message Priority Discard From** field, enter a value to determine the priority of the ingress message.

#### Note

- The value of the **SBI Message Priority Discard From** field is compared with the "3gpp-Sbi-Message-Priority" header to categorize an ingress message request as high or low priority. By default, SCP considers 24 as the priority for the ingress message request if the message does not have the "3gpp-Sbi-Message-Priority" header. If the priority of the ingress message request is less than the value of **SBI Message Priority Discard From**, then the message is considered as high priority message.
- SCP discards all the 5G SBI messages whose "3gpp-Sbi-Message-Priority" header value is equal to or greater than this configuration.

**Figure 4-62 Configuring SBI Message Priority and Error Profiles**



SBI Message Priority Discard From:

▼ Error Profile Configuration

Error Code:

Error Cause:

Error Title:

Retry After:

Redirect Url:

Error Description:

4. To configure the error profiles, complete the following fields:

**Table 4-36 Error Profile Configuration**

| Field Name        | Description                                                                                                                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error Code</b> | Indicates configurable error codes to be sent by SCP to consumer NFs when the producer NF is congested or throttled in case of a low priority message.<br>The default value is 503, which indicates: Service Unavailable. |

Table 4-36 (Cont.) Error Profile Configuration

| Field Name               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error Cause</b>       | Indicates the error cause that is specific to the occurrence of the problem.<br>The default value is NF_CONGESTION.                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Error Title</b>       | Indicates the title of the error type.<br>The default value is NF service is overloaded or congested.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Retry After</b>       | Indicates the time during which the service is unavailable. It is applicable when the error code is 503.<br>When the error code is 3xx, where x indicates any numeric value, it specifies the minimum time that the user must wait before issuing the redirected request.<br>The default value is 5. The unit of this value can be HTTP-date or delta-seconds. For example: <ul style="list-style-type: none"> <li>Fri, 31 Dec 2001 23:59:59 GMT</li> <li>120</li> </ul> In the latter example, the delay is 2 minutes. |
| <b>Redirect Url</b>      | Retries the request towards the directed resource referred in the Location header using the same request method.<br>Example:<br><br>https://udm1.udmsvc.domain/USEast/nudm-sdm/v1/path2                                                                                                                                                                                                                                                                                                                                 |
| <b>Error Description</b> | Indicates an explanation specific to the occurrence of the problem.<br>The default value is NF service is overloaded or congested.                                                                                                                                                                                                                                                                                                                                                                                      |

5. Click **Save**.

## 4.2.26 Configuring the nextHopSCP Routing Option

Perform the following procedure to configure the nextHopSCP routing options.

1. From the left navigation pane, navigate to **SCP** and click the **Routing Options** tab.  
The Routing Options screen appears with the list of services.
2. To edit the Next Hop SCP section, click the **Edit** icon for the corresponding service name.
3. Expand the **Next Hop SCP Routing Options** option.

**Figure 4-63 NextHopSCP**

Next Hop SCP Routing Options

Response Timeout: 4s

Total Transaction Lifetime: 7s

Service Level

Max Routing Attempts: 2

Service Endpoint Level

Max Routing Attempts: 1

NFService Load Based Congestion Control

Alternate Routing Onset Threshold Percent: 80

Alternate Routing Abatement Threshold Percent: 75

Throttle Onset Threshold Percent: 90

Throttle Abatement Threshold Percent: 85

Error Profile Configuration

Reroute On Response Code List:

Exceptions:

| Name    | Action      | Error Code | Error Response      |
|---------|-------------|------------|---------------------|
| No_Host | Send_Answer | 503        | Service Unavailable |

4. Configure the following fields as required:

**Table 4-37 Configuring Next Hop SCP Routing Options**

| Field Name                                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Response Timeout</b>                     | Indicates the allotted time to respond to a message request. When the response timeout expires, SCP performs alternate rerouting to the available alternate NF or pod.<br>If no alternate NFs or pods are available, SCP sends an error message.<br>The default value is 4 seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Total Transaction lifetime</b>           | Indicates the total time allowed to forward a request, including initial and all subsequent routing attempts.<br><b>Note:</b> The total time consumed in processing all retries must not exceed the total transaction lifetime.<br>The default value is 7 seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Max Routing Attempts (Service Level)</b> | Indicates the maximum number of forward routing attempts made at a service level. <ul style="list-style-type: none"> <li>Maximum number of times SCP is allowed to forward a request message. If the Max Routing attempts value is set to 1 for both service and pod level, the total transaction lifetime field value is not required. If the Max Routing attempts value is set to greater than 1 for both service and pod level, then the total transaction lifetime field value is considered for rerouting processing.</li> <li>Rerouting of request messages is always considered as Max Routing attempts value minus one (-1), that is, Rerouting of request messages = (Max Routing attempts value) -1</li> </ul> The default routing attempt is 2. |

**Table 4-37 (Cont.) Configuring Next Hop SCP Routing Options**

| Field Name                                                                                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Max Routing Attempts</b><br>(Service Endpoint Level)                                                 | Indicates the maximum number of forward routing attempts at NF or pod level. <ul style="list-style-type: none"> <li>Maximum number of times SCP is allowed to forward a request message. If the Max Routing attempts value is set to 1 for both service and pod level, the total transaction lifetime field value is not required. If the Max Routing attempts value is set to greater than 1 for both service and pod level, then the total transaction lifetime field value is considered for rerouting processing.</li> <li>Rerouting of request messages is always considered as Max Routing attempts value minus one (-1), that is, Rerouting of request messages = (Max Routing attempts value) -1</li> </ul> The default routing attempt is 1. |
| <b>Alternate Routing Onset Threshold Percent</b><br>(NFService Load Based Congestion Control Level)     | Indicates the percentage of Alternate Routing Onset Threshold Percent.<br>The default value is 80%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Alternate Routing Abatement Threshold Percent</b><br>(NFService Load Based Congestion Control Level) | Indicates the percentage of Alternate Routing Abatement Threshold Percent.<br>The default value is 75%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Throttle Onset Threshold Percent</b><br>(NFService Load Based Congestion Control Level)              | Indicates the percentage of Throttle Onset Threshold Percent.<br>The default value is 90%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Throttle Abatement Threshold Percent</b><br>(NFService Load Based Congestion Control Level)          | Indicates the percentage of Throttle Abatement Threshold Percent.<br>The default value is 85%.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

- Click **Save**.

## 4.2.27 Configuring SEPP Inter PLMN Routing

Perform the following procedure to add an NF instance ID and configure Public Land Mobile Network (PLMN) IDs supported by Security Edge Protection Proxy (SEPP).

- From the left navigation pane, navigate to **SCP** and click the **SEPP Info** tab.
- To filter or add an NF instance ID in the SEPP Info section, click the required buttons as described in the following table:

**Table 4-38 Filtering and Adding NF Instance IDs**

| Button, Column, and Field Names | Description                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>Type to Filter</b>           | This field allows you to search for an NF instance ID and displays it in the NF Instance ID column. |
| <b>Refresh</b>                  | This button refreshes information in the SEPP Info section.                                         |
| <b>Add</b>                      | This button allows you to add a new NF instance ID.                                                 |
| <b>NF Instance ID</b>           | This column displays the available NF instance IDs.                                                 |



**Table 4-38 (Cont.) Filtering and Adding NF Instance IDs**

| Button, Column, and Field Names | Description                                                                      |
|---------------------------------|----------------------------------------------------------------------------------|
| Actions                         | This column allows you to edit an existing NF instance ID using the edit option. |

3. To add a new NF instance ID, click **Add**.

**Figure 4-64 Adding a New NF Instance ID**

4. In the **NF Instance ID** field, enter an instance ID, for example, 8faf1bbc-6e4a-4454-a507-aef01a101a06.
5. Expand the **SEPP Info** option to configure SEPP ports as follows:
  - a. In the **Http** field, enter a value between 0 and 65535.  
This field is applicable for the HTTP connection.
  - b. In the **Https** field, enter a value between 0 and 65535.  
This field is applicable for the HTTPS connection.

**Note**

If both the fields are configured, then the HTTPS connection is preferred.

6. To configure PLMN IDs supported by SEPP, in the Remote PLMN List section, click **Add**.

**Figure 4-65 Supported PLMN by SEPP**

Add Remote PLMN List

MCC:

MCC

MNC:

MNC

Save

Cancel

- a. In the **MCC** field, enter the required mobile country code.  
Mobile Country Code (MCC) is a three digit number ranging from 0 to 9.
  - b. In the **MNC** field, enter the required mobile network code.  
Mobile Network Code (MNC) can be of two or three digits ranging from 0 to 9.
  - c. Click **Save**.
7. Click **Save**.

## 4.2.28 Configuring Route Groups

Perform the following procedure to configure Route Groups parameters.

1. From the left navigation pane, click the **SCP** tab, and then click the **Route Groups** tab.  
The Route Groups screen appears.

**Figure 4-66 Route Groups**

Route Groups

Query Parameters:

Query Parameters

Get

Add

Delete

Export

Clear

2. In the Route Groups section, click **Add** to add request body in the **Request** field.  
Query parameters are applicable only for DELETE and GET resource types.
3. Click **Submit**.  
Response body automatically appears in the **Response** field.

4. Click **Get** to view all the records of the response body in the **Response** field.
5. To export, delete, or clear the data, click the required buttons as described in the following table, and then click **Submit**.

Table 4-39 Route Groups Buttons and Field Descriptions

| Button and Field Name   | Description                                                                                                                    |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Response</b>         | Displays the required Route Groups records.                                                                                    |
| <b>Request</b>          | Allows you to add a query parameter when you click the <b>Add</b> button.                                                      |
| <b>Query Parameters</b> | Processes routeGroupId, routeGroupType, or primaryRoute parameters.                                                            |
| <b>Get</b>              | Retrieves configured route groups based on the supplied query parameters as filtering criteria.                                |
| <b>Export</b>           | Exports Route Groups records in the JSON format.                                                                               |
| <b>Delete</b>           | Removes the configuration of an existing route group.                                                                          |
| <b>Clear</b>            | Resets all the fields in this screen.                                                                                          |
| <b>Add</b>              | Configures a new route group or replaces an existing route group by providing a route group configuration in the request body. |

## 4.2.29 Configuring Ingress Rate Limiter Consumer Info

Perform the following procedure to configure consumer information for ingress rate limiting.

1. From the left navigation pane, click the **SCP** tab, and then click the **Ingress Rate Limiter Consumer Info** tab.

The Ingress Rate Limiter Consumer Info screen appears:

Figure 4-67 Ingress Rate Limiter Consumer Info

The screenshot shows the 'Consumer Info Configuration' screen. The left sidebar has a dark theme with the following menu items: < SCP, Alternate NF Group, Canary Release, Consumer Info Configurati..., Global Options, Mediation, NF Rule Profile, Outlier Detection, Pod Overload Control, Rate Limiting, Reports, Route Groups, and Routing Options. The main content area has a light gray background and is titled 'Consumer Info Configuration'. It contains the following fields and values:

| Field                           | Value                                          |
|---------------------------------|------------------------------------------------|
| XFCC Certificate Extract Index: | XFCC Certificate Extract Index<br>0            |
| XFCC Extract Field:             | XFCC Extract Field<br>DNS                      |
| XFCC Extract Index:             | XFCC Extract Index<br>0                        |
| User Agent Format:              | User Agent Format                              |
| Primary Header Name:            | Primary Header Name<br>X-Forwarded-Client-Cert |
| User Agent Separator:           | User Agent Separator                           |
| Secondary Header Name:          | Secondary Header Name                          |

In the top right corner of the main area, there are 'Edit' and 'Refresh' buttons.

2. In the Ingress Rate Limiter Consumer Info section, click **Edit**, and then configure the fields as described in the following table:

Table 4-40 Configuring Consumer Information

| Field Name                            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>XFCC Certificate Extract Index</b> | <p>The certificate extract index contains certificate information in the XFCC header.</p> <p>This parameter is used to decode "X-Forwarded-Client-Cert" for the FQDN.</p> <p>The default value is 0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>XFCC Extract Field</b>             | <p>This is the name of the field that has to be retrieved from the XFCC header.</p> <p>The default value is DNS.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>XFCC Extract Index</b>             | <p>Index where the field configured in 'extractField' is present in the XFCC header for extraction.</p> <p>The default value is 0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>User Agent Format</b>              | <p>The header format to identify the consumer NF according to the ingress rate limiting configurations.</p> <p>It supports the following formats:</p> <ul style="list-style-type: none"> <li>Format1: NFTYPE-NFINSTANCEID FQDN or NFTYPE-NFINSTANCEID-FQDN</li> <li>Format2: NFTYPE-FQDN NFINSTANCEID or NFTYPE-FQDN-NFINSTANCEID</li> <li>Format3: NFTYPE-NFINSTANCEID</li> <li>Format4: NFTYPE-FQDN</li> <li>Format5: NFTYPE</li> </ul> <p>Where,</p> <ul style="list-style-type: none"> <li>NFTYPE indicates the type of consumer NF.</li> <li>NFINSTANCEID indicates the instance ID of the consumer NF.</li> <li>FQDN indicates the FQDN of the consumer NF.</li> </ul> <p>In the aforementioned example, "-" is a separator and NFInstanceId, FQDN, and Hostname are supported IDs.</p> |
| <b>Primary Header Name</b>            | <p>The header name to identify the consumer NF according to the ingress rate limiting configurations.</p> <p>This is a mandatory parameter. This parameter is given priority over the secondaryHeaderName parameter.</p> <p>The default value is "X-Forwarded-Client-Cert".</p> <p>It can use the following values:</p> <ul style="list-style-type: none"> <li>"User-Agent"</li> <li>"X-Forwarded-Client-Cert"</li> </ul>                                                                                                                                                                                                                                                                                                                                                                     |
| <b>User Agent Separator</b>           | <p>This is the separator that the User-Agent header uses to separate NFINSTANCEID and FQDN.</p> <p>The default value is "SPACE".</p> <p>It can use the following values:</p> <ul style="list-style-type: none"> <li>"SPACE"</li> <li>"HYPHEN"</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Secondary Header Name</b>          | <p>The header name to identify the consumer NF according to the ingress rate limiting configurations.</p> <p>This is an optional parameter.</p> <p>The default value is "".</p> <p>It can use the following values:</p> <ul style="list-style-type: none"> <li>"User-Agent"</li> <li>"X-Forwarded-Client-Cert"</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

3. Click **Save**.

## 4.2.30 Configuring SCP Services

Perform the following procedure to view thread watchdog and queue alerts threshold configurations required for SCP microservices.

1. From the left navigation pane, click the SCP tab, and then click the SCP Service Configuration tab.
2. In the left navigation pane, click the SCPC-AlternateResolution tab and do the following:
  - a. In the SCPC-AlternateResolution Service Configuration section, expand the SCP Service Configuration option.
  - b. To view the Thread Watchdog configuration values, expand the Thread Watchdog Configuration option.
  - c. To view the Connectivity Watchdog configuration values, expand the Connectivity Watchdog Configuration option.
3. In the left navigation pane, click the SCPC-Audit tab and do the following:
  - a. In the SCPC-Audit Service Configuration section, expand the SCP Service Configuration option.
  - b. To view the Thread Watchdog configuration values, expand the Thread Watchdog Configuration option.
  - c. To view the Connectivity Watchdog configuration values, expand the Connectivity Watchdog Configuration option.
4. In the left navigation pane, click the SCPC-Configuration tab and do the following:
  - a. In the SCPC-Configuration Service Configuration section, expand the SCP Service Configuration option.
  - b. To view the Thread Watchdog configuration values, expand the Thread Watchdog Configuration option.
  - c. To view the Connectivity Watchdog configuration values, expand the Connectivity Watchdog Configuration option.
5. In the left navigation pane, click the SCPC-Configuration tab and do the following:
  - a. In the SCPC-Configuration Service Configuration section, expand the SCP Service Configuration option.
  - b. To view the Thread Watchdog configuration values, expand the Thread Watchdog Configuration option.
  - c. To view the Connectivity Watchdog configuration values, expand the Connectivity Watchdog Configuration option.
6. In the left navigation pane, click the SCPC-Notification tab and do the following:
  - a. In the SCPC-Notification Service Configuration section, expand the SCP Service Configuration option.
  - b. To view the threshold values of different queues, expand the Queue Utilization Alert Thresholds option.

The SCPC-Notification Service Configuration screen displays the queue values for critical, major, and minor threshold.

**Figure 4-68 SCPC-Notification Service Configuration**

| Queue Name        | Critical Queue Threshold | Major Queue Threshold | Minor Queue Threshold |                      |
|-------------------|--------------------------|-----------------------|-----------------------|----------------------|
| notificationQueue | 86%                      | 76%                   | 66%                   | <a href="#">View</a> |
| waitingQueue      | 85%                      | 75%                   | 65%                   | <a href="#">View</a> |
| runQueue          | 85%                      | 75%                   | 65%                   | <a href="#">View</a> |

The following table describes the significance of each column to determine the values of critical, major, and minor threshold.

**Note**

The critical, major, and minor threshold values are automatically populated in the CNC Console and cannot be modified. These values are configured using REST APIs as described in "Configuring SCP Services" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

**Table 4-41 Queue Utilization Alert Thresholds**

| Column Name                     | Description                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Queue Name</b>               | Indicates the name of the queue for which these configurations are applicable.                                 |
| <b>Critical Queue Threshold</b> | Indicates the percentage (%) value for queue usage threshold upon reaching which a "critical" alert is raised. |
| <b>Major Queue Threshold</b>    | Indicates the percentage (%) value for queue usage threshold upon reaching which a "major" alert is raised.    |
| <b>Minor Queue Threshold</b>    | Indicates the percentage (%) value for queue usage threshold upon reaching which a "minor" alert is raised.    |

7. In the left navigation pane, click the SCPC-Subscription tab and do the following:
  - a. In the SCPC-Subscription Service Configuration section, expand the SCP Service Configuration option.
  - b. To view the Thread Watchdog configuration values, expand the Thread Watchdog Configuration option.
  - c. To view the Connectivity Watchdog configuration values, expand the Connectivity Watchdog Configuration option.
8. In the left navigation pane, click the SCP-NrfProxy tab and do the following:
  - a. In the SCP-NrfProxy Service Configuration section, expand the SCP Service Configuration option.

- b. To view the threshold values of different queues, expand the Queue Utilization Alert Thresholds option.

The SCP-NrfProxy Service Configuration screen displays the queue values for critical, major, and minor threshold.

**Figure 4-69 SCP-NrfProxy Service Configuration**

| SCP-NrfProxy Service Configuration |                          |                       |                       |                      |
|------------------------------------|--------------------------|-----------------------|-----------------------|----------------------|
| SCP Service Configuration          |                          |                       |                       |                      |
| Queue Utilization Alert Thresholds |                          |                       |                       |                      |
| Value:                             |                          |                       |                       |                      |
| Queue Name                         | Critical Queue Threshold | Major Queue Threshold | Minor Queue Threshold |                      |
| scpDownstreamExecutorQueue         | 85%                      | 75%                   | 65%                   | <a href="#">View</a> |
| scpUpstreamExecutorQueue           | 85%                      | 75%                   | 65%                   | <a href="#">View</a> |

The queue utilization alerts threshold values are automatically populated in the CNC Console as described in [Table 4-41](#).

- c. Expand the Thread Watchdog Configuration option to view the values of thread watchdog configurations:

The following table describes the fields required to configure the Thread Watchdog feature:

**Note**

Thread watchdog field values are automatically populated in the CNC Console and cannot be modified. These values are configured using REST APIs as described in "Configuring SCP Services" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

**Table 4-42 Thread Watchdog Configuration**

| Field Name                   | Description                                                                                                                                                                                                                                                                                    |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enable Thread Watchdog       | Specifies whether to enable or disable liveness failures. If this parameter is set to <code>true</code> , liveness fails whenever the watchdog reports a stuck or deadlocked thread.                                                                                                           |
| Watchdog Monitoring Interval | Indicates the time interval used by the watchdog to monitor if any threads are stuck.                                                                                                                                                                                                          |
| Watchdog Interval            | Indicates the maximum time allowed for threads to be nonresponsive. Watchdog uses this time to determine if a thread is stuck.<br>For example, if this value is set to 10 seconds and a thread does not respond for 10 seconds, then the watchdog marks that thread as stuck or nonresponsive. |
| Watchdog Failure Count       | Indicates the maximum number of times thread watchdog attempts to check if a thread is stuck before marking the thread as hung or stuck.<br>For example, if this value is set to 3, then the watchdog checks if a thread is stuck 3 times continuously before marking it as stuck or hung.     |

9. In the left navigation pane, click the SCP-Worker tab and do the following:
  - a. In the SCP-Worker Service Configuration section, expand the SCP Service Configuration option.
  - b. To view the threshold values of different queues, expand the Queue Utilization Alert Thresholds option.

The SCP-Worker Service Configuration screen displays the queue values for critical, major, and minor threshold.

**Figure 4-70 SCP-Worker Service Configuration**

| SCP-Worker Service Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |                       |                       | Refresh              |            |                          |                       |                       |  |                            |     |     |     |                      |                                    |     |     |     |                      |                          |     |     |     |                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------|-----------------------|----------------------|------------|--------------------------|-----------------------|-----------------------|--|----------------------------|-----|-----|-----|----------------------|------------------------------------|-----|-----|-----|----------------------|--------------------------|-----|-----|-----|----------------------|
| <div> <div>SCP Service Configuration</div> <div> <div>Queue Utilization Alert Thresholds</div> <div>Value:</div> <table> <tr> <th>Queue Name</th><th>Critical Queue Threshold</th><th>Major Queue Threshold</th><th>Minor Queue Threshold</th><th></th></tr> <tr> <td>scpDownstreamExecutorQueue</td><td>85%</td><td>75%</td><td>65%</td><td><a href="#">View</a></td></tr> <tr> <td>scpNrfProxyDownstreamExecutorQueue</td><td>85%</td><td>75%</td><td>65%</td><td><a href="#">View</a></td></tr> <tr> <td>scpUpstreamExecutorQueue</td><td>85%</td><td>75%</td><td>65%</td><td><a href="#">View</a></td></tr> </table> </div> </div> |                          |                       |                       |                      | Queue Name | Critical Queue Threshold | Major Queue Threshold | Minor Queue Threshold |  | scpDownstreamExecutorQueue | 85% | 75% | 65% | <a href="#">View</a> | scpNrfProxyDownstreamExecutorQueue | 85% | 75% | 65% | <a href="#">View</a> | scpUpstreamExecutorQueue | 85% | 75% | 65% | <a href="#">View</a> |
| Queue Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Critical Queue Threshold | Major Queue Threshold | Minor Queue Threshold |                      |            |                          |                       |                       |  |                            |     |     |     |                      |                                    |     |     |     |                      |                          |     |     |     |                      |
| scpDownstreamExecutorQueue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 85%                      | 75%                   | 65%                   | <a href="#">View</a> |            |                          |                       |                       |  |                            |     |     |     |                      |                                    |     |     |     |                      |                          |     |     |     |                      |
| scpNrfProxyDownstreamExecutorQueue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 85%                      | 75%                   | 65%                   | <a href="#">View</a> |            |                          |                       |                       |  |                            |     |     |     |                      |                                    |     |     |     |                      |                          |     |     |     |                      |
| scpUpstreamExecutorQueue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 85%                      | 75%                   | 65%                   | <a href="#">View</a> |            |                          |                       |                       |  |                            |     |     |     |                      |                                    |     |     |     |                      |                          |     |     |     |                      |

The queue utilization alerts threshold values are automatically populated in the CNC Console as described in [Table 4-41](#).

- c. Expand the Thread Watchdog Configuration option to view the values of thread watchdog configurations that are automatically populated in the CNC Console as described in [Table 4-42](#).

## 4.2.31 Configuring Outlier Detection

Perform the following procedure to add, edit, or remove any existing rule name for outlier detection.

1. From the left navigation pane, click the SCP tab, and then click the Outlier Detection tab.  
The Outlier Detection screen appears.



**Figure 4-71 Outlier Detection**

| Outlier Detection                                                                                                 |                           |
|-------------------------------------------------------------------------------------------------------------------|---------------------------|
| <div> <input type="text" value="Type to Filter"/> <span>✕</span> <span>↻ Refresh</span> <span>⊕ Add</span> </div> |                           |
| Rule Name ↕                                                                                                       | Actions                   |
| defaultRule                                                                                                       | <div>✎</div> <div>🗑</div> |
| nextHopScpODRule                                                                                                  | <div>✎</div> <div>🗑</div> |

2. If you want to edit or remove any existing rule name from the Rule Name column, click **Edit** or **Delete** icon in the Actions column.
3. To add new rule names, click **Add**.
4. In the Add Outlier Detection section, configure the following fields:
  - **Rule Name:** Enter a unique rule name that is available in the outlier detection table.
  - **Consecutive Errors:** Enter a value between from 5 to 500 to define the number of consecutive errors after which an endpoint is considered unhealthy.
  - **Interval:** Enter a value from 30 seconds to 86400 seconds to set the interval after which stale records are removed from the outlier data cache.
  - **Base Ejection Time:** Enter a value between 1 second and 500 seconds to set the of duration endpoint ejection.
  - **Error List:** Select the required error name from the available error list to be considered for outlier detection.
5. Click **Save**.

## 4.2.32 Configuring Traffic Feed

Perform the following procedure to configure OCNADD and Trigger Points.

1. From the left navigation pane, click the SCP tab, and then click the Traffic Feed tab.
2. To configure OCNADD fields, in the left navigation pane, click the Data Director tab.
3. In the Traffic Feed Data Director Configuration section, click **Edit** and configure the fields as described in the "Configuring Traffic Feed Data Director" section of the *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
4. To configure Trigger Points, in the left navigation pane, click the Trigger Points tab.
5. In the Trigger Points section, click **Add** and configure the fields as described in the "Configuring Traffic Feed Trigger Point Config" section of the *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
6. Click **Save**.

## 4.2.33 Congestion Control Configurations

Perform the following steps to configure congestion control parameters:

1. From the left navigation menu, navigate to **SCP** and then select **Congestion Control**.

- Click **Edit** icon from the **Actions** column for the required service that must be modified.

**Note**

The default rule name cannot be deleted. The new rule name can be added, modified, or deleted.

The **Edit Congestion Control** screen appears.

**Figure 4-72 Congestion Control**

- Make the required modifications for the following parameters:
  - Alternate Routing Onset Threshold Percent:** Set the threshold percentage for onset alternate routing.
  - Alternate Routing Abatement Threshold Percent:** Set the threshold percentage for alternate routing abatement.
  - Throttle Onset Threshold Percent:** Set the threshold percentage for onset throttling.
  - Throttle Abatement Threshold Percent:** Set the threshold percentage for throttle abatement.
  - SBI Msg Priority Discard From:** Set the priority for message, after which the messages can be discarded. For example, if the value is 30, then messages with priority 0-29 are high priority, and other low-priority messages will be throttled.

**Note**

All the parameters are mandatory.

For more information about the configuration parameters, see *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.

- Click **Save**.
- Click **Cancel** to reset all the fields.
- Click **Delete** from the **Actions** column to delete the record.

## 4.2.34 Routing Options Configurations

Perform the following procedure to view or edit Routing Options Configuration parameters.

1. From the left navigation menu, navigate to **SCP**, and then click the **Routing Options Configuration** tab.
2. In the Routing Options Configuration section, click **Edit** from the Actions column for the required service that must be modified.  
The Edit Routing Options Configuration screen appears.

**Figure 4-73 Routing Options Configuration**

The screenshot shows the 'Edit Routing Options Configuration' interface. On the left is a dark sidebar with the Oracle logo and a list of navigation items: Pod Overload Control, Rate Limiting, Reports, Route Groups, Routing Options, Routing Options Configura..., SBI Message Priority, SCP Features, SCP Profile, SCP Service Configurati..., SEPP Info, Service Groups, Topology Source Info, Traffic Feed, and Upgrade Status. The 'Routing Options' item is highlighted. The main content area has a header 'Edit Routing Options Configuration' and a dropdown menu set to 'Cluster1.SCP.Cluster1-scp-instance1'. Below this are five configuration fields: 'Routing Options Config Name' (value: defaultConfig), 'NF Type' (value: ALL), 'Service Name' (value: ALL), 'Message Type List' (value: notification-message with a close icon), and 'Routing Config SetName' (value: defaultRoutingConfigSet). At the bottom right are 'Save' and 'Cancel' buttons.

3. In the Routing Options Config Name, configure the following:
  - NF Type: Set the NF type for which routing options are to be configured.
  - Service Name: Set the NF service name for the routing options to be configured.
  - Message Type List: Set the routing options for notification or SBI messages.
  - Routing Options Config SetName: Enter the name of the routing configuration used to retrieve routing options.
4. Enter or modify the required values as described in "Routing Options Configuration" and "Routing Config Set" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
5. Click **Save**.

## 4.2.35 Routing Config Set

Perform the following procedure to define custom routing options for notification.

1. From the left navigation menu, navigate to **SCP**, and then click the **Routing Config Set** tab.
2. In the Routing Config Set section, click **Edit** from the Actions column for the required service that must be modified.

The Edit Routing Config Set screen appears.

**Figure 4-74 Edit Routing Config Set**

The screenshot displays the 'Edit Routing Config Set' interface in the Oracle CNC Console. The left sidebar shows the navigation menu with 'SCP' selected. The main content area is titled 'Edit Routing Config Set'. It includes a 'Routing Config Set Name' field with the value 'defaultRoutingConfigSet'. Below this is the 'configureRoutingOptions' section, which contains several fields: 'Name' (5g-sbi-notification), 'OD Enabled' (toggle), 'OD Rule Name' (defaultRule), 'CB Enabled' (toggle), 'CB Rule Name' (defaultRule), 'Deployment Model' (SITE\_WIDE), 'Total Transaction Lifetime' (6s), and 'Response Timeout' (1s). At the bottom, there is a 'Reroute Condition List' table with a header 'Status Code' and an 'Add' button.

3. Enter or modify the required values as described in "Routing Config Set" and "Routing Options Configuration" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
4. In the Reroute Condition List, configure the list of error codes for rerouting:
  - Click **Add** to add new status code.
  - Click **Edit** or **Delete** icon to edit or remove any existing error code from the reroute condition list.
5. Click **Save**.
6. Click **Cancel** to reset all the fields.

## 4.2.36 Circuit Breaking Configurations

Perform the following procedure to configure circuit breaking data.

1. From the left navigation menu, navigate to **SCP**, and then click the **Circuit Breaking** tab.
2. In the Circuit Breaking section, click **Edit** icon from the Actions column for the required service that must be modified.  
The Edit Circuit Breaking screen appears.

**Figure 4-75 Edit Circuit Breaking**

The screenshot shows the Oracle CNC Console interface for editing circuit breaking settings. The left navigation pane has the 'SCP' tab selected. The main content area is titled 'Edit Circuit Breaking'. It shows the 'Rule Name' as 'defaultRule'. Under the 'Circuit Breaking Configuration Data' section, the 'HTTP2 Max Requests' field is set to '1000'. At the bottom right, there are 'Save' and 'Cancel' buttons.

3. In the **HTTP2 Max Requests** field, set the maximum number of requests SCP routes to a NF service instance, waiting for a response before stopping further routing requests to it. The maximum allowed value is 1000.
4. Enter or modify the required values as described in "Circuit Breaking Configurations" in *Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide*.
5. Click **Save**.
6. Click **Cancel** to reset the field.

## 4.2.37 Viewing SCP Feature Status

Perform the following procedure to fetch the runtime status of NRF migration task.

1. From the left navigation pane, click the **SCP** tab, and then click the **SCP Feature Status** tab.
2. On the SCP Feature Status page, the following columns display the SCP feature status.

**Table 4-43 SCP Feature Status**

| Column Name         | Description                                                                                                                                                                                                                                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Feature Name</b> | Displays the names of the features, such as nrf_bootstrap_info.                                                                                                                                                                                                                              |
| <b>Admin State</b>  | Displays the admin state of the feature. Possible statuses are mentioned below: <ul style="list-style-type: none"> <li>• <b>ENABLED</b>: This indicates that the user has enabled the feature.</li> <li>• <b>DISABLED</b>: This indicates that the user has disabled the feature.</li> </ul> |

Table 4-43 (Cont.) SCP Feature Status

| Column Name               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Runtime Status</b>     | <p>Displays the current runtime status of the feature. Possible statuses are mentioned below:</p> <ul style="list-style-type: none"> <li>• <b>DISABLED:</b> This indicates that the feature is disabled.<br/>For example, in the <code>nrf_bootstrap_info</code> feature, this state means SCP is running with a statically configured NRF. If the user has changed the 'Admin State' from <code>ENABLED</code> to <code>DISABLED</code>, this state means the feature is successfully disabled.</li> <li>• <b>IN_PROGRESS:</b> This indicates the enabling or disabling of the feature is currently in progress when the 'Admin State' is set to <code>ENABLED</code> or <code>DISABLED</code>.<br/>For example, in the <code>nrf_bootstrap_info</code> feature, when the 'Admin State' is <code>ENABLED</code>, the migration from static to DNS SRV based NRF topology is in progress. In the <code>nrf_bootstrap_info</code> feature, when the 'Admin State' is <code>DISABLED</code>, the migration from a DNS SRV based NRF topology to static NRF topology is in progress.</li> <li>• <b>FAILED_RETRY:</b> This indicates that the process of enabling or disabling the feature (as indicated by the 'Admin State') has encountered failure and is undergoing retries.<br/>For example, in the <code>nrf_bootstrap_info</code> feature, this state means either of the migration tasks has failed and going through retries.</li> <li>• <b>ENABLED:</b> This indicates the feature is successfully enabled.<br/>For example, in the <code>nrf_bootstrap_info</code> feature, this state means the migration from static to a DNS SRV based NRF topology is successful.</li> </ul> |
| <b>Creation Timestamp</b> | Displays the time of creation of the event, for example, <code>creationTimestamp</code> :<br>"2021-05-26T01:17:15.000+00:00"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Update Timestamp</b>   | Displays the time of updation of the event, for example, <code>creationTimestamp</code> :<br>"2021-05-26T06:24:15.000+00:00"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

# 5

## Metrics

This chapter provides information about newly introduced and updated metrics and its dimensions.

### 5.1 Dimension Description

The following table provides information on Dimension of Metrics.

**Table 5-1 SCP Dimension Descriptions**

| Dimension             | Description                                                                                                                                                                                                                                                                             |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ocscp_nf_type         | Includes the producer NF type that is extracted from the URI of the message.<br>The sample values are UDM, PCF, AMF, and so on.                                                                                                                                                         |
| ocscp_nf_service_type | Includes the producer NF Service type that is extracted from the URI of the message.<br>The sample values are nudm-uecm, nudm-sdm, scpc-notification, and so on.<br><b>Note:</b> Notifications from NRF to scpc-notification will be pegged with the service type as scpc-notification. |
| ocscp_req_msg_size    | Indicates the request message size buckets.<br>The sample values are 1(size < 1k bytes), 2 (1k < size < 2k bytes), 4 (2k < size < 4k ), and so on.                                                                                                                                      |
| ocscp_locality        | Indicates the SCP site name or locality name with which SCP is deployed.                                                                                                                                                                                                                |
| ocscp_fqdn            | Includes the FQDN of SCP, which is used to deploy SCP.<br>The sample values are Loc6, Loc7, and so on.                                                                                                                                                                                  |
| plmn_id               | Includes the serving PLMN ID of SCP.<br>The sample value is mnc123-mcc254.                                                                                                                                                                                                              |
| ocscp_authority       | Includes the authority of SCP.<br>The sample value is FQDN:PORT or IP:PORT.<br><b>Note:</b> This dimension will get pegged only when it enabled using <code>values.yaml</code> .<br><br><code>scpAuthorityMetricLabelDisabled: false</code>                                             |
| ocscp_message_type    | Includes the message type received at SCP. It can be of any type: <ul style="list-style-type: none"><li>SERVICE_SPECIFIC_REQUEST</li><li>NOTIFICATION_OR_CALLBACK_REQUEST</li></ul>                                                                                                     |

Table 5-1 (Cont.) SCP Dimension Descriptions

| Dimension                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ocscp_consumer_host           | Includes the consumer host details extracted from the user-agent header. SCP should be able to decode that particular format only if the user-agent header is available in certain allowed configurable formats.<br><b>Note:</b> The ocscp_consumer_host dimension will include the value OCSCP-INITIATED-MSG only in the case of SCP self-generated requests. These requests can be identified based on the header (x-ocscp-initiated-msg=true). |
| ocscp_consumer_nf_instance_id | Includes the consumer NF Instance ID details extracted from the user-agent header. SCP should be able to decode that particular format only if the user-agent header is available in certain allowed configurable formats.                                                                                                                                                                                                                        |
| ocscp_consumer_nf_type        | Includes consumer NF type details extracted from the user-agent header. SCP should be able to decode that particular format only if the user-agent header is available in certain allowed configurable formats.                                                                                                                                                                                                                                   |
| ocscp_consumer_nf_unique_id   | Includes the Consumer NF Unique ID details extracted from the user-agent header. SCP should be able to decode that particular format only if the user-agent header is available in certain allowed configurable formats.                                                                                                                                                                                                                          |
| ocscp_peer_nf_instance_id     | NF Instance ID of the peer to which message (request or response) is routed.<br>For requests, the NF instance ID is obtained from information on a known NF producer or consumer.<br>For responses, the NF Instance ID is obtained from the User-Agent/XFCC header. SCP should be able to decode that particular format only if the user-agent header is available in certain allowed configurable formats.                                       |
| ocscp_peer_nf_service_type    | NF Service type of peer to which message (request or response) is routed.<br>For requests, the NF service type is obtained from information on a known NF producer or consumer.<br>For responses, service type is obtained from learned information about NF extracted from the User-Agent/XFCC header. SCP should be able to decode that particular format only if the user-agent header is available in certain allowed configurable formats.   |
| action                        | Action taken ("error_sent" or "rerouted") on request throttling because of OCI enforcement.                                                                                                                                                                                                                                                                                                                                                       |
| scope                         | The OCI scope received in the OCI header.                                                                                                                                                                                                                                                                                                                                                                                                         |
| auditMode                     | The mode of Audit in which SCP performs with NRF using NRF discovery or management services.                                                                                                                                                                                                                                                                                                                                                      |
| auditType                     | Type of audit triggered by the audit microservice. It can be an on-demand audit or a regular audit, depending on what triggered the audit. Example: A change in TSI from local to NRF will trigger an on-demand audit.                                                                                                                                                                                                                            |
| bodyModified                  | This dimension is used to know if the response received from mediation has any changes in the body that is sent in the request towards mediation.                                                                                                                                                                                                                                                                                                 |
| bucketKey                     | The key used to maintain the value of the message rate in egress or ingress rate limit functionality.                                                                                                                                                                                                                                                                                                                                             |



Table 5-1 (Cont.) SCP Dimension Descriptions

| Dimension                  | Description                                                                                                                                                                                                           |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| cause                      | The reason for the event's occurrence. The value can vary from one metric to another.                                                                                                                                 |
| cca_consumer_nflInstanceId | The NF instance ID of the consumer sending the CCA header.                                                                                                                                                            |
| certificate_type           | The type of certificate used, such as primary server, secondary server, etc.                                                                                                                                          |
| coherenceCluster           | The name of the coherence cluster used in the SCP deployment.                                                                                                                                                         |
| configurationName          | The name of the configuration that has changed.                                                                                                                                                                       |
| cpu_level                  | The level for CPU utilization, whether it is under minor, major, or critical utilization levels based on the configurations.                                                                                          |
| dbOperation                | The DB operation that happened on a DB table. Example: find, findAll, save, saveAll, get, count, delete, deleteAll.                                                                                                   |
| destination                | Indicates the destination SVC, like scpc-notification, scp-nrfproxy, and so on.                                                                                                                                       |
| detail                     | This dimension contains details about the issue that has happened.                                                                                                                                                    |
| duplicateTargetFqdn        | When a duplicate target fqdn is detected across different NRF SRV fqdns.                                                                                                                                              |
| error                      | Error that is received from the NRF during the OAuth2 query.                                                                                                                                                          |
| error-reason               | Reason for ingress or egress connection failures.                                                                                                                                                                     |
| errorType                  | The error reason that caused notification processing to fail.                                                                                                                                                         |
| event                      | The notification was even received in the notification. Example, deregister.                                                                                                                                          |
| eventName                  | Showing the migration state of the NRF DNS SRV feature.<br>Possible values <ul style="list-style-type: none"> <li>FEATURE_ENABLED</li> <li>START_NRF_RULE_PROCESSING</li> </ul>                                       |
| eventType                  | It shows the status of the egress requests on the Jetty client or the event type received in notification requests from NRF. This is used in different metrics, so refer to the respective metric for interpretation. |
| failureReason              | Reasons for the failure of the NRF DNS SRV feature migration.                                                                                                                                                         |
| headerModified             | Indicates whether any header is modified by the mediation service in response.                                                                                                                                        |
| host_type                  | Indicates the host type used for sending the request. example, "IP" or "FQDN"                                                                                                                                         |
| http_method                | Indicates the HTTP method of the request getting treatment for overload. Example: PUT, PATCH, POST, etc.                                                                                                              |
| interScpHost               | Contains the host of the SCP to which the request is being sent.                                                                                                                                                      |
| is_from_local_cache        | Whether the NRF discovery response is retrieved from local cache (true) or NRF (false)                                                                                                                                |
| is_inter_plmn              | Whether NRF Delegated Discovery made is for inter plmn (true) or for intra plmn (false)                                                                                                                               |
| locality                   | The locality of the foreign NF.                                                                                                                                                                                       |
| lockEvent                  | The notification cache lock event (released or acquired)                                                                                                                                                              |

Table 5-1 (Cont.) SCP Dimension Descriptions

| Dimension                 | Description                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------|
| msName                    | The name of the scp microservice.                                                                                       |
| nfInstanceId              | The producer NF instance ID.                                                                                            |
| nfProfileProcessingStatus | The status of the notification profile processing.                                                                      |
| ocscp_nf_service_type     | The NF service type                                                                                                     |
| nf_status                 | The status of NF, for example, REGISTERED.                                                                              |
| nfType                    | The NF type, for example, UDM.                                                                                          |
| notificationSource        | Indicates the source of notification received at the Notification microservice. It can be NRF or some SCP microservice. |

**Note**

- The values for these dimensions, such as `ocscp_consumer_host`, `ocscp_consumer_nf_instance_id`, and `ocscp_consumer_nf_type` are available based on the availability of the User-Agent header in incoming message requests. SCP should be able to decode that particular format only if the User-Agent header is available in certain allowed configurable formats.
- In the notification message type, certain dimension values such as `ocscp_nf_service_type`, `ocscp_nf_setid`, and `ocscp_nf_type` may not qualify for pegging. In the scenario where the service name cannot be derived from the PATH URI, pegging will not take place, and if these dimensions are identified through headers, pegging will occur.

## 5.1.1 SCP Metrics

The following table provides information for metrics for Service Communication Proxy (SCP).

**Caution**

User, computer and applications, and character encoding settings may cause an issue when copy-pasting commands or any content from PDF. The PDF reader version also affects the copy-pasting functionality. It is recommended to verify the pasted content when the hyphens or any special characters are part of the copied content.

Table 5-2 `ocscp_metric_http_rx_req_total`

| Field       | Details                                                               |
|-------------|-----------------------------------------------------------------------|
| Description | The total number of incoming HTTP requests at the scp-worker service. |
| Type        | Counter                                                               |

Table 5-2 (Cont.) ocscp\_metric\_http\_rx\_req\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on)</li> <li>ocscp_req_msg_size (The request message size buckets, for example, 1 (size &lt; 1k bytes), 2 (1k &lt; size &lt; 2k bytes), 4 (2k &lt; size &lt; 4k), and so on.)</li> <li>ocscp_locality (SCP site name, for example, Loc6, Loc7, and so on)</li> <li>ocscp_fqdn (contains fqdn of scp)</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_authority</li> <li>ocscp_message_type</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_consumer_nf_unique_id</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>These dimensions are available based on the availability of the User-Agent header in incoming message requests. SCP should be able to decode that particular format only if the User-Agent header is available in certain allowed configurable formats.</li> <li>The ocscp_consumer_host dimension for the metric can have an "OCSCP-INITIATED-MSG" value if the request is an SCP self-generated request.</li> </ul> |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_http_rx_req_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_http_rx_req_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_http_rx_req_total{ocscp_req_msg_size="2"}</li> <li>ocscp_metric_http_rx_req_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_http_rx_req_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_http_rx_req_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:8000"}</li> <li>ocscp_message_type="SERVICE_SPECIFIC_REQUEST"}</li> <li>ocscp_metric_http_rx_req_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_http_rx_req_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_metric_http_rx_req_total{ocscp_consumer_nf_type="SMF"}</li> <li>ocscp_metric_http_rx_req_total{ocscp_consumer_nf_unique_id="SE1SMSF1"}</li> </ul>                                                                                                                                                                                                                                                     |

Table 5-3 ocscp\_metric\_http\_tx\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>The total number of HTTP requests forwarded by Service Communication Proxy to the upstream cluster.</p> <p>Each SCP-worker pod will peg this metric.</p> <p><b>Note:</b>The ocscp_authority dimension will get pegged only when it is enabled using the value.yaml file. scpAuthorityMetricLabelDisabled: false</p> |
| Type        | Counter                                                                                                                                                                                                                                                                                                                |

Table 5-3 (Cont.) ocscp\_metric\_http\_tx\_req\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, and so on)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, and so on. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, and so on. Default value = NA)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_nf_setid (set1.udmset.5gc.mnc012.mcc345, default value = "UNKNOWN")</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_fqdn(contains fqdn of scp)</li> <li>ocscp_authority</li> <li>ocscp_message_type</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_consumer_nf_unique_id</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>These dimensions are available based on the availability of the User-Agent header in incoming message requests. SCP should be able to decode that particular format only if the User-Agent header is available in certain allowed configurable formats.</li> <li>The ocscp_consumer_host dimension for the metric can have an "OCSCP-INITIATED-MSG" value if the request is an SCP self-generated request.</li> </ul> |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_http_tx_req_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_nf_end_point="10.96.166.65:80"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_nf_setid="set1.udmset.5gc.mnc012.mcc345"}</li> <li>ocscp_metric_http_tx_req_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:8000"}</li> <li>ocscp_message_type="NOTIFICATION_OR_CALLBACK_REQUEST"</li> <li>ocscp_metric_http_tx_req_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_consumer_nf_type="SMF"}</li> <li>ocscp_metric_http_tx_req_total{ocscp_consumer_nf_unique_id="SE1SMSF1"}</li> </ul>                                                                                                    |

Table 5-4 ocscp\_metric\_http\_rx\_res\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Total number of HTTP responses received by SCP with specific HTTP response codes (e.g., 201, 503, etc.).<br>Each SCP-worker pod will peg this metric.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_response_code (for example, 201, 503, 404, and so on.)</li> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_nf_end_point (Default value = 0.0:00)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, and so on.)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, and so on. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, and so on. Default value = NA)</li> <li>ocscp_res_msg_size (The response message size buckets. For example, 1 (size &lt; 1k bytes), 2 (1k &lt; size &lt; 2k bytes), 4 (2k &lt; size &lt; 4k ), and so on.)</li> <li>ocscp_response_code_class (e.g., 2, 5, and so on.)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_nf_setid(e.g, set1.udmset.5gc.mnc012.mcc345, default value = "UNKNOWN")</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_fqdn(contains fqdn of scp)</li> <li>ocscp_authority</li> </ul> <p><b>Note:</b> These dimensions are available based on the availability of the User-Agent header in incoming message requests. SCP should be able to decode that particular format only if the User-Agent header is available in certain allowed configurable formats.</p> |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_http_rx_res_total{ocscp_response_code="201"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_thread_id="140189853226752"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_nf_end_point="10.96.166.65:80"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_res_msg_size="2"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_response_code_class="2"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_nf_setid="set1.udmset.5gc.mnc012.mcc345"}</li> <li>ocscp_metric_http_rx_res_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_http_rx_res_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:8000"}</li> </ul>                                                                                                                                                                                              |

Table 5-5 ocscp\_metric\_http\_tx\_res\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>Total number of HTTP responses forwarded by SCP back to the consumer or request originator with specific HTTP response codes (e.g., 201, 503, etc.)</p> <p>Each SCP-worker pod will peg this metric when sending the response back to the consumer.</p> <p><b>Note:</b>The ocscp_authority dimension will get pegged only when it is enabled using the value.yaml file. scpAuthorityMetricLabelDisabled: false</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_response_code (for example, 201, 503, 404, and so on.)</li> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, and so on.)</li> <li>ocscp_response_code_class (for example, 2, 5, and so on.)</li> <li>ocscp_fqdn(contains fqdn of scp)</li> <li>ocscp_authority</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_consumer_nf_unique_id</li> </ul> <p><b>Note:</b> The ocscp_consumer_host dimension for the metric can have an "OCSCP-INITIATED-MSG" value if the request is an SCP self-generated request.</p>                                                                                                                                                                                                                         |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_http_tx_res_total{ocspf_response_code="201"}</li> <li>ocscp_metric_http_tx_res_total{ocscp_thread_id="140189853226752"}</li> <li>ocscp_metric_http_tx_res_total{ocspf_nf_type="UDM"}</li> <li>ocscp_metric_http_tx_res_total{ocspf_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_http_tx_res_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_http_tx_res_total{ocscp_response_code_class="2"}</li> <li>ocscp_metric_http_tx_res_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_http_tx_res_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:8000"}</li> <li>ocscp_metric_http_tx_res_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_http_tx_res_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_metric_http_tx_res_total{ocscp_consumer_nf_type="SMF"}</li> <li>ocscp_metric_http_tx_res_total{ocscp_consumer_nf_unique_id="SE1SMSF1"}</li> </ul> |

Table 5-6 ocscp\_metric\_attempts\_to\_forward\_route\_total

| Field       | Details                                                                 |
|-------------|-------------------------------------------------------------------------|
| Description | Total number of requests that matched the catch-all-route routing rule. |
| Type        | Counter                                                                 |

Table 5-6 (Cont.) ocscp\_metric\_attempts\_to\_forward\_route\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_nf_end_point (Default value = 0.0:00)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, and so on.)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_fqdn(contains fqdn of scp)</li> </ul>                                                                                                                                                 |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_attempts_to_forward_route_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_attempts_to_forward_route_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_attempts_to_forward_route_total{ocscp_nf_end_point="10.96.166.65:80"}</li> <li>ocscp_metric_attempts_to_forward_route_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_attempts_to_forward_route_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_attempts_to_forward_route_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_attempts_to_forward_route_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-7 ocscp\_metric\_routing\_attempt\_fail\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Total number of request that SCP failed to route due to any reason.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on).</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on).</li> <li>ocscp_nf_end_point (default value = NA)</li> <li>ocscp_locality (SCP site name, for example, Loc6, Loc7, and so on.)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc., default value = NA)</li> <li>ocscp_producer_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b01, etc., default value = NA)</li> <li>ocscp_error_condition</li> <li>ocscp_producer_fqdn (default value = NA, contains the fqdn of the producer)</li> <li>ocscp_fqdn (contains the fqdn of scp)</li> </ul> |

Table 5-7 (Cont.) ocscp\_metric\_routing\_attempt\_fail\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_routing_attempt_fail_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_routing_attempt_fail_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_routing_attempt_fail_total{ocscp_nf_end_point="10.96.166.65:80"}</li> <li>ocscp_metric_routing_attempt_fail_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_routing_attempt_fail_total{ocscp_producer_nf_instance_id="6faf1b bc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_routing_attempt_fail_total{ocscp_service_instance_id="fe137ab7-7 40a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_routing_attempt_fail_total(ocscp_producer_fqdn="udm1svc.default.svc.cluster.local")</li> <li>ocscp_metric_routing_attempt_fail_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-8 ocscp\_metric\_request\_processing\_time\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric captures the processing time by SCP for ingress requests into the time buckets, for example, 1ms, 2ms, 4ms, 8ms and so on.                                                                                                                                                                                                   |
| Type        | Histogram                                                                                                                                                                                                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_processing_time (for example, 1ms, 2ms, 4ms, 8ms, 16ms, 32ms, 64ms, 128ms, 256ms, 500ms, 1000ms, 2000ms, 3000ms, 5000ms, 10000ms, 15000ms, &gt;15000ms)</li> <li>ocscp_fqdn (contains fqdn of scp)</li> </ul> |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_request_processing_time_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_request_processing_time_total{ocscp_processing_time="1ms"}</li> <li>ocscp_metric_request_processing_time_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul>               |

Table 5-9 ocscp\_metric\_response\_processing\_time\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric captures the processing time by SCP for ingress responses into the time buckets (for example, 1ms, 2ms, 4ms, 8ms and so on).                                                                                                                                                                                                  |
| Type        | Histogram                                                                                                                                                                                                                                                                                                                                 |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_processing_time (for example, 1ms, 2ms, 4ms, 8ms, 16ms, 32ms, 64ms, 128ms, 256ms, 500ms, 1000ms, 2000ms, 3000ms, 5000ms, 10000ms, 15000ms, &gt;15000ms.)</li> <li>ocscp_fqdn (contains fqdn of scp)</li> </ul> |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_response_processing_time_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_response_processing_time_total{ocscp_processing_time="1ms"}</li> <li>ocscp_metric_response_processing_time_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul>             |



**Table 5-10 ocscp\_metric\_request\_per\_try\_timeout\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric captures the number of incoming request whose per try timeout expired.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_nf_setid(e.g, set1.udmset.5gc.mnc012.mcc345, default value = "UNKNOWN")</li> <li>ocscp_fqdn (contains fqdn of scp)</li> </ul>                                                                                                                                                                                         |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_request_per_try_timeout_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_request_per_try_timeout_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_request_per_try_timeout_total{ocscp_nf_end_point="10.96.166.65:80"}</li> <li>ocscp_metric_request_per_try_timeout_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_request_per_try_timeout_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_request_per_try_timeout_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_request_per_try_timeout_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_request_per_try_timeout_total{ocscp_nf_setid="set1.udmset.5gc.mnc012.mcc345"}</li> <li>ocscp_metric_request_per_try_timeout_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-11 ocscp\_metric\_transaction\_timeout\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric captures the total number of request whose transaction timed out.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, and so on.)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, and so on. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, and so on. Default value = NA)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_fqdn (contains fqdn of scp)</li> </ul> |

Table 5-11 (Cont.) ocscp\_metric\_transaction\_timeout\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_transaction_timeout_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_transaction_timeout_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_transaction_timeout_total{ocscp_nf_end_point="10.96.166.65:80"}</li> <li>ocscp_metric_transaction_timeout_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_transaction_timeout_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_transaction_timeout_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_transaction_timeout_total(ocscp_producer_fqdn="udm1svc.default.svc.cluster.local")</li> <li>ocscp_metric_transaction_timeout_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-12 ocscp\_metric\_max\_routing\_attempts\_exhausted\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric captures the total number of requests whose maximum routing attempts expired during alternate routing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, and so on.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, and so on.)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, and so on. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_fqdn (contains fqdn of scp)</li> </ul>                                                                                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_max_routing_attempts_exhausted_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_max_routing_attempts_exhausted_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_max_routing_attempts_exhausted_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_max_routing_attempts_exhausted_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_max_routing_attempts_exhausted_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_max_routing_attempts_exhausted_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"p_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-13 ocscp\_notifications\_rejected\_topologysource\_local\_total

| Field       | Details                                                                                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>Number of NF notification messages rejected because "learning from NRF" was configured as "not allowed".</p> <p>Metrics Pegging Condition:</p> <p>This metrics will be pegged whenever notification is received for NF configured as LOCAL.</p> |
| Type        | Counter                                                                                                                                                                                                                                            |

**Table 5-13 (Cont.) ocscp\_notifications\_rejected\_topologysource\_local\_total**

| Field     | Details                                                                                                                                                                                         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>nfType (for example: UDM, AMF)</li> <li>ocscp_fqdn</li> </ul>                                                                                            |
| Example   | <ul style="list-style-type: none"> <li>scp_local_topology_source_total{nfType = "UDM"}</li> <li>scp_local_topology_source_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-14 ocscp\_topologysource\_toggle\_nrf\_to\_local\_total**

| Field       | Details                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times topology source changed from "NRF" to "Local" for given NF.                                                                                                                                               |
| Type        | Counter                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (for example: UDM, AMF)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                      |
| Example     | <ul style="list-style-type: none"> <li>scp_topologysource_toggle_nrf_to_local_total{nfType = "UDM"}</li> <li>scp_topologysource_toggle_nrf_to_local_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-15 ocscp\_topologysource\_toggle\_local\_to\_nrf\_total**

| Field       | Details                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times topology source changed from "Local" to "NRF" for given NF.                                                                                                                                               |
| Type        | Counter                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (for example: UDM, AMF)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                      |
| Example     | <ul style="list-style-type: none"> <li>scp_topologysource_toggle_local_to_nrf_total{nfType = "UDM"}</li> <li>scp_topologysource_toggle_local_to_nrf_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-16 ocscp\_db\_operation\_failure\_total**

| Field       | Details                                                                                                                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times audit failed due to database failure.                                                                                                                                                                         |
| Type        | Counter                                                                                                                                                                                                                       |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>dbOperation (eg: find, findAll, save, saveAll, get, count, delete, deleteAll)</li> <li>tableName (eg: VIRTUAL_SERVICES, SERVICES_ENTRIES, NF_PROFILES.)</li> </ul> |

Table 5-16 (Cont.) ocscp\_db\_operation\_failure\_total

| Field   | Details                                                                                                                                                                                                                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_db_operation_failure_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_db_operation_failure_total{dbOperation="findAll"}</li> <li>ocscp_db_operation_failure_total{tableName="SERVICE_ENTRIES"}</li> </ul> |

Table 5-17 ocscp\_notification\_nf\_profile\_processing\_failure\_total

| Field       | Details                                                                                                                                                                         |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times notification process failure.                                                                                                                                   |
| Type        | Counter                                                                                                                                                                         |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (eg., AMF)</li> <li>nfInstanceId</li> <li>ocscp_fqdn</li> </ul>                                                                   |
| Example     | ocscp_notification_nf_profile_processing_failure_total{nfType="UDM",nfInstanceId="6faf3abc-6e4a-4454-a507-a14ef8e1bc4b",ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"} |

Table 5-18 ocscp\_patch\_subscription\_nf\_success\_total

| Field       | Details                                                                                                                                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of successful patch operation of subscription based on nfType and nrfRegionOrSetId.                                                                                                                                                                                                     |
| Type        | Counter                                                                                                                                                                                                                                                                                        |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (eg: UDM, AMF)</li> <li>nrfRegionOrSetId (eg:Reg1,Reg2)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                           |
| Example     | <ul style="list-style-type: none"> <li>ocscp_patch_subscription_nf_success_total{nfType="A USF"</li> <li>ocscp_patch_subscription_nf_success_total{nrfRegionOrSetId="Reg1"}</li> <li>ocscp_patch_subscription_nf_success_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-19 ocscp\_patch\_subscription\_nf\_failure\_total

| Field       | Details                                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of failure patch operation of subscription based on nfType and nrfRegionOrSetId.                                              |
| Type        | Counter                                                                                                                              |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (eg: UDM, AMF)</li> <li>nrfRegionOrSetId (eg:Reg1,Reg2)</li> <li>ocscp_fqdn</li> </ul> |

**Table 5-19 (Cont.) ocscp\_patch\_subscription\_nf\_failure\_total**

| Field   | Details                                                                                                                                                                                                                                                                                         |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_patch_subscription_nf_failure_total{nfType="AUS F"}</li> <li>ocscp_patch_subscription_nf_failure_total{nrfRegionOrSetId="Reg1"}</li> <li>ocscp_patch_subscription_nf_failure_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-20 ocscp\_unsubscription\_nf\_success\_total**

| Field       | Details                                                                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of successful operations of unsubscription based on nfType and nrfRegionOrSetId.                                                                                                                                                                                            |
| Type        | Counter                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (for example: UDM, AMF)</li> <li>nrfRegionOrSetId(eg:Reg1,Reg2)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                       |
| Example     | <ul style="list-style-type: none"> <li>ocscp_unsubscription_nf_success_total{nfType="AUSF"}</li> <li>ocscp_unsubscription_nf_success_total{nrfRegionOrSetId="Reg1"}</li> <li>ocscp_unsubscription_nf_success_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-21 ocscp\_unsubscription\_nf\_failure\_total**

| Field       | Details                                                                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of failure operations of unsubscription based on nfType and nrfRegionOrSetId.                                                                                                                                                                                               |
| Type        | Counter                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (for example: UDM, AMF)</li> <li>nrfRegionOrSetId(eg:Reg1,Reg2)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                       |
| Example     | <ul style="list-style-type: none"> <li>ocscp_unsubscription_nf_failure_total{nfType="AUSF"}</li> <li>ocscp_unsubscription_nf_failure_total{nrfRegionOrSetId="Reg1"}</li> <li>ocscp_unsubscription_nf_failure_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-22 ocscp\_subscription\_nf\_success\_total**

| Field       | Details                                                                                                                                      |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of successful operations of subscription based on nfType and nrfRegionOrSetId.                                                        |
| Type        | Counter                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (for example: UDM, AMF)</li> <li>nrfRegionOrSetId(eg:Reg1,Reg2)</li> <li>ocscp_fqdn</li> </ul> |

Table 5-22 (Cont.) ocscp\_subscription\_nf\_success\_total

| Field   | Details                                                                                                                                                                                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_subscription_nf_success_total{nftype="AUSF"}</li> <li>ocscp_subscription_nf_success_total{nrfRegionOrSetId="Reg1"}</li> <li>ocscp_subscription_nf_success_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-23 ocscp\_subscription\_nf\_failure\_total

| Field       | Details                                                                                                                                                                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of failure operations of subscription based on nfType and nrfRegionOrSetId.                                                                                                                                                                                           |
| Type        | Counter                                                                                                                                                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (for example: UDM, AMF)</li> <li>nrfRegionOrSetId (eg: Reg1, set1.nrfset.5gc.mnc014.mcc310)</li> <li>ocscp_fqdn</li> </ul>                                                                                                     |
| Example     | <ul style="list-style-type: none"> <li>ocscp_subscription_nf_failure_total{nftype="AUSF"}</li> <li>ocscp_subscription_nf_failure_total{nrfRegionOrSetId="Reg1"}</li> <li>ocscp_subscription_nf_failure_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-24 ocscp\_audit\_2xx\_empty\_nf\_array

| Field       | Details                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The state of metrics is 1 when SCP audit receives empty NF array response for nfType. Then, state of metrics is changes to 0 when audit receives non empty NF array.                                                      |
| Type        | Gauge                                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>nfType (eg: UDM, AMF)</li> <li>auditMethod</li> <li>nrfRegionOrSetId(eg:Reg1,Reg2)</li> </ul>                                                                  |
| Example     | ocscp_audit_2xx_empty_nf_array_rx_total{nrfRegionOrSetId="Reg2"}<br>ocscp_audit_2xx_empty_nf_array_rx_total{nftype="UDM"}<br>ocscp_audit_2xx_empty_nf_array_rx_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"} |

Table 5-25 ocscp\_audit\_error\_response

| Field       | Details                                                                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The state of metrics is 1 when SCP audit receives error response for nfType. Then, state of metrics is changed to 0 when audit receives non error response for nfType. |
| Type        | Gauge                                                                                                                                                                  |

**Table 5-25 (Cont.) ocscp\_audit\_error\_response**

| Field     | Details                                                                                                                                                  |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>nfType (eg: UDM, AMF)</li> <li>auditMethod</li> <li>nrfRegionOrSetId(eg:Reg1,Reg2)</li> </ul> |
| Example   | ocscp_audit_error_response{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}                                                                       |

**Table 5-26 ocscp\_subscription\_nrf\_registration\_success\_total**

| Field       | Details                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metrics pegs the number of times registration successful for a particular nrfRegionOrSetId.                                                                                                                                              |
| Type        | Counter                                                                                                                                                                                                                                       |
| Dimension   | nrfRegionOrSetId<br>For example: (Reg11,Reg1,set1.nrfset.5gc.mnc014.mcc310)<br>ocscp_fqdn                                                                                                                                                     |
| Example     | <ul style="list-style-type: none"> <li>ocscp_subscription_nrf_registration_success_total{nrfRegionOrSetId="Reg11"}</li> <li>ocscp_subscription_nrf_registration_success_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-27 ocscp\_subscription\_nrf\_registration\_failure\_total**

| Field       | Details                                                                                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metrics pegs the number of times registration failed for a particular nrfRegionOrSetId.                                                                                                                                                |
| Type        | Counter                                                                                                                                                                                                                                     |
| Dimension   | nrfRegionOrSetId<br>For example: (Reg11,Reg1,set1.nrfset.5gc.mnc014.mcc310)<br>ocscp_fqdn                                                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_subscription_nrf_registration_failure_total{nrfRegionOrSetId="Reg11"}</li> <li>ocscp_subscription_nrf_heartbeat_failures_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-28 ocscp\_subscription\_nrf\_heartbeat\_success\_total**

| Field       | Details                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------|
| Description | This metrics pegs the number of times heartbeat successful for a particular nrfRegionOrSetId. |
| Type        | Counter                                                                                       |
| Dimension   | nrfRegionOrSetId<br>For example: (Reg11,Reg1,set1.nrfset.5gc.mnc014.mcc310)<br>ocscp_fqdn     |

Table 5-28 (Cont.) ocscp\_subscription\_nrf\_heartbeat\_success\_total

| Field   | Details                                                                                                                                                                                                                                 |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_subscription_nrf_heartbeat_success_total{nrfRegionOrSetId="Reg11"}</li> <li>ocscp_subscription_nrf_heartbeat_success_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-29 ocscp\_subscription\_nrf\_heartbeat\_failures\_total

| Field       | Details                                                                                                                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metrics pegs the number of times heartbeat failed for a particular nrfRegionOrSetId.                                                                                                                                                 |
| Type        | Counter                                                                                                                                                                                                                                   |
| Dimension   | nrfRegionOrSetId<br>For example: (Reg11,Reg1,set1.nrfset.5gc.mnc014.mcc310)<br>ocscp_fqdn                                                                                                                                                 |
| Example     | <ul style="list-style-type: none"> <li>ocscp_subscription_nrf_heartbeat_failures_total{nrfRegionOrSetId="Reg11"}</li> <li>ocscp_subscription_nrf_heartbeat_failures_total{scpFqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-30 ocscp\_metric\_upstream\_service\_time\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric captures the time taken by upstream host is responding the request in time buckets, for example, 1ms, 2ms, 4ms, 8ms, and so on.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Type        | Histogram                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, and so on.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, and so on. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, and so on. Default value = NA)</li> <li>ocscp_upstream_service_time (for example, 1ms, 2ms, 4ms, 8ms, etc.16ms, 32ms, 64ms, 128ms, 256ms, 500ms, 1000ms, 2000ms, 3000ms, 5000ms, 10000ms, 15000ms, &gt;15000ms.)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_fqdn</li> </ul> |



Table 5-30 (Cont.) ocscp\_metric\_upstream\_service\_time\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_upstream_service_time{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_upstream_service_time{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_upstream_service_time{ocscp_nf_end_point="10.96.166.65:80"}</li> <li>ocscp_metric_upstream_service_time{ocscp_locality="Loc7"}</li> <li>ocscp_metric_upstream_service_time{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_upstream_service_time{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_upstream_service_time{ocscp_upstream_service_time="1ms"}</li> <li>ocscp_metric_upstream_service_time{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_upstream_service_time_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_upstream_service_time_total{ocscp_authORITY="ocscp-scp-worker.scpsvc.svc.cluster.local:8000"}</li> </ul> |

Table 5-31 ocscp\_metric\_scp\_generated\_response\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Captures the error response generated by SCP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (for example: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_response_code (for example: 503, 404, 408, etc.)</li> <li>ocscp_error_group (for example: ocscp.http.config_error.cluster_not_found, ocscp.http.routing_failure.connect_failure, etc)</li> <li>scp_fqdn</li> <li>ocscp_nf_end_point(nrf2svc.scpsvc.svc.cluster.local:8080)</li> <li>ocscp_producer_nf_instance_id(3faf3bbc-6e4a-2828-a507-a14ef8e1bc6a)</li> <li>ocscp_producer_fqdn(nrf2svc.scpsvc.svc.cluster.local)</li> </ul> |

Table 5-31 (Cont.) ocscp\_metric\_scp\_generated\_response\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_scp_generated_response_total{ocscp_nf_type="UDM",ocscp_nf_service_type="nudm-uecm",</li> <li>ocscp_metric_scp_generated_response_total{ocscp_response_code="503",ocscp_error_group="ocscp.http.routing_failure.connect_failure",scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local",ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:8000"}</li> <li>ocscp_metric_scp_generated_response_total{ocscp_error_group="Destination webclient Connection Failure",ocscp_nf_end_point="nfr2l2svc.scpsvc.svc.cluster.local:8080",ocscp_producer_nf_instance_id="3faf2bb-c-6e4a-2828-a507-a14ef8e1bc7b",ocscp_producer_fqdn="nfr2l2svc.scpsvc.svc.cluster.local",ocscp_response_code="503"}</li> </ul> |

Table 5-32 ocscp\_notification\_failure\_type\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of Notification failed to process.                                                                                                                                                                                                                                                                                           |
| Type        | Counter                                                                                                                                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>errorType (for example: Invalid Supi Range, Invalid Identity Range, Notification Failure)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                     |
| Example     | <ul style="list-style-type: none"> <li>ocscp_notification_failure_type_total{errorType="Invalid Identity Range"}</li> <li><b>Note:</b> errorType like Invalid Supi Range, Invalid Identity Range, Notification Failure</li> <li>ocscp_notification_failure_type_total{ocscp_fqdn="ocscpworker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-33 ocscp\_nrf\_notifications\_requests\_nf\_total

| Field       | Details                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of Notifications Requests from NRF specific to NFs per NF Type.                                                                                                                                              |
| Type        | Counter                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>nftype (for example: UDM, AMF)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                |
| Example     | <ul style="list-style-type: none"> <li>ocscp_nrf_notifications_requests_nf_total{nftype="UDM"}</li> <li>ocscp_nrf_notifications_requests_nf_total{ocscp_fqdn="ocscp-scpworker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-34 ocscp\_notification\_nf\_profile\_processing\_success\_total

| Field       | Details                                         |
|-------------|-------------------------------------------------|
| Description | Number of notifications processed successfully. |
| Type        | Counter                                         |

**Table 5-34 (Cont.) ocscp\_notification\_nf\_profile\_processing\_success\_total**

| Field     | Details                                                                                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>nftype (for example: UDM, AMF)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                           |
| Example   | <ul style="list-style-type: none"> <li>ocscp_notification_nf_profile_processing_success_total{nftype="UDM"}</li> <li>ocscp_notification_nf_profile_processing_success_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-35 ocscp\_audit\_ondemand\_success\_total**

| Field       | Details                                                                                                                                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of Successful On-Demand Audit invokes.                                                                                                                                                                      |
| Type        | Counter                                                                                                                                                                                                            |
| Dimension   | nrfRegionOrSetId<br>For example: (Reg11,Reg1,Reg2)<br>ocscp_fqdn                                                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_audit_ondemand_success_total{nrfRegionOrSetId="Reg11"}</li> <li>ocscp_audit_ondemand_success_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-36 ocscp\_audit\_ondemand\_failure\_total**

| Field       | Details                                                                                                                                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of Failure On-Demand Audit invokes.                                                                                                                                                                         |
| Type        | Counter                                                                                                                                                                                                            |
| Dimension   | nrfRegionOrSetId<br>For example: (Reg11,Reg1,Reg2)<br>ocscp_fqdn                                                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_audit_ondemand_failure_total{nrfRegionOrSetId="Reg11"}</li> <li>ocscp_audit_ondemand_failure_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-37 ocscp\_duplicate\_audit\_profile\_total**

| Field       | Details                                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------------------|
| Description | Number of duplicate profiles added by audit due to notification slowness                                          |
| Type        | Counter                                                                                                           |
| Dimension   | nftype (for example: UDM, AMF)<br>nflInstanceId (for example: 4947a69a-f61b-4bc1-b9da-47c9c5d14b64)<br>ocscp_fqdn |

Table 5-37 (Cont.) ocscp\_duplicate\_audit\_profile\_total

| Field   | Details                                                                                                                                                                                                                                                                                                     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_duplicate_audit_profile_total{nfType="UDM"}</li> <li>ocscp_duplicate_audit_profile_total{nflInstanceId="4947a69a-f61b-4bc1-b9da-47c9c5d14b64"}</li> <li>ocscp_duplicate_audit_profile_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-38 ocscp\_notification\_foreign\_nf\_locality\_absent

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Sets to 1 if a foreign NF is registered from an unknown locality that is locality is not present in the foreign NF                                                                                                                                                                                                                                                                                                                                                                                           |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Dimension   | locality (for example: UNKNOWN_LOCALITY)<br>nflInstanceId (for example: 1faf1bbc-6e4a-4454-a507-a14ef8e1bb6a)<br>nfType (for example: UDM, AMF)<br>nrregionorsetid (for example: Reg1,Reg2)<br>ocscp_fqdn                                                                                                                                                                                                                                                                                                    |
| Example     | <ul style="list-style-type: none"> <li>ocscp_notification_foreign_nf_locality_absent{locality="UNKNOWN_LOCALITY"}</li> <li>ocscp_notification_foreign_nf_locality_absent{nflInstanceId="4947a69a-f61b-4bc1-b9da-47c9c5d14b64"}</li> <li>ocscp_notification_foreign_nf_locality_absent{nfType="UDM"}</li> <li>ocscp_notification_foreign_nf_locality_absent{nrregionorsetid="Reg2"}</li> <li>ocscp_notification_foreign_nf_locality_absent{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-39 ocscp\_notification\_foreign\_nf\_locality\_unserved

| Field       | Details                                                                                                                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Sets to 1 if a foreign NF is registered and its locality is not served by any SCP                                                                                                               |
| Type        | Gauge                                                                                                                                                                                           |
| Dimension   | locality (for example: Loc80)<br>nflInstanceId (for example: 1faf1bbc-6e4a-4454-a507-a14ef8e1bb6a)<br>nfType (for example: UDM, AMF)<br>nrregionorsetid (for example: Reg1, Reg2)<br>ocscp_fqdn |

Table 5-39 (Cont.) ocscp\_notification\_foreign\_nf\_locality\_unserved

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_notification_foreign_nf_locality_unserved{locality="Loc80"}</li> <li>ocscp_notification_foreign_nf_locality_unserved{nflnstanceId="4947a69a-f61b-4bc1-b9da-47c9c5d14b64"}</li> <li>ocscp_notification_foreign_nf_locality_unserved{nftype="UDM"}</li> <li>ocscp_notification_foreign_nf_locality_unserved{nrfregionorsetid="Reg2"}</li> <li>ocscp_notification_foreign_nf_locality_unserved{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-40 ocscp\_notification\_duplicate\_foreign\_location

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Sets to 1 if Locality of foreign NF(mate/serving locality in case of foreign SCP) is same as one of locality present in the local SCP.                                                                                                                                                                                                                                                                                                                                                            |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Dimension   | locality (for example: Loc83)<br>nflnstanceId (for example: 1faf1bbc-6e4a-4454-a507-a14ef8e1bb6a)<br>nftype (for example: UDM, AMF)<br>nrfregionorsetid (for example: Reg1, Reg2)<br>ocscp_fqdn                                                                                                                                                                                                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_notification_duplicate_foreign_location{locality="Loc83"}</li> <li>ocscp_notification_duplicate_foreign_location{nflnstanceId="4947a69a-f61b-4bc1-b9da-47c9c5d14b64"}</li> <li>ocscp_notification_duplicate_foreign_location{nftype="UDM"}</li> <li>ocscp_notification_duplicate_foreign_location{nrfregionorsetid="Reg2"}</li> <li>ocscp_notification_duplicate_foreign_location{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-41 ocscp\_interscp\_downstream\_rq\_total

| Field       | Details                                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Keeps track of ingress message received from another SCP                                                                                                                         |
| Type        | Counter                                                                                                                                                                          |
| Dimension   | ocscp_fqdn (for example: site2-ocscp-scp-worker.scpsvc.svc.cluster.local")<br>ocscp_nf_service_type (for example:"nudm-uecm")<br>ocscp_nf_type (for example:"UDM")<br>ocscp_fqdn |

**Table 5-41 (Cont.) ocscp\_interscp\_downstream\_rq\_total**

| Field   | Details                                                                                                                                                                                                                                                                                             |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_interscp_downstream_rq_total{ocscp_fqdn="site 2-ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_interscp_downstream_rq_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_interscp_downstream_rq_total{ocscp_nf_type="UDM"}</li> </ul> |

**Table 5-42 ocscp\_metric\_rule\_engine\_processing\_time\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Captures the processing time by SCP for rule engine                                                                                                                                                                                                                                                                                                               |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                           |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, etc.)</li> <li>ocscp_processing_time (for example, 1ms, 2ms, 4ms, 8ms, etc)</li> <li>ocscp_fqdn (contains fqdn of scp)</li> </ul> |
| Example     | ocscp_metric_rule_engine_processing_time_total{ocscp_locality="Loc7"}<br>ocscp_metric_rule_engine_processing_time_total{ocscp_nf_service_type=" nudm-uecm"}<br>ocscp_metric_rule_engine_processing_time_total{ ocscp_nf_type="UDM"}<br>ocscp_metric_rule_engine_processing_time_total{ocscp_processing_time="29"}                                                 |

**Table 5-43 ocscp\_metric\_upstream\_response\_timeout\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Contains information of timeout for every attempt made by producer to get a response.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (for example, UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, etc.)</li> <li>ocscp_producer_fqdn (for example, udm1svc.default.svc.cluster.local)</li> <li>ocscp_response_code (for example, 503 SERVICE_UNAVAILABLE, 504 GATEWAY_TIMEOUT)</li> <li>ocscp_nf_setid(e.g, set1.udmset.5gc.mnc012.mcc345, default value = "UNKNOWN")</li> <li>ocscp_fqdn</li> </ul> |

**Table 5-43 (Cont.) ocscp\_metric\_upstream\_response\_timeout\_total**

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <pre>ocscp_metric_upstream_response_timeout_total{ ocscp_nf_type="UDM"} ocscp_metric_upstream_response_timeout_total{ocscp_location="Loc7"} ocscp_metric_upstream_response_timeout_total{ocscp_nservice_type=" nudm-uecm"} ocscp_metric_upstream_response_timeout_total{ocscp_processing_time="29"} ocscp_metric_upstream_response_timeout_total{ocscp_response_code="504 GATEWAY_TIMEOUT"} ocscp_metric_upstream_response_timeout_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"} ocscp_metric_upstream_response_timeout_total{ocscp_nsetid="set1.udmset.5gc.mnc012.mcc345"}</pre> |

**Table 5-44 ocscp\_metric\_http\_streaminfo\_create\_total**

| Field       | Details                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------|
| Description | Captures information of application, microservice, fqdn and vendor whenever StreamInfo Object is initialized |
| Type        | Counter                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> </ul>                                                 |
| Example     | <pre>ocscp_metric_http_streaminfo_create_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</pre> |

**Table 5-45 ocscp\_metric\_http\_streaminfo\_delete\_total**

| Field       | Details                                                                                                                                      |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Captures information of application, microservice, fqdn and vendor just before StreamInfo Object is destroyed before the garbage collection. |
| Type        | Counter                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> </ul>                                                                                 |
| Example     | <pre>ocscp_metric_http_streaminfo_delete_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</pre>                                 |

**Table 5-46 ocscp\_upstream\_rq\_pending\_overflow\_total**

| Field       | Details                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------|
| Description | Captures total number of requests for which circuit has been broken due to http2MaxLimit reached for outstanding requests. |
| Type        | Counter                                                                                                                    |

**Table 5-46 (Cont.) ocscp\_upstream\_rq\_pending\_overflow\_total**

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type( for example, UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality( SCP site name for example, Loc6, Loc7, etc.)</li> <li>ocscp_producer_fqdn( for example, udm1svc.default.svc.cluster.local)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_fqdn (contains fqdn of scp)</li> </ul>                                                                                                         |
| Example   | <pre>ocscp_upstream_rq_pending_overflow_total{ ocscp_nf_type="UDM"}</pre> <pre>ocscp_upstream_rq_pending_overflow_total{ocscp_nf_service_type=" nudm-uecm"}</pre> <pre>ocscp_upstream_rq_pending_overflow_total{ocscp_locality="Loc7"}</pre> <pre>ocscp_upstream_rq_pending_overflow_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</pre> <pre>ocscp_upstream_rq_pending_overflow_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</pre> <pre>ocscp_upstream_rq_pending_overflow_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</pre> <pre>ocscp_upstream_rq_pending_overflow_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</pre> |

**Table 5-47 ocscp\_circuit\_breaking\_applied**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the circuit breaking state. If outstanding request limit has been reached then gauge will show 1 otherwise 0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type( for example, UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (for example, nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality (SCP site name for example, Loc6, Loc7, etc.)</li> <li>ocscp_producer_fqdn (for example, udm1svc.default.svc.cluster.local)</li> <li>ocscp_producer_nf_instance_id (for example, 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (for example, fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_fqdn (contains fqdn of scp)</li> </ul> |



Table 5-47 (Cont.) ocscp\_circuit\_breaking\_applied

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <pre>ocscp_circuit_breaking_applied{ ocscp_nf_type="UDM"} ocscp_circuit_breaking_applied{ocscp_nf_service_type=" nudm-uecm"} ocscp_circuit_breaking_applied{ocscp_locality="Loc7"} ocscp_circuit_breaking_applied{ocscp_producer_fqdn="udm 1svc.default.svc.cluster.local"} ocscp_circuit_breaking_applied{ocscp_producer_nf_instanc e_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"} ocscp_circuit_breaking_applied{ocscp_fqdn="ocscp-scp- worker.scpsvc.svc.cluster.local"}</pre> |

Table 5-48 ocscp\_configuration\_tx\_res\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of times the configuration microservice receives request from users.                                                                                                                                                                                                                                                                                                                                 |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>configurationName(RoutingOptions, CanaryRelease, MessagePriority, NfServiceGroup, MediationConfiguration, SystemOptions, LogLevels, TracingOptions, IngressRateLimiter, EgressRateLimiter, WorkerPodOverloadCtrlPolicy, WorkerPodOverloadActionPolicy, WorkerPodOverloadDiscardPolicy)</li> <li>requestType(GET, PUT, DELETE)</li> <li>responseCode</li> <li>ocscp_fqdn</li> </ul> |
| Example     | <pre>ocscp_configuration_tx_res_total{configurationName="Syste moptions"} ocscp_configuration_tx_res_total{requestType="PUT"} ocscp_configuration_tx_res_total{responseCode="200"} ocscp_configuration_tx_res_total{ocscp_fqdn="ocscp-scp- worker.scpsvc.svc.cluster.local"}</pre>                                                                                                                                        |

Table 5-49 ocscp\_rx\_configuration\_total

| Field       | Details                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of times the configuration microservice responds to users either with a successful or failure response. |
| Type        | Counter                                                                                                                      |

Table 5-49 (Cont.) ocscp\_rx\_configuration\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>configurationName (RoutingOptions, CanaryRelease, MessagePriority, NfServiceGroup, MediationConfiguration, SystemOptions, LogLevels, TracingOptions, IngressRateLimiter, EgressRateLimiter, WorkerPodOverloadCtrlPolicy, WorkerPodOverloadActionPolicy, WorkerPodOverloadDiscardPolicy)</li> <li>requestType(GET, PUT, DELETE)</li> <li>ocscp_fqdn</li> </ul> |
| Example   | ocscp_rx_configuration_total{configurationName="Systemoptions"}<br>ocscp_rx_configuration_total{requestType="PUT"}<br>ocscp_rx_configuration_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}                                                                                                                                                                                           |

Table 5-50 ocscp\_notification\_all\_routing\_rules\_deleted\_total

| Field       | Details                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates no of times all routing rules are deleted.                                                                                                                                                                                   |
| Type        | Counter                                                                                                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>nfType (for example: UDM, AMF)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_notification_all_routing_rules_deleted_total{nfType="UDM"}</li> <li>ocscp_notification_all_routing_rules_deleted_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-51 ocscp\_no\_nf\_instance

| Field       | Details                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the state of number of instances for NFType.                                                                                                                     |
| Type        | Gauge                                                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>nftype (for example: UDM, AMF)</li> <li>ocscp_fqdn</li> </ul>                                                                       |
| Example     | <ul style="list-style-type: none"> <li>ocscp_no_nf_instance{nftype="UDM"}</li> <li>ocscp_no_nf_instance{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-52 ocscp\_metric\_egress\_rate\_limiting\_not\_applied\_req\_total

| Field       | Details                                                           |
|-------------|-------------------------------------------------------------------|
| Description | Number of requests routed without egress rate limiting treatment. |
| Type        | Counter                                                           |

**Table 5-52 (Cont.) ocscp\_metric\_egress\_rate\_limiting\_not\_applied\_req\_total**

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_producer_nf_instance_id</li> <li>ocscp_producer_fqdn</li> <li>ocscp_cause</li> <li>ocscp_egress_rl_bucketkey</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_egress_rate_limiting_not_applied_req_total{ ocscp_nf_type="UDM"}</li> <li>ocscp_metric_egress_rate_limiting_not_applied_req_total{ocscp_nf_service_type=" nudm-uecm"}</li> <li>ocscp_metric_egress_rate_limiting_not_applied_req_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_egress_rate_limiting_not_applied_req_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_egress_rate_limiting_not_applied_req_total{ocscp_cause="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_egress_rate_limiting_not_applied_req_total{ocscp_egress.rl.bucketkey="egress_6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_egress_rate_limiting_not_applied_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-53 ocscp\_metric\_egress\_rate\_limiting\_alternate\_routed\_req\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of requests alternate routed because of egress rate limiting.                                                                                                                                                                                                                                                          |
| Type        | Counter                                                                                                                                                                                                                                                                                                                       |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_producer_nf_instance_id</li> <li>ocscp_producer_fqdn</li> <li>ocscp_egress_rl_bucketkey</li> <li>ocscp_fqdn</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> </ul> |

Table 5-53 (Cont.) ocscp\_metric\_egress\_rate\_limiting\_alternate\_routed\_req\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_egress_rl_bucketkey="egress_6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_metric_egress_rate_limiting_alternate_routed_req_total{ocscp_consumer_nf_type="SMF"}</li> </ul> |

Table 5-54 ocscp\_metric\_egress\_rate\_limiting\_throttle\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of requests throttled due to egress rate limiting                                                                                                                                                                                                                                                                                                                                         |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_producer_nf_instance_id</li> <li>ocscp_producer_fqdn</li> <li>ocscp_consumer_fqdn</li> <li>ocscp_configured_egress_rate</li> <li>ocscp_egress_rl_bucketkey</li> <li>ocscp_fqdn</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> </ul> |

Table 5-54 (Cont.) ocscp\_metric\_egress\_rate\_limiting\_throttle\_req\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_nf_type="UDM"}</li> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_nf_service_type="nudm-uecm"}</li> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_egress_rl_bucketkey="egress_6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>• ocscp_metric_egress_rate_limiting_throttle_req_total{ ocscp_consumer_nf_type="SMF"}</li> </ul> |

Table 5-55 ocscp\_metric\_ingress\_rate\_limiting\_not\_applied\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                               |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of requests routed without ingress rate limiting treatment                                                                                                                                                                                                                                                     |
| Type        | Counter                                                                                                                                                                                                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>• ocscp_consumer_nf_type</li> <li>• ocscp_consumer_host</li> <li>• ocscp_consumer_nf_instance_id</li> <li>• ocscp_ingress_rl_headername</li> <li>• ocscp_ingress_rl_headerformat</li> <li>• ocscp_cause</li> <li>• ocscp_ingress_rl_bucketkey</li> <li>• ocscp_fqdn</li> </ul> |

Table 5-55 (Cont.) ocscp\_metric\_ingress\_rate\_limiting\_not\_applied\_req\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_ingress_rl_headername="User-Agent"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_ingress_rl_headerformat="NFTYPE-FQDN NFINSTANCEID"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_cause="CONFIGURATION_NOT_FOUND"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp.ingress.rl.bucketkey="ingress_6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{app="ocscp-scp-worker",app_kubernetes_io_component="microService",app_kubernetes_io_instance="ocscp",app_kubernetes_io_managed_by="Helm",app_kubernetes_io_name="scp-worker",app_kubernetes_io_part_of="ocscp",app_kubernetes_io_version="22.4.0.0",application_name="ocscp",coherenceCluster="scp-coherence-cluster",exported_vendor="Oracle",helm_sh_chart="scp-worker-22.4.0",instance="192.168.141.38:8091",job="kubernetes-pods",kubernetes_namespace="scpsvc",kubernetes_pod_name="ocscp-scp-worker-5897bd5b76-wvbm",microservice="scp-worker",ocscp_cause="CONFIGURATION_NOT_FOUND",ocscp_consumer_fqdn="NA",ocscp_consumer_nf_instance_id="NA",ocscp_consumer_nf_type="NA",ocscp_ingress_rl_bucketkey="NA",ocscp_ingress_rl_headerformat="NFTYPE-FQDN NFINSTANCEID",ocscp_ingress_rl_headername="User-Agent",pod_template_hash="5897bd5b76",ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local",vendor="oracle"}</li> </ul> |

Table 5-56 ocscp\_metric\_ingress\_rate\_limiting\_throttle\_req\_total

| Field       | Details                                                   |
|-------------|-----------------------------------------------------------|
| Description | Number of requests throttled due to ingress rate limiting |
| Type        | Counter                                                   |

Table 5-56 (Cont.) ocscp\_metric\_ingress\_rate\_limiting\_throttle\_req\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"><li>• ocscp_consumer_nf_type</li><li>• ocscp_consumer_nf_instance_id</li><li>• ocscp_consumer_host</li><li>• ocscp_configured_ingress_rate</li><li>• ocscp_ingress_rl_bucketkey</li><li>• ocscp_fqdn</li><li>• ocscp_ingress_rl_headername</li><li>• ocscp_ingress_rl_headerformat</li></ul> |

Table 5-56 (Cont.) ocscp\_metric\_ingress\_rate\_limiting\_throttle\_req\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_ingress_rl_headername="User-Agent"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_ingress_rl_headerformat="NFTYPE-FQDN-NFINSTANCEID"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_configured_ingress_rate="40 messages per 1 seconds with Burst of 100 %"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp.ingress.rl.bucketkey="ingress_6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_ingress_rate_limiting_not_applied_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_ingress_rate_limiting_throttle_req_total{app="ocscp-scp-worker",app_kubernetes_io_component="microService",app_kubernetes_io_instance="ocscp",app_kubernetes_io_managed_by="Helm",app_kubernetes_io_name="scp-worker",app_kubernetes_io_part_of="ocscp",app_kubernetes_io_version="22.4.0.0",application_name="ocscp",coherenceCluster="scp-coherence-cluster",exported_vendor="Oracle",helm_sh_chart="scp-worker-22.4.0",instance="192.168.141.38:8091",job="kubernetes-pods",kubernetes_namespace="scpsvc",kubernetes_pod_name="ocscp-scp-worker-5897bd5b76-wvbm",microservice="scp-worker",ocscp_configured_ingress_rate="40 messages per 1 seconds with Burst of 100 %",ocscp_consumer_fqdn="smf1svc.scpsvc.svc.cluster.local",ocscp_consumer_nf_instance_id="2faf1bbc-6e4a-4454-acd7-a14ef8efbc6b",ocscp_consumer_nf_type="SMF",ocscp_ingress_rl_bucketkey="ingress_2faf1bbc-6e4a-4454-acd7-a14ef8efbc6b",ocscp_ingress_rl_headerformat="NFTYPE-FQDN",ocscp_ingress_rl_headername="User-Agent",pod_template_hash="5897bd5b76",ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local",vendor="oracle"}</li> </ul> |



**Table 5-57 ocscp\_notification\_received\_different\_nrfregionorsetid\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of duplicate notifications skipped with the nrfRegionOrSetId update                                                                                                                                                                                                                                                                                                                                        |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                           |
| Dimension   | <ul style="list-style-type: none"> <li>• nfType</li> <li>• nfiInstanceId</li> <li>• nrfRegionOrSetId</li> <li>• ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                                             |
| Example     | ocscp_notification_received_different_nrfregionorsetid_total{nfType="UDM"}<br>ocscp_notification_received_different_nrfregionorsetid_total{nfiInstanceId="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}<br>ocscp_notification_received_different_nrfregionorsetid_total{nrfRegionOrSetId="Reg1"}<br>ocscp_notification_received_different_nrfregionorsetid_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"} |

**Table 5-58 ocscp\_audit\_2xx\_empty\_nf\_array\_rx\_total**

| Field       | Details                                                                                                                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of 2xx responses with empty body                                                                                                                                                                                      |
| Type        | Counter                                                                                                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>• nrfRegionOrSetId</li> <li>• nfType</li> <li>• ocscp_fqdn</li> </ul>                                                                                                                 |
| Example     | ocscp_audit_2xx_empty_nf_array_rx_total{nrfRegionOrSetId="Reg2"}<br>ocscp_audit_2xx_empty_nf_array_rx_total{nfType="UDM"}<br>ocscp_audit_2xx_empty_nf_array_rx_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"} |

**Table 5-59 ocscp\_audit\_nrf\_failure\_response\_rx\_total**

| Field       | Details                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of failed responses received from NRF for SCP audit                                                                                                                                                                          |
| Type        | Counter                                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>• nrfRegionOrSetId</li> <li>• nfType</li> <li>• ocscp_fqdn</li> </ul>                                                                                                                        |
| Example     | ocscp_audit_nrf_failure_response_rx_total{nrfRegionOrSetId="Reg1"}<br>ocscp_audit_nrf_failure_response_rx_total{nfType="AUSF"}<br>ocscp_audit_nrf_failure_response_rx_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"} |

Table 5-60 ocscp\_notification\_request\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric pegs the number of times notifications received on the notification module.                                                                                                                                                                                                                                                                                                                                                                                                  |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>• eventType</li> <li>• nfStatus</li> <li>• nfType</li> <li>• nfInstanceId</li> <li>• notificationSource</li> <li>• nrfRegionOrSetId</li> <li>• ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                                              |
| Example     | <pre>ocscp_notification_request_total {eventType="NF_REGISTERED"} ocscp_notification_request_total {nfStatus="REGISTERED"} ocscp_notification_request_total {nfType="UDM"} ocscp_notification_request_total {nfInstanceId="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"} ocscp_notification_request_total {notificationSource="NRF"} ocscp_notification_request_total {nrfRegionOrSetId="Reg1"} ocscp_notification_request_total{ocscp_fqdn="ocscp-scp- worker.scpsvc.svc.cluster.local"}</pre> |

Table 5-61 ocscp\_audit\_tx\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric pegs the number of times an audit request is initiated for particular NFType, nrfRegionOrSetId, and nrfHost.                                                                                                                                                                                                                       |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                        |
| Dimension   | <ul style="list-style-type: none"> <li>• auditType</li> <li>• nrfHost</li> <li>• nfType</li> <li>• auditMode</li> <li>• nrfRegionOrSetId</li> <li>• ocscp_fqdn</li> </ul>                                                                                                                                                                      |
| Example     | <pre>ocscp_audit_tx_req_total{auditType="onDemand"} ocscp_audit_tx_req_total{nrfHost="nrf.svc.cluster.local"} ocscp_audit_tx_req_total{nfType="AMF"} ocscp_audit_tx_req_total{auditMode="nnrf-disc"} ocscp_audit_tx_req_total{nrfRegionOrSetId="Reg1"} ocscp_audit_tx_req_total{ocscp_fqdn="ocscp-scp- worker.scpsvc.svc.cluster.local"}</pre> |

Table 5-62 ocscp\_audit\_rx\_res\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric pegs the number of times a response has been received for an initiated audit request.                                                                                                                                                                                                                                                                                                                                                      |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>auditType</li> <li>nrfHost</li> <li>nfType</li> <li>auditMode</li> <li>nrfRegionOrSetId</li> <li>responseCodeClass</li> <li>responseCode</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                         |
| Example     | ocscp_audit_rx_res_total{auditType="onDemand"}<br>ocscp_audit_rx_res_total{nrfHost="nrf.svc.cluster.local"}<br>ocscp_audit_rx_res_total{nfType="AMF"}<br>ocscp_audit_rx_res_total{auditMode="nnrf-disc"}<br>ocscp_audit_rx_res_total{nrfRegionOrSetId="Reg1"}<br>ocscp_audit_rx_res_total{responseCodeClass="2xx"}<br>ocscp_audit_rx_res_total{responseCode="201"}<br>ocscp_audit_rx_res_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"} |

Table 5-63 ocscp\_metric\_interscp\_http\_tx\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of HTTP requests forwarded to the next hop SCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_scp_end_point (Default value = NA, scp51svc.default.svc.cluster.local:8080)</li> <li>ocscp_locality (SCP own locality e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 2fbf1bbc-6e4b-3994-b507-b14ef8e1bc51, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_producer_nf_fqdn (default value = NA, Contains fqdn of NF pcf1svc.default.svc.cluster.local)</li> <li>ocscp_nf_setid ( default value = "UNKNOWN")</li> <li>ocscp_nexthop_ocscp_fqdn (contains fqdn of other scp scp51svc.default.svc.cluster.local)</li> <li>ocscp_fqdn (contains fqdn of scp ocscp-scp-worker.scpsvc.svc.cluster.local)</li> </ul> |

Table 5-63 (Cont.) ocscp\_metric\_interscp\_http\_tx\_req\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_nf_type="PCF"}</li> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_scp_end_point="10.96.166.65:80"}</li> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_producer_nf_fqdn="pcf1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_nexthop_ocscp_fqdn="scp51svc.default.svc.cluster.local"}</li> <li>ocscp_metric_interscp_http_tx_req_total{ocscp_fqdn="scp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-64 ocscp\_metric\_interscp\_http\_rx\_res\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of HTTP responses received from SCP with specific HTTP response codes, for example, 201, 503, and so on.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_response_code (e.g., 201, 503, 404, etc.)</li> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm,npcf-smpolicycontrol etc.)</li> <li>ocscp_scp_end_point (Default value = NA, scp52svc.default.svc.cluster.local:8080)</li> <li>ocscp_locality (SCP own locality e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_res_msg_size (The response message size buckets. e.g., 1 (size &lt; 1k bytes), 2 (1k &lt; size &lt; 2k bytes), 4 (2k &lt; size &lt; 4k ), etc.)</li> <li>ocscp_response_code_class (e.g., 2, 5, etc.)</li> <li>ocscp_producer_nf_fqdn (default value = NA, Contains fqdn of NF pcf1svc.default.svc.cluster.local )</li> <li>ocscp_nf_setid(default value ="UNKNOWN")</li> <li>ocscp_nexthop_ocscp_fqdn(contains fqdn of other scp scp51svc.default.svc.cluster.local)</li> <li>ocscp_fqdn(contains fqdn of scp)</li> </ul> |

Table 5-64 (Cont.) ocscp\_metric\_interscp\_http\_rx\_res\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_response_code="201"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_nf_type="PCF"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_scp_endpoint="scp52svc.default.svc.cluster.local:8080"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_res_msg_size="2"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_response_code_class="2"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_producer_nf_fqdn="pcf1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_nexthop_ocscp_fqdn="scp51svc.default.svc.cluster.local"}</li> <li>ocscp_metric_interscp_http_rx_res_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-65 ocscp\_metric\_jetty\_client\_requests\_total

| Field       | Details                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of HTTP requests sent to producer NFs by the Jetty client.                                                                                                                                                         |
| Type        | Counter                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>eventtype(eg., onQueued, onBegin, onHeaders, onCommit, onContent, onSuccess, onFailure)</li> <li>ocscp_fqdn(contains fqdn of scp)</li> </ul>                                       |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_jetty_client_requests_total(eventtype="onBegin")</li> <li>ocscp_metric_jetty_client_requests_total(ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local")</li> </ul> |

Table 5-66 ocscp\_worker\_pod\_overload\_discard\_req\_total

| Field       | Details                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of requests discarded with error responses through overload control treatment of SCP-worker service when CPU utilization or Pending Transactions exceeds threshold. |
| Type        | Counter                                                                                                                                                                    |

Table 5-66 (Cont.) ocscp\_worker\_pod\_overload\_discard\_req\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>Consumer NF type</li> <li>Consumer NF instance</li> <li>Producer NF FQDN (if available)</li> <li>CPU threshold level (Minor/Major/Critical)</li> <li>HTTP method</li> <li>SMP priority</li> <li>ocscp_fqdn</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_consumer_nf_unique_id</li> </ul>                                                                                                                                  |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_overload_discard_with_error_res_total{cpu_level="MINOR"}</li> <li>ocscp_metric_overload_discard_with_error_res_total{http_method="PATCH"}</li> <li>ocscp_metric_overload_discard_with_error_res_total{ocscp_producer_fqdn="pcf1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_overload_discard_with_error_res_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_overload_discard_with_error_res_total{sbimessage_priority="19"}</li> </ul> |

Table 5-67 ocscp\_alterate\_resolution\_dnssrv\_req\_total

| Field       | Details                                                                                                                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the total number of requests sent to DNS SRV.                                                                                                                                                                                                     |
| Type        | Counter                                                                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>service_proto_name</li> </ul>                                                                                                                                                                    |
| Example     | <ul style="list-style-type: none"> <li>ocscp_alterate_resolution_dnssrv_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_alterate_resolution_dnssrv_req_total{service_proto_name="_http._tcp.nf2stub.scpsvc.sv"}</li> </ul> |

Table 5-68 ocscp\_alterate\_resolution\_dnssrv\_res\_total

| Field       | Details                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the total number of DNS SRV queries received from the DNS server.                                                                                                                                                            |
| Type        | Counter                                                                                                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>service_proto_name</li> <li>status(success/failure)</li> <li>cause(timed_out, host_not_found, network_error, referral, name_too_long, na, error_at_scp, unknown)</li> </ul> |

Table 5-68 (Cont.) ocscp\_alterate\_resolution\_dnssrv\_res\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_alterate_resolution_dnssrv_res_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_alterate_resolution_dnssrv_res_total{service_protocol_name="_http_tcp.nf2stub.scpsvc.sv"}</li> <li>ocscp_alterate_resolution_dnssrv_res_total{status="success"}</li> <li>ocscp_alterate_resolution_dnssrv_res_total{cause="timed_out"}</li> </ul> |

Table 5-69 ocscp\_metric\_http\_ar\_tx\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the total number of alternate route attempts made by SCP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_primary_producer_fqdn</li> <li>ocscp_primary_nf_end_point</li> <li>ocscp_alterate_producer_fqdn</li> <li>ocscp_alterate_nf_end_point</li> <li>ocscp_locality</li> <li>ocscp_alterate_producer_nf_instance_id</li> <li>ocscp_alterate_producer_service_instance_id</li> <li>ocscp_nf_setid</li> <li>ocscp_alterate_route_type</li> </ul> <p><b>Note:</b> In the notification message type, certain dimension values such as ocscp_nf_service_type, ocscp_nf_setid, and ocscp_nf_type may not qualify for pegging. In the scenario where the service name cannot be derived from the PATH URI, pegging will not take place, and if these dimensions are identified through headers, pegging will occur.</p> |

Table 5-69 (Cont.) ocscp\_metric\_http\_ar\_tx\_req\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_http_ar_tx_req_total{ocscp_alternate_route_type="DNS_SRV"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_alternate_route_type="STATIC_CONFIG"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_nf_type="PCF"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_alternate_nf_end_point="pcf2svc.default.svc.cluster.local:8080"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_primary_producer_fqdn="pcf1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_alternate_producer_fqdn="pcf2svc.default.svc.cluster.local"}</li> <li>ocscp_metric_http_ar_tx_req_total{ocscp_nf_setid="Loc7"}</li> </ul> |

Table 5-70 ocscp\_metric\_sidecarproxy\_failures\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of error responses received from service mesh sidecar proxy because of transport error towards producer NFs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_fqdn</li> <li>response_code</li> <li>ocscp_server_header</li> </ul> |



Table 5-70 (Cont.) ocscp\_metric\_sidecarproxy\_failures\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_response_code="503"}</li> <li>ocscp_metric_sidecarproxy_failures_total{ocscp_server_header="envoy"}</li> </ul> |

Table 5-71 ocscp\_metric\_remote\_response\_without\_server\_header\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times SCP adds the server header in the error response received from producer NFs without server header.                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_fqdn</li> </ul> |

Table 5-71 (Cont.) ocscp\_metric\_remote\_response\_without\_server\_header\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_remote_response_without_server_header_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_remote_response_without_server_header_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_remote_response_without_server_header_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_remote_response_without_server_header_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_remote_response_without_server_header_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_remote_response_without_server_header_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_remote_response_without_server_header_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-72 ocscp\_metric\_add\_or\_update\_server\_header\_custom\_behavior\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times SCP adds or updates the server header in the error response received from producer NFs.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_fqdn</li> </ul> |

Table 5-72 (Cont.) ocscp\_metric\_add\_or\_update\_server\_header\_custom\_behavior\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_add_or_update_server_header_custom_behavior_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_add_or_update_server_header_custom_behavior_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_add_or_update_server_header_custom_behavior_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_add_or_update_server_header_custom_behavior_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_add_or_update_server_header_custom_behavior_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_add_or_update_server_header_custom_behavior_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_add_or_update_server_header_custom_behavior_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-73 ocscp\_metric\_add\_server\_header\_default\_behavior\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times SCP adds the server header in the error response received from producer NFs.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_fqdn</li> </ul> |

Table 5-73 (Cont.) ocscp\_metric\_add\_server\_header\_default\_behavior\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_add_server_header_default_behavior_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_add_server_header_default_behavior_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_add_server_header_default_behavior_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_add_server_header_default_behavior_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}</li> <li>ocscp_metric_add_server_header_default_behavior_total{ocscp_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> <li>ocscp_metric_add_server_header_default_behavior_total{ocscp_producer_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_add_server_header_default_behavior_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-74 ocscp\_metric\_failure\_from\_peer\_scp\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times SCP receives error responses with server header containing only the next hop FQDN of SCP.                                                                                                                                                                                                                              |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_peer_scp_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_fqdn</li> </ul>                                                                                                                               |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_failure_from_peer_scp_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_failure_from_peer_scp_total{ocscp_peer_scp_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_metric_failure_from_peer_scp_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-75 ocscp\_peer\_scp\_unhealthy

| Field       | Details                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times (as gauge) the peer SCP is marked as unavailable.                                                                                                                                        |
| Type        | Gauge                                                                                                                                                                                                    |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_peer_scp_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_fqdn</li> </ul> |

**Table 5-75 (Cont.) ocscp\_peer\_scp\_unhealthy**

| Field   | Details                                                                                                                                                                                                                                                                                |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_peer_scp_unhealthy{ocscp_locality="Loc7"}</li> <li>ocscp_peer_scp_unhealthy{ocscp_peer_scp_fqdn="udm1svc.default.svc.cluster.local"}</li> <li>ocscp_peer_scp_unhealthy{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-76 ocscp\_alterate\_resolution\_dnssrv\_rx\_error\_res**

| Field       | Details                                                                                                                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates failed DNS SRV query responses.                                                                                                                                                                                                  |
| Type        | Gauge                                                                                                                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>cause (network_error, timed_out)</li> <li>ocscp_fqdn (ocscp-scp-worker.scpsvc.svc.cluster.local)</li> </ul>                                                                                         |
| Example     | <ul style="list-style-type: none"> <li>cscp_alterate_resolution_dnssrv_rx_error_res {errortype="network_error"}</li> <li>ocscp_alterate_resolution_dnssrv_rx_error_res {ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-77 ocscp\_producer\_load\_throttled**

| Field       | Details                                                                        |
|-------------|--------------------------------------------------------------------------------|
| Description | Indicates that the producer NF load has exceeded the throttled threshold.      |
| Type        | Gauge                                                                          |
| Dimension   | producerFqdn                                                                   |
| Example     | ocscp_producer_load_throttled{producerFqdn="udm1svc.scpsvc.svc.cluster.local"} |

**Table 5-78 ocscp\_producer\_load\_alterateRoute**

| Field       | Details                                                                               |
|-------------|---------------------------------------------------------------------------------------|
| Description | Indicates that the producer NF load has exceeded the alternate route state threshold. |
| Type        | Gauge                                                                                 |
| Dimension   | producerFqdn                                                                          |
| Example     | ocscp_producer_load_alterateRoute{producerFqdn="pcf1svc.scpsvc.svc.cluster.local"}    |

**Table 5-79 ocscp\_metric\_ondemand\_discovery\_tx\_req\_total**

| Field       | Details                                                                   |
|-------------|---------------------------------------------------------------------------|
| Description | Number of times SCP worker sends on-demand discovery request to nrfproxy. |
| Type        | Counter                                                                   |

**Table 5-79 (Cont.) ocscp\_metric\_ondemand\_discovery\_tx\_req\_total**

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g.: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_consumer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_fqdn</li> <li>subscriber_info_present_in_discovery_headers<br/>(If any of the following discovery headers is present in the request: 3gpp-sbi-discovery-supi, 3gpp-sbi-discovery-gpsi, 3gpp-sbi-discovery-external-group-identity, 3gpp-sbi-discovery-routing-indicator, 3gpp-sbi-discovery-msisdn, 3gpp-sbi-discovery-imsi)</li> </ul> |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_ondemand_discovery_tx_req_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_ondemand_discovery_tx_req_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_ondemand_discovery_tx_req_total{ocscp_consumer_nf_type="UDM"}</li> </ul>                                                                                                                                                                                                                                                                     |

**Table 5-80 ocscp\_metric\_ondemand\_discovery\_rx\_res\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times SCP worker receives on-demand discovery response from nrfproxy.                                                                                                                                                                                                                                                                                                                                                                                        |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g.: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_consumer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_fqdn</li> <li>ocscp_response_code</li> <li>ocscp_response_code_class</li> <li>subscriber_info_present_in_discovery_headers</li> </ul>                                                                                                     |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_ondemand_discovery_rx_res_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_ondemand_discovery_rx_res_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_ondemand_discovery_rx_res_total{ocscp_consumer_nf_type="AMF"}</li> <li>ocscp_metric_ondemand_discovery_rx_res_total{ocscp_response_code="201"}</li> <li>ocscp_metric_ondemand_discovery_rx_res_total{ocscp_response_code_class="2"}</li> </ul> |

**Table 5-81 ocscp\_metric\_ondemand\_discovery\_cache\_match\_total**

| Field       | Details                                                                             |
|-------------|-------------------------------------------------------------------------------------|
| Description | Number of times SCP worker is able to resolve discovery requests using local cache. |
| Type        | Counter                                                                             |

**Table 5-81 (Cont.) ocscp\_metric\_ondemand\_discovery\_cache\_match\_total**

| Field     | Details                                                                                                                                                                                                                                                                                                         |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g.: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_consumer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_fqdn</li> <li>subscriber_info_present_in_discovery_headers</li> </ul>              |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_ondemand_discovery_cache_match_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_ondemand_discovery_cache_match_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_ondemand_discovery_cache_match_total{ocscp_consumer_nf_type="AMF"}</li> </ul> |

**Table 5-82 ocscp\_nrf\_nf\_discovery\_tx\_req\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of discovery requests sent to NRF by nrfproxy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_producer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_consumer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_name (e.g.: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_fqdn</li> <li>subscriber_info_present (If any of the following discovery headers present in the request: 3gpp-sbi-discovery-supi, 3gpp-sbi-discovery-gpsi, 3gpp-sbi-discovery-external-group-identity, 3gpp-sbi-discovery-routing-indicator, 3gpp-sbi-discovery-msisd, 3gpp-sbi-discovery-imsi)</li> <li>is_inter_plmn (e.g.: true for inter plmn; false for intra plmn)</li> </ul> |
| Example     | <ul style="list-style-type: none"> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_producer_nf_type="UDM"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_consumer_nf_type="AMF"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_nf_service_name="nudm-uecm"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_fqdn="ocscp-worker.scpsvc.svc.cluster.local"}</li> </ul>                                                                                                                                                                                                                                           |

**Table 5-83 ocscp\_nrf\_nf\_discovery\_rx\_res\_total**

| Field       | Details                                                                |
|-------------|------------------------------------------------------------------------|
| Description | The total number of discovery responses received from NRF by nrfproxy. |
| Type        | Counter                                                                |

Table 5-83 (Cont.) ocscp\_nrf\_nf\_discovery\_rx\_res\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_producer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_consumer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_name (e.g.: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_fqdn</li> <li>subscriber_info_present</li> <li>is_inter_plmn</li> <li>status_code</li> </ul>                                                                                                                  |
| Example   | <ul style="list-style-type: none"> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_producer_nf_type="UDM"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_consumer_nf_type="AMF"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_nf_service_name="nudm-uecm"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{status_code="200"}</li> </ul> |

Table 5-84 ocscp\_nrf\_nf\_discovery\_rx\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of discovery requests received by nrfproxy from SCP worker.                                                                                                                                                                                                                                                                                                        |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_producer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_consumer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_name (e.g.: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_fqdn</li> <li>subscriber_info_present</li> <li>is_inter_plmn</li> </ul>                                                                       |
| Example     | <ul style="list-style-type: none"> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_producer_nf_type="UDM"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_consumer_nf_type="AMF"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_nf_service_name="nudm-uecm"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-85 ocscp\_nrf\_nf\_discovery\_tx\_res\_total

| Field       | Details                                                                 |
|-------------|-------------------------------------------------------------------------|
| Description | The total number of discovery responses sent by nrfproxy to SCP worker. |
| Type        | Counter                                                                 |



Table 5-85 (Cont.) ocscp\_nrf\_nf\_discovery\_tx\_res\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_producer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_consumer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_name (e.g.: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_fqdn</li> <li>subscriber_info_present</li> <li>is_inter_plmn</li> <li>status_code</li> <li>is_from_local_cache (Whether the discovery process was made from local cache (true) or NRF (false))</li> </ul>     |
| Example   | <ul style="list-style-type: none"> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_producer_nf_type="UDM"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_consumer_nf_type="AMF"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_nf_service_name="nudm-uecm"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{status_code="200"}</li> </ul> |

Table 5-86 ocscp\_nrfproxy\_generated\_error\_response\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of error responses generated by nrfproxy excluding NRF returned errors.                                                                                                                                                                                                                                                                                                                                                                 |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_producer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_consumer_nf_type (e.g.: UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_name (e.g.: nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_fqdn</li> <li>subscriber_info_present</li> <li>is_inter_plmn</li> <li>status_code</li> <li>valid_NRF_response_to_fail (Whether SCP convert 200 OK (NRF) to 400 error, due to empty profile list or not)</li> </ul> |
| Example     | <ul style="list-style-type: none"> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_producer_nf_type="UDM"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_consumer_nf_type="AMF"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_nf_service_name="nudm-uecm"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_nrf_nf_discovery_tx_req_total{status_code="200"}</li> </ul>      |

Table 5-87 ocscp\_metric\_sepp\_http\_rx\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of HTTP requests routed towards SEPP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_nf_end_point (Default value = NA) ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_sepp_fqdn (default value = NA, Contains fqdn of producer)</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_authority</li> </ul> |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_sepp_http_tx_req_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_sepp_http_tx_req_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_sepp_http_tx_req_total{ocscp_sepp_fqdn="sepp1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_sepp_http_tx_req_total{plmn_id="mnc123-mcc100"}</li> </ul>                                                                                                                                                                                                                                                          |

Table 5-88 ocscp\_metric\_sepp\_http\_rx\_res\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of HTTP responses received from SEPP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_response_code (e.g., 201, 503, 404, etc.)</li> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_res_msg_size (The response message size buckets. e.g., 1 (size &lt; 1k bytes), 2 (1k &lt; size &lt; 2k bytes), 4 (2k &lt; size &lt; 4k ), etc.)</li> <li>ocscp_response_code_class (e.g., 2, 5, etc.)</li> <li>ocscp_sepp_fqdn (default value = NA, Contains fqdn of producer)</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_authority</li> </ul> |

**Table 5-88 (Cont.) ocscp\_metric\_sepp\_http\_rx\_res\_total**

| Field   | Details                                                                                                                                                                                                                                                                                                                                                            |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_sepp_http_rx_res_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_sepp_http_rx_res_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_sepp_http_rx_res_total{ocscp_sepp_fqdn="sepp1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_sepp_http_rx_res_total{plmn_id="mnc123-mcc100"}</li> </ul> |

**Table 5-89 ocscp\_metric\_sepp\_http\_tx\_res\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of HTTP responses routed towards SEPP.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_response_code (e.g., 201, 503, 404, etc.)</li> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_response_code_class (e.g., 2, 5, etc.)</li> <li>ocscp_sepp_fqdn (default value = NA, Contains fqdn of producer)</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_authority</li> </ul> |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_sepp_http_tx_res_total{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_sepp_http_tx_res_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_sepp_http_tx_res_total{ocscp_sepp_fqdn="sepp1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_sepp_http_tx_res_total{plmn_id="mnc123-mcc100"}</li> </ul>                                                                                                           |

**Table 5-90 ocscp\_metric\_sepp\_routing\_attempt\_fail\_total**

| Field       | Details                                                              |
|-------------|----------------------------------------------------------------------|
| Description | The total number of inter-PLMN requests routing failed towards SEPP. |
| Type        | Counter                                                              |

Table 5-90 (Cont.) ocscp\_metric\_sepp\_routing\_attempt\_fail\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_sepp_fqdn (default value = NA, Contains fqdn of producer)</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_authority</li> <li>ocscp_error_group</li> </ul> |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_sepp_routing_attempt_fail_current{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_sepp_routing_attempt_fail_current{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_sepp_routing_attempt_fail_current{ocscp_sepp_fqdn="sepp1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_sepp_routing_attempt_fail_current{plmn_id="mnc123-mcc100"}</li> </ul>                                                                                                                                                                                                                                                  |

Table 5-91 ocscp\_metric\_sepp\_routing\_attempt\_fail\_current

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Set to 1 if inter-plmn requests routing failed towards SEPP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>ocscp_producer_nf_instance_id (e.g., 6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, etc. Default value = NA)</li> <li>ocscp_service_instance_id (e.g., fe137ab7-740a-46ee-aa5c-951806d77b02, etc. Default value = NA)</li> <li>ocscp_sepp_fqdn (default value = NA, Contains fqdn of producer)</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_authority</li> <li>ocscp_error_group</li> </ul> |

**Table 5-91 (Cont.) ocscp\_metric\_sepp\_routing\_attempt\_fail\_current**

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_sepp_routing_attempt_fail_current{ocscp_nf_type="UDM"}</li> <li>ocscp_metric_sepp_routing_attempt_fail_current{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_sepp_routing_attempt_fail_current{ocscp_sepp_fqdn="sepp1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_sepp_routing_attempt_fail_current{plmn_id="mnc123-mcc100"}</li> </ul> |

**Table 5-92 ocscp\_metric\_sepp\_not\_configured\_total**

| Field       | Details                                                                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of inter-PLMN requests failed because SEPP is not configured for target PLMN received in interPlmnFqdn from 3gpp-Sbi-Target-apiRoot HTTP header or interPlmnFqdn after discovery response. |
| Type        | Counter                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_authority</li> </ul>                                            |
| Example     | ocscp_metric_sepp_not_configured_total{plmn_id="mnc123-mcc254"}                                                                                                                                             |

**Table 5-93 ocscp\_metric\_sepp\_not\_configured\_current**

| Field       | Details                                                                                                                                                                                             |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Set to 1 if inter-plmn requests failed because SEPP is not configured for target PLMN received in interPlmnFqdn from 3gpp-Sbi-Target-apiRoot HTTP header or interPlmnFqdn after discovery response. |
| Type        | Gauge                                                                                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_locality (SCP site name e.g., Loc6, Loc7, etc.)</li> <li>plmn_id(mnc123-mcc254)</li> <li>ocscp_authority</li> </ul>                                    |
| Example     | ocscp_metric_sepp_not_configured_current{plmn_id="mnc123-mcc254"}                                                                                                                                   |

**Table 5-94 ocscp\_metric\_5gsbi\_rx\_req\_total**

| Field       | Details                                                            |
|-------------|--------------------------------------------------------------------|
| Description | The total number of incoming HTTPS requests at scp-worker service. |
| Type        | Counter                                                            |

Table 5-94 (Cont.) ocscp\_metric\_5gsbi\_rx\_req\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_authority</li> <li>scheme(e.g., https)</li> </ul>                                                                                                                                                                 |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_5gsbi_rx_req_total{ocscp_nf_type="PCF"}</li> <li>ocscp_metric_5gsbi_rx_req_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_metric_5gsbi_rx_req_total{scheme="https"}</li> <li>ocscp_metric_5gsbi_rx_req_total{ocscp_nf_end_point="NA"}</li> <li>ocscp_metric_5gsbi_rx_req_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:9443"}</li> </ul> |

Table 5-95 ocscp\_metric\_5gsbi\_tx\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of HTTPS requests forwarded by SCP to upstream cluster.                                                                                                                                                                                                                                                                                                                                                            |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>ocscp_authority</li> <li>scheme(e.g., https)</li> </ul>                                                                                    |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_5gsbi_tx_req_total{ocscp_nf_type="PCF"}</li> <li>ocscp_metric_5gsbi_tx_req_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_metric_5gsbi_tx_req_total{scheme="https"}</li> <li>ocscp_metric_5gsbi_tx_req_total{ocscp_nf_end_point="NA"}</li> <li>ocscp_metric_5gsbi_tx_req_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:9443"}</li> </ul> |

Table 5-96 ocscp\_metric\_5gsbi\_tx\_res\_total

| Field       | Details                                                                                                                                                                                                                                                                                             |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>The total number of HTTPS responses forwarded by SCP with specific HTTP response codes, for example, 201, 503, and so on.</p> <p><b>Note:</b> The ocscp_authority dimension will get pegged only when it is enabled using the value.yaml file.</p> <p>scpAuthorityMetricLabelDisabled: false</p> |

Table 5-96 (Cont.) ocscp\_metric\_5gsbi\_tx\_res\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                           |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type      | Counter                                                                                                                                                                                                                                                                                                                                                           |
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_response_code(e.g., 201, 503, 404, etc.)</li> <li>ocscp_response_code_class (e.g., 2, 5, etc.)</li> <li>ocscp_authority</li> <li>scheme(e.g., https)</li> </ul>                                  |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_5gsbi_tx_res_total{ocscp_nf_type="PCF"}</li> <li>ocscp_metric_5gsbi_tx_res_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_metric_5gsbi_tx_res_total{scheme="https"}</li> <li>ocscp_metric_5gsbi_tx_res_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:9443"}</li> </ul> |

Table 5-97 ocscp\_metric\_5gsbi\_rx\_res\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of HTTPS responses received by SCP with specific HTTP response codes, for example, 201, 503, and so on.                                                                                                                                                                                                                                                                                                            |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_response_code(e.g., 201, 503, 404, etc.)</li> <li>ocscp_response_code_class (e.g., 2, 5, etc.)</li> <li>ocscp_authority</li> <li>scheme(e.g., https)</li> </ul>                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_5gsbi_rx_res_total{ocscp_nf_type="PCF"}</li> <li>ocscp_metric_5gsbi_rx_res_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_metric_5gsbi_rx_res_total{scheme="https"}</li> <li>ocscp_metric_5gsbi_rx_res_total{ocscp_nf_end_point="NA"}</li> <li>ocscp_metric_5gsbi_rx_res_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:9443"}</li> </ul> |

Table 5-98 ocscp\_metric\_ssl\_certificate\_expire\_total

| Field       | Details                                                                                 |
|-------------|-----------------------------------------------------------------------------------------|
| Description | The state of metric becomes 1 when the server or client certificate is about to expire. |
| Type        | Gauge                                                                                   |

**Table 5-98 (Cont.) ocscp\_metric\_ssl\_certificate\_expire\_total**

| Field     | Details                                                                                                                                                                                                                                                         |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>certificate_type(for example, 5G_SBI_SERVER_PRIMARY, 5G_SBI_CLIENT_PRIMARY, 5G_SBI_SERVER_SECONDARY, 5G_SBI_CLIENT_SECONDARY, 5G_SBI_TRAFFIC_FEED_PRIMARY, 5G_SBI_TRAFFIC_FEED_SECONDARY)</li> </ul> |
| Example   | ocscp_metric_ssl_certificate_expire_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}                                                                                                                                                               |

**Table 5-99 ocscp\_metric\_https\_egress\_connection\_failure\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of HTTPS egress connection failures.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>SCP-Level</li> <li>error-reason</li> </ul>                                                                                                                                                                                                                                                                                                                              |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_https_egress_connection_failure_total{SCP_Level="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_https_egress_connection_failure_total{ocscp_producer_fqdn="10.104.138.33"}</li> <li>ocscp_metric_https_egress_connection_failure_total{error_reason="PKIX path building failed: sun.security.provider.certpath.SunCertPathBuilderException: unable to find valid certification path to requested target"}</li> </ul> |

**Table 5-100 ocscp\_metric\_https\_ingress\_connection\_failure\_total**

| Field       | Details                                                                                                                                                                                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of HTTPS ingress connection failures.                                                                                                                                                                                                                                                |
| Type        | Counter                                                                                                                                                                                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>SCP_Level</li> <li>error_reason</li> </ul>                                                                                                                                                                                                                     |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_https_ingress_connection_failure_total{SCP_Level="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_https_ingress_connection_failure_total{error_reason="unable to find valid certification path to requested target"}</li> </ul> |

**Table 5-101 ocscp\_metric\_scp\_cache\_service\_unreachable\_total**

| Field       | Details                                                         |
|-------------|-----------------------------------------------------------------|
| Description | Number of times SCP worker is unable to find SCP cache service. |



**Table 5-101 (Cont.) ocscp\_metric\_scp\_cache\_service\_unreachable\_total**

| Field     | Details                                                                                                                                                                                          |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type      | Counter                                                                                                                                                                                          |
| Dimension | <ul style="list-style-type: none"> <li>coherenceCluster</li> <li>ocscp_fqdn</li> </ul>                                                                                                           |
| Example   | <ul style="list-style-type: none"> <li>ocscp_metric_scp_cache_service_unreachable_total{coherenceCluster="scp-coherence-cluster"scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-102 ocscp\_missed\_nf\_notifications\_total**

| Field       | Details                                                  |
|-------------|----------------------------------------------------------|
| Description | Number of times the notifications are missed.            |
| Type        | Counter                                                  |
| Dimension   | nfType                                                   |
| Example     | ocscp_missed_nf_notifications_total{ocscp_nf_type="UDM"} |

**Table 5-103 ocscp\_notifications\_rejected\_topologysource\_nrf\_total**

| Field       | Details                                                                    |
|-------------|----------------------------------------------------------------------------|
| Description | Number of notifications rejected from NRF as topology source.              |
| Type        | Counter                                                                    |
| Dimension   | nfType                                                                     |
| Example     | ocscp_notifications_rejected_topologysource_nrf_total{ocscp_nf_type="UDM"} |

**Table 5-104 ocscp\_nrf\_notifications\_requests\_total**

| Field       | Details                                                     |
|-------------|-------------------------------------------------------------|
| Description | Number of NRF notifications received.                       |
| Type        | Counter                                                     |
| Dimension   | nfType                                                      |
| Example     | ocscp_nrf_notifications_requests_total{ocscp_nf_type="UDM"} |

**Table 5-105 ocscp\_soothsayer\_audit\_db\_fetch**

| Field       | Details                                                     |
|-------------|-------------------------------------------------------------|
| Description | Indicates the database fetched for audit.                   |
| Type        | Counter                                                     |
| Dimension   | ocscp_soothsayer_audit_db_fetch                             |
| Example     | ocscp_nrf_notifications_requests_total{ocscp_nf_type="UDM"} |

**Table 5-106 ocsdp\_update\_topology\_source\_failure\_total**

| Field       | Details                                                         |
|-------------|-----------------------------------------------------------------|
| Description | Number of times the topology source information is toggled.     |
| Type        | Counter                                                         |
| Dimension   | nfType                                                          |
| Example     | ocsdp_update_topology_source_failure_total{ocsdp_nf_type="UDM"} |

**Table 5-107 ocsdp\_worker\_pod\_overload\_control\_cpu\_utilization\_warn**

| Field       | Details                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates CPU utilization of SCP worker at Warn level.                                                                        |
| Type        | Gauge                                                                                                                         |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>scp-service</li> </ul>                                               |
| Example     | ocsdp_worker_pod_overload_control_cpu_utilization_warn{pod_name="ocsdp-scp-worker-6fcc755f9b-5hckw",scp_service="scp-worker"} |

**Table 5-108 ocsdp\_worker\_pod\_overload\_control\_cpu\_utilization\_minor**

| Field       | Details                                                                                                                        |
|-------------|--------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates CPU utilization of SCP worker at Minor level.                                                                        |
| Type        | Gauge                                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>scp-service</li> </ul>                                                |
| Example     | ocsdp_worker_pod_overload_control_cpu_utilization_minor{pod_name="ocsdp-scp-worker-6fcc755f9b-5hckw",scp_service="scp-worker"} |

**Table 5-109 ocsdp\_worker\_pod\_overload\_control\_cpu\_utilization\_major**

| Field       | Details                                                                                                                        |
|-------------|--------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates CPU utilization of SCP worker at Major level.                                                                        |
| Type        | Gauge                                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>scp-service</li> </ul>                                                |
| Example     | ocsdp_worker_pod_overload_control_cpu_utilization_major{pod_name="ocsdp-scp-worker-6fcc755f9b-5hckw",scp_service="scp-worker"} |

**Table 5-110 ocsdp\_notifications\_suspended\_topologysource\_nrf\_total**

| Field       | Details                                                                  |
|-------------|--------------------------------------------------------------------------|
| Description | Indicates the number of times SUSPEND notifications are received by SCP. |

**Table 5-110 (Cont.) ocscp\_notifications\_suspended\_topologysource\_nrf\_total**

| Field     | Details                                                                                           |
|-----------|---------------------------------------------------------------------------------------------------|
| Type      | Counter                                                                                           |
| Dimension | <ul style="list-style-type: none"> <li>pod_name</li> <li>ocscp_producer_nf_instance_id</li> </ul> |
| Example   | ocscp_notifications_suspended_topologysource_nrf_total{status="suspended"}                        |

**Table 5-111 ocscp\_notifications\_profile\_deleted\_deregistration\_total**

| Field       | Details                                                                                        |
|-------------|------------------------------------------------------------------------------------------------|
| Description | Indicates the number of times NF profile is removed due to DEREGISTER ED notification.         |
| Type        | Counter                                                                                        |
| Dimension   | <ul style="list-style-type: none"> <li>event</li> <li>ocscp_producer_nf_instance_id</li> </ul> |
| Example     | ocscp_notifications_profile_deleted_deregistration_total{event="deregistered"}                 |

**Table 5-112 ocscp\_metric\_ar\_attempt\_fail\_total**

| Field       | Details                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the total number of failed alternate routing attempts made using static configuration.                                                       |
| Type        | Counter                                                                                                                                                |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_alternate_route_type</li> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_fqdn</li> </ul> |
| Example     | ocscp_metric_ar_attempt_fail_total{ocscp_alternate_route_type="STATIC_CONFIG"}                                                                         |

**Table 5-113 ocscp\_nrf\_nf\_discovery\_request\_processing\_time\_total**

| Field       | Details                                                                                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the NRF request processing time by the scp-nrfproxy microservice.                                                                                                                                                      |
| Type        | Counter                                                                                                                                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_producer_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_consumer_nf_type</li> <li>subscriber_info_present</li> <li>ocscp_nrf_service_type</li> <li>is_inter_plmn</li> </ul>  |
| Example     | <ul style="list-style-type: none"> <li>ocscp_nrf_nf_discovery_request_processing_time_total{ocscp_producer_nf_type="PCF"}</li> <li>ocscp_nrf_nf_discovery_request_processing_time_total{ocscp_consumer_nf_type="PCF"}</li> </ul> |

**Table 5-114 ocscp\_nrf\_nf\_discovery\_response\_processing\_time\_total**

| Field       | Details                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the NRF response processing time by the scp-nrfproxy microservice.                                                                                                                                                       |
| Type        | Counter                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_producer_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_consumer_nf_type</li> <li>subscriber_info_present</li> <li>is_inter_plmn</li> <li>ocscp_nrf_service_type</li> </ul>    |
| Example     | <ul style="list-style-type: none"> <li>ocscp_nrf_nf_discovery_response_processing_time_total{ocscp_producer_nf_type="PCF"}</li> <li>ocscp_nrf_nf_discovery_response_processing_time_total{ocscp_consumer_nf_type="PCF"}</li> </ul> |

**Table 5-115 ocscp\_global\_egress\_rl\_bucketkey\_not\_rate\_controlled\_total**

| Field       | Details                                                                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates when the local SCP is not performing global rate control while other SCP instances in the scp-cache cluster are performing the rate control.                                                                                                                                        |
| Type        | Counter                                                                                                                                                                                                                                                                                       |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_egress_rl_bucketkey</li> </ul>                                                                                                                                                                                               |
| Example     | <ul style="list-style-type: none"> <li>ocscp_global_egress_rl_bucketkey_not_rate_controlled_total(bucketKey="egress_udm3svc.scpsvc.svc.cluster.local")</li> <li>ocscp_global_egress_rl_bucketkey_not_rate_controlled_total(ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local")</li> </ul> |

**Table 5-116 ocscp\_global\_egress\_rl\_remote\_participant\_connectivity\_failure**

| Field       | Details                                                                                                                                                                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Monitors the remote coherence participant connectivity status.                                                                                                                                                                                                 |
| Type        | Gauge                                                                                                                                                                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>scp_local_coh_cluster_name</li> <li>scp_remote_coh_cluster_name</li> <li>scp_remote_coh_cluster_fqdn</li> <li>scp_remote_coh_cluster_port</li> <li>scp_remote_coh_cluster_nf_instance_id</li> </ul> |

Table 5-116 (Cont.) ocscp\_global\_egress\_rl\_remote\_participant\_connectivity\_failure

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | ocscp_global_egress_rl_remote_participant_connectivity_failure{applicationName="ocscp",microservice="scp-cache",ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local",scp_local_coh_cluster_name="scp-coherence-cluster",scp_remote_coh_cluster_fqdn="ocscp-scp-cache.fedsvc.svc.cluster.local",scp_remote_coh_cluster_name="scp-coherence-cluster-fedsvc",scp_remote_coh_cluster_port="30001",ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local",scp_remote_coh_cluster_nf_instance_id="2faf1bbc-6e4a-4454-a507-a14ef8e1bc22"} |

Table 5-117 ocscp\_mediation\_http\_tx\_total

| Field       | Details                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates that the request is forwarded to Mediation.                                                                                                                    |
| Type        | Counter                                                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_mediation_triggerpoint</li> <li>ocscp_mediation_filtername</li> </ul> |
| Example     | ocscp_mediation_http_tx_total(ocscp_mediation_filtername="PCFsmpolicy",ocscp_mediation_triggerpoint="requestIngress")                                                    |

Table 5-118 ocscp\_mediation\_http\_rx\_total

| Field       | Details                                                                                                                                                                                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates that the response is received by SCP from Mediation when Mediation is invoked from the request trigger point and producer NF when Mediation is triggered from the response trigger points.                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                                 |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_mediation_triggerpoint</li> <li>ocscp_mediation_filtername</li> <li>responseCode</li> <li>responseCodeClass</li> <li>headerModified</li> <li>bodyModified</li> </ul> |
| Example     | ocscp_mediation_http_rx_total(ocscp_mediation_filtername="PCFsmpolicy",ocscp_mediation_triggerpoint="requestIngress")                                                                                                                                                   |

**Table 5-119 ocscp\_mediation\_upstream\_service\_time\_ms\_total**

| Field       | Details                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the time taken for Mediation processing.                                                                                                          |
| Type        | Counter                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>• nfType</li> <li>• ocscp_nf_service_type</li> <li>• triggerpoint</li> <li>• mediationUpstreamServiceTime</li> </ul> |
| Example     | ocscp_mediation_upstream_service_time_ms_total(ocscp_mediation_triggerpoint="requestIngress")                                                               |

**Table 5-120 ocscp\_mediation\_http\_not\_reachable**

| Field       | Details                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates that the request to Mediation has failed or connection is not established.                                                        |
| Type        | Gauge                                                                                                                                       |
| Dimension   | <ul style="list-style-type: none"> <li>• nfType</li> <li>• ocscp_nf_service_type</li> <li>• triggerpoint</li> <li>• responsecode</li> </ul> |
| Example     | ocscp_mediation_http_not_reachable(ocscp_mediation_filter name="PCFsmpolicy",ocscp_mediation_triggerpoint="requestIngress")                 |

**Table 5-121 ocscp\_notification\_queue\_utilization**

| Field       | Details                                                                                                                                                                                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates Notification queue utilization.                                                                                                                                                                                                                        |
| Type        | Gauge                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>• queueName</li> <li>• queueCapacity</li> </ul>                                                                                                                                                                           |
| Example     | <ul style="list-style-type: none"> <li>• ocscp_notification_queue_utilization{queueName="waitingQueueUDM"}</li> <li>• ocscp_notification_queue_utilization &gt; 0</li> <li>• ocscp_notification_queue_utilization{queueName="waitingQueueUDM"} &gt; 0</li> </ul> |

**Table 5-122 ocscp\_notification\_queue\_alert**

| Field       | Details                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------|
| Description | Indicates Notification queue alert.                                                                        |
| Type        | Gauge                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>• queueName</li> <li>• severity</li> <li>• queueCapacity</li> </ul> |

Table 5-122 (Cont.) ocscp\_notification\_queue\_alert

| Field   | Details                                                                                                                                                                                                                                  |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_notification_queue_alert{queueName="waitingQueueUDM"}</li> <li>ocscp_notification_queue_alert &gt; 0</li> <li>ocscp_notification_queue_alert{queueName="waitingQueueUDM"} &gt; 0</li> </ul> |

Table 5-123 ocscp\_nrfproxy\_queue\_utilization

| Field       | Details                                                                                                                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates NrfProxy queue utilization.                                                                                                                                                                                                      |
| Type        | Gauge                                                                                                                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>queueName</li> <li>queueCapacity</li> </ul>                                                                                                                                                         |
| Example     | <ul style="list-style-type: none"> <li>ocscp_nrfproxy_queue_utilization{queueName="scpUpstreamExecutorQueue"}</li> <li>ocscp_nrfproxy_queue_utilization{queueCapacity="10000"}</li> <li>ocscp_nrfproxy_queue_utilization &gt; 0</li> </ul> |

Table 5-124 ocscp\_worker\_queue\_utilization

| Field       | Details                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates Worker queue utilization.                                                                                                                                                                                                |
| Type        | Gauge                                                                                                                                                                                                                              |
| Dimension   | <ul style="list-style-type: none"> <li>queueName</li> <li>queueCapacity</li> </ul>                                                                                                                                                 |
| Example     | <ul style="list-style-type: none"> <li>ocscp_worker_queue_utilization{queueName="scpClientExecutorQueue"}</li> <li>ocscp_worker_queue_utilization{queueCapacity="10000"}</li> <li>ocscp_worker_queue_utilization &gt; 0</li> </ul> |

Table 5-125 ocscp\_nrfproxy\_queue\_alert

| Field       | Details                                                                                                                                                                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates NrfProxy queue alert<br>Metrics Pegging Condition: This metric value will either be 0 or 1. Based on the severity value, it will be 1 for high severity, and correspondingly, for other severity values, it will be 0.                   |
| Type        | Gauge                                                                                                                                                                                                                                              |
| Dimension   | <ul style="list-style-type: none"> <li>queueName: Name of the queue (scpDownstreamExecutorQueue, scpUpstreamExecutorQueue)</li> <li>severity: CRITICAL, MAJOR, MINOR, NORMAL</li> <li>queueCapacity: The maximum size of queue is 10000</li> </ul> |

**Table 5-125 (Cont.) ocscp\_nrfproxy\_queue\_alert**

| Field   | Details                                                                                                                                                                                                                  |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_nrfproxy_queue_alert{queueName="scpDownstreamExecutorQueue"}</li> <li>ocscp_nrfproxy_queue_alert &gt; 0</li> <li>ocscp_nrfproxy_queue_alert{severity="CRITICAL"}</li> </ul> |

**Table 5-126 ocscp\_worker\_queue\_utilization**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates Worker queue utilization.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>queue_name: name of the queue (scpDownstreamExecutorQueue, scpUpstreamExecutorQueue, scpNrfProxyDownstreamExecutorQueue, scpClientExecutorQueue, scpUpdateSSLCertsQueue, scpMediationDownstreamExecutorQueue, scpReconfigureEgressRLExecutorQueue)</li> <li>queueCapacity: The maximum size of queue is 10000</li> </ul>                                                                                                                                                                                                                                                     |
| Example     | <p>Below example will return worker queue utilization metric for scpClientExecutorQueue:</p> <ul style="list-style-type: none"> <li>ocscp_worker_queue_utilization{queueName="scpClientExecutorQueue"}</li> </ul> <p>Below example will returns all worker queues utilization metric with queueCapacity:</p> <ul style="list-style-type: none"> <li>ocscp_worker_queue_utilization{queueCapacity="10000"}</li> </ul> <p>Below example will return all worker queue utilization metrics with utilization greater than 0:</p> <ul style="list-style-type: none"> <li>ocscp_worker_queue_utilization &gt; 0</li> </ul> |

**Table 5-127 ocscp\_worker\_queue\_alert**

| Field       | Details                                                                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates Worker queue alert.                                                                                                                                                                               |
| Type        | Gauge                                                                                                                                                                                                       |
| Dimension   | <ul style="list-style-type: none"> <li>queueName</li> <li>severity</li> <li>queueCapacity</li> </ul>                                                                                                        |
| Example     | <ul style="list-style-type: none"> <li>ocscp_worker_queue_alert{queueName="scpUpdateSSLCertsQueue"}</li> <li>ocscp_worker_queue_alert &gt; 0</li> <li>ocscp_worker_queue_alert{severity="MAJOR"}</li> </ul> |



**Table 5-128 ocscp\_metric\_nf\_lci\_rx\_total**

| Field       | Details                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of messages received with the LCI header.                                                                                                                                                                     |
| Type        | Counter                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_scp_instance_id</li> </ul>                                                                                                                                        |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_nf_lci_rx_total{ocscp_fqdn= "ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_nf_lci_rx_total{ocscp_producer_nf_instance_id="instance-id-example"}</li> </ul> |

**Table 5-129 ocscp\_metric\_nf\_lci\_tx\_total**

| Field       | Details                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of messages received with the LCI header.                                                                                                                                                                     |
| Type        | Counter                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_scp_instance_id</li> </ul>                                                                                                                                        |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_nf_lci_tx_total{ocscp_fqdn= "ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_nf_lci_tx_total{ocscp_producer_nf_instance_id="instance-id-example"}</li> </ul> |

**Table 5-130 ocscp\_metric\_scp\_lci\_tx\_total**

| Field       | Details                                                                                                                                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of messages forwarded with SCP's LCI header.                                                                                                                                                                                     |
| Type        | Counter                                                                                                                                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_scp_instance_id</li> </ul>                                                                                                                                                           |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_scp_lci_tx_total{ocscp_fqdn= "ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_scp_lci_tx_total{ocscp_producer_nf_instance_id="2faf1bbc-6e4a-4454-a507-a14ef8e1bc22"}</li> </ul> |

**Table 5-131 ocscp\_metric\_nf\_lci\_cache\_update\_total**

| Field       | Details                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------|
| Description | Indicates the number of cache updates done by peer load change.                                 |
| Type        | Counter                                                                                         |
| Dimension   | ocscp_fqdn                                                                                      |
| Example     | ocscp_metric_nf_lci_cache_update_total{ocscp_fqdn= "ocscp-scp-worker.scpsvc.svc.cluster.local"} |

**Table 5-132 ocscp\_scp\_load**

| Field       | Details                                                                                                                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Metric to record SCP load value.                                                                                                                                                                               |
| Type        | Gauge                                                                                                                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_scp_instance_id</li> </ul>                                                                                                                    |
| Example     | <ul style="list-style-type: none"> <li>ocscp_scp_load{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_scp_load{ocscp_scp_instance_id="2faf1bbc-6e4a-4454-a507-a14ef8e1bc22"}</li> </ul> |

**Table 5-133 ocscp\_nf\_load**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                               |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Metric to record NF load value.                                                                                                                                                                                                                                                                                                                                       |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                 |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>peer_info</li> <li>ocscp_scope</li> <li>ocscp_producer_service_instance_id</li> </ul>                                                                                                                                                                                                                      |
| Example     | <ul style="list-style-type: none"> <li>ocscp_nf_load{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_nf_load{ocscp_producer_instance_id="2faf1bbc-6e4a-4454-a507-a14ef8e1bc22"}</li> <li>ocscp_nf_load{ocscp_scope="nf-instance"}</li> <li>ocscp_nf_load{ocscp_producer_service_instance_id="fe137ab7-740a-46ee-aa5c-951806d77b02"}</li> </ul> |

**Table 5-134 ocscp\_modeld\_cache\_key\_size**

| Field       | Details                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Metric to indicate modelD cache Key size in worker and nrfrproxy.                                                                                                         |
| Type        | Gauge                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>scp_service</li> <li>ocscp_fqdn</li> </ul>                                                                                         |
| Example     | <ul style="list-style-type: none"> <li>ocscp_modeld_cache_key_size{scp_service="scp-nrfrproxy"}</li> <li>ocscp_modeld_cache_key_size{scp_service="scp-worker"}</li> </ul> |

**Table 5-135 ocscp\_cache\_egress\_grl\_local\_worker\_token\_consumption\_total**

| Field       | Details                                                             |
|-------------|---------------------------------------------------------------------|
| Description | The local SCP worker token consumption in global egress rate limit. |
| Type        | Counter                                                             |

**Table 5-135 (Cont.) ocscp\_cache\_egress\_grl\_local\_worker\_token\_consumption\_total**

| Field     | Details                                                                                                                                                                                                                                                                                     |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>bucketKey</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                             |
| Example   | <ul style="list-style-type: none"> <li>ocscp_cache_egress_grl_local_worker_token_consumption_total{bucketKey="egress_pcf1svc.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_cache_egress_grl_local_worker_token_consumption_total{scp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> </ul> |

**Table 5-136 ocscp\_cache\_egress\_grl\_remote\_worker\_token\_consumption\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The remote SCP worker token consumption in global egress rate limit.                                                                                                                                                                                                                                                               |
| Type        | Counter                                                                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>bucketKey</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                    |
| Example     | <ul style="list-style-type: none"> <li>ocscp_cache_egress_grl_remote_worker_token_consumption_total{bucketKey="6faf1bbc-6e4a-4a54-a507-a14ef8e1bc5d_egress_pcf1svc.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_cache_egress_grl_remote_worker_token_consumption_total{scp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> </ul> |

**Table 5-137 ocscp\_cache\_egress\_grl\_local\_worker\_msg\_consumption\_percentage\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The local SCP worker token consume percentage in global egress rate limit.                                                                                                                                                                                                                                      |
| Type        | Counter                                                                                                                                                                                                                                                                                                         |
| Dimension   | <ul style="list-style-type: none"> <li>bucketKey</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                 |
| Example     | <ul style="list-style-type: none"> <li>ocscp_cache_egress_grl_local_worker_msg_consumption_percentage_total{bucketKey="egress_pcf1svc.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_cache_egress_grl_local_worker_msg_consumption_percentage_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> </ul> |

**Table 5-138 ocscp\_cache\_egress\_grl\_controller\_token\_consumption\_total**

| Field       | Details                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------|
| Description | The number of tokens consumed by the global rate controller to adjust token availability for cache services. |
| Type        | Counter                                                                                                      |

**Table 5-138 (Cont.) ocscp\_cache\_egress\_grl\_controller\_token\_consumption\_total**

| Field     | Details                                                                                                                                                                                                                                                                                   |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>bucketKey</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                           |
| Example   | <ul style="list-style-type: none"> <li>ocscp_cache_egress_grl_controller_token_consumption_total{bucketKey="egress_pcf1svc.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_cache_egress_grl_controller_token_consumption_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> </ul> |

**Table 5-139 ocscp\_metric\_svc\_unreachable**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric is pegged whenever there is a communication failure between microservices. Once the communication between the source and the destination is reestablished, this metric is cleared.                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Dimension   | <ul style="list-style-type: none"> <li>source: indicates the source svc, such as scp-worker, scpc-configuration, and so on.</li> <li>destination: indicates the destination svc, such as scpc-notification, scp-nrfproxy, and so on.</li> </ul> <p>Possible list of values:</p> <ul style="list-style-type: none"> <li>source: scp-worker, scp-nrfproxy, scpc-audit, scpc-alternate-resolution, scpc-configuration, scpc-notification, scpc-subscription</li> <li>destination: scp-worker, scp-nrfproxy, scpc-audit, scpc-alternate-resolution, scpc-configuration, scpc-notification, scpc-subscription, scp-mediation, scp-cache</li> </ul> |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_svc_unreachable{source="scp-worker", destination="scpc-notification"}</li> <li>ocscp_metric_svc_unreachable{source="scpc-audit", destination="scp-worker"}</li> <li>ocscp_metric_svc_unreachable{source="scpc-subscription", destination="scp-worker"}</li> </ul>                                                                                                                                                                                                                                                                                                                         |

**Table 5-140 ocscp\_metric\_nf\_unhealthy\_total**

| Field       | Details                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times a producer NF is marked unhealthy.                                                                                                                                                                  |
| Type        | Counter                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_producer_nf_instance_id</li> <li>ocscp_nf_end_point</li> <li>ocscp_producer_fqdn</li> <li>ocscp_nf_service_type</li> <li>ocscp_locality</li> <li>ocscp_fqdn</li> </ul> |

Table 5-140 (Cont.) ocscp\_metric\_nf\_unhealthy\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_nf_unhealthy_total{ocscp_producer_nf_instance_id="123-ffb"}</li> <li>ocscp_metric_nf_unhealthy_total{ocscp_nf_end_point="10.23.34.54:8080"}</li> <li>ocscp_metric_nf_unhealthy_total{ocscp_producer_fqdn="udm1.svc.cluster.local.com"}</li> <li>ocscp_metric_nf_unhealthy_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_nf_unhealthy_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_nf_unhealthy_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-141 ocscp\_metric\_req\_nf\_unhealthy\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of message requests not routed to the selected producer NF because it is marked unhealthy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_producer_nf_instance_id</li> <li>ocscp_nf_end_point</li> <li>ocscp_producer_fqdn</li> <li>ocscp_nf_service_type</li> <li>ocscp_locality</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                                                                                                                        |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_req_nf_unhealthy_total{ocscp_producer_nf_instance_id="123-44b"}</li> <li>ocscp_metric_req_nf_unhealthy_total{ocscp_nf_end_point="10.23.34.54:8080"}</li> <li>ocscp_metric_req_nf_unhealthy_total{ocscp_producer_fqdn="udm1.svc.cluster.local.com"}</li> <li>ocscp_metric_req_nf_unhealthy_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_req_nf_unhealthy_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_req_nf_unhealthy_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-142 ocscp\_metric\_req\_peer\_scp\_unhealthy\_total

| Field       | Details                                                                                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of message requests not routed to the selected peer SCP because it is marked unhealthy.                                                                                       |
| Type        | Counter                                                                                                                                                                              |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_service_type</li> <li>ocscp_peer_scp_instance_id</li> <li>ocscp_peer_scp_fqdn</li> <li>ocscp_fqdn</li> <li>ocscp_locality</li> </ul> |

**Table 5-142 (Cont.) ocscp\_metric\_req\_peer\_scp\_unhealthy\_total**

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_req_peer_scp_unhealthy_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_req_peer_scp_unhealthy_total{ocscp_peer_scp_instance_id="123-23b"}</li> <li>ocscp_metric_req_peer_scp_unhealthy_total{ocscp_peer_scp_fqdn="scp51svc.cluster.local.com"}</li> <li>ocscp_metric_req_peer_scp_unhealthy_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_req_peer_scp_unhealthy_total{ocscp_locality="Loc7"}</li> </ul> |

**Table 5-143 ocscp\_metric\_sepp\_unhealthy\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of times SEPP is marked unhealthy.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_sepp_instance_id</li> <li>ocscp_sepp_end_point</li> <li>ocscp_sepp_fqdn</li> <li>ocscp_locality</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                                                              |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_sepp_unhealthy_total{ocscp_sepp_instance_id="123-55b"}</li> <li>ocscp_metric_sepp_unhealthy_total{ocscp_sepp_end_point="10.23.34.54:8080"}</li> <li>ocscp_metric_sepp_unhealthy_total{ocscp_sepp_fqdn="sepp1.svc.cluster.local.com"}</li> <li>ocscp_metric_sepp_unhealthy_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_sepp_unhealthy_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-144 ocscp\_metric\_req\_sepp\_unhealthy\_total**

| Field       | Details                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of message requests not routed to the selected SEPP because SEPP is marked unhealthy.                                                                                                               |
| Type        | Counter                                                                                                                                                                                                    |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_service_type</li> <li>ocscp_sepp_instance_id</li> <li>ocscp_sepp_end_point</li> <li>ocscp_sepp_fqdn</li> <li>ocscp_locality</li> <li>ocscp_fqdn</li> </ul> |

Table 5-144 (Cont.) ocscp\_metric\_req\_sepp\_unhealthy\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_metric_req_sepp_unhealthy_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_metric_req_sepp_unhealthy_total{ocscp_sepp_instance_id="123-455b"}</li> <li>ocscp_metric_req_sepp_unhealthy_total{ocscp_sepp_endpoint="10.23.34.54:8080"}</li> <li>ocscp_metric_req_sepp_unhealthy_total{ocscp_sepp_fqdn="sepp1.svc.cluster.local.com"}</li> <li>ocscp_metric_req_sepp_unhealthy_total{ocscp_locality="Loc7"}</li> <li>ocscp_metric_req_sepp_unhealthy_total{scp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-145 ocscp\_metric\_nf\_set\_unhealthy

| Field       | Details                                                             |
|-------------|---------------------------------------------------------------------|
| Description | Indicates whether all the producer NFs in the NF SET are unhealthy. |
| Type        | Gauge                                                               |
| Dimension   | ocscp_nf_setid                                                      |
| Example     | ocscp_metric_nf_set_unhealthy{ocscp_nf_setid="123-445-363"}         |

Table 5-146 ocscp\_sepp\_unhealthy

| Field       | Details                                                                                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicate whether all the SEPP instances are unhealthy.                                                                                                                                                                                      |
| Type        | Gauge                                                                                                                                                                                                                                       |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_sepp_instance_id</li> <li>ocscp_sepp_fqdn</li> <li>ocscp_locality</li> </ul>                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_sepp_unhealthy{ocscp_sepp_instance_id="123-455b"}</li> <li>ocscp_sepp_unhealthy{ocscp_sepp_fqdn="sepp1.svc.cluster.local.com"}</li> <li>ocscp_sepp_unhealthy{ocscp_locality="Loc7"}</li> </ul> |

Table 5-147 ocscp\_metric\_trafficfeed\_not\_attempted\_total

| Field       | Details                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of messages selected for traffic feed based on the trigger point configuration filter criteria but not attempted to send because of some condition. |
| Type        | Counter                                                                                                                                                    |

**Table 5-147 (Cont.) ocscp\_metric\_trafficfeed\_not\_attempted\_total**

| Field     | Details                                                                                                                                                                                                                                                                                                                                                     |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_nfServiceType (e.g. nudm-uecm, nudm-sdm, etc.)</li> <li>triggerpoint (e.g. requestIngress, requestEgress, responseIngress, responseEgress)</li> <li>ocscp_cause (e.g. CRITICAL Pod Overload, Incorrect Data Director Information, Send Failed)</li> <li>kafka_partition_id</li> <li>kafka_broker_id</li> </ul> |
| Example   | ocscp_metric_trafficfeed_not_attempted_total{ocscp_cause="Incorrect Data Director Information",ocscp_nf_service_type="nudm-uecm",ocscp_trafficfeed_triggerpoint="requestEgress"}                                                                                                                                                                            |

**Table 5-148 ocscp\_metric\_trafficfeed\_failed\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of messages failed to send to traffic feed.                                                                                                                                                                                                                                                                                                          |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nfServiceType (e.g. nudm-uecm, nudm-sdm, etc.)</li> <li>triggerpoint (e.g. requestIngress, requestEgress, responseIngress, responseEgress)</li> <li>ocscp_cause (e.g. CRITICAL Pod Overload, Incorrect Data Director Information, Send Failed)</li> <li>kafka_partition_id</li> <li>kafka_broker_id</li> </ul> |
| Example     | ocscp_metric_trafficfeed_failed_total{ocscp_cause="Incorrect Data Director Information",ocscp_nf_service_type="nudm-uecm",ocscp_trafficfeed_triggerpoint="requestEgress"}                                                                                                                                                                                   |

**Table 5-149 ocscp\_metric\_trafficfeed\_attempted\_total**

| Field       | Details                                                                                                                                                                                                                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of messages sent to traffic feed.                                                                                                                                                                                                                  |
| Type        | Counter                                                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_service_type (e.g. nudm-uecm, nudm-sdm, etc.)</li> <li>triggerpoint (e.g. requestIngress, requestEgress, responseIngress, responseEgress)</li> <li>kafka_partition_id</li> <li>kafka_broker_id</li> </ul> |
| Example     | ocscp_metric_trafficfeed_total{ocscp_nf_service_type="nausf-auth",ocscp_trafficfeed_triggerpoint="requestEgress"}                                                                                                                                         |



**Table 5-150 ocscp\_worker\_fqdn\_resolution\_total**

| Field       | Details                                                                                                                                                                                                                                                                                             |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of messages for which fqdn is resolved by DNS or from nfProfile.                                                                                                                                                                                                                             |
| Type        | Counter                                                                                                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_service_type</li> <li>ocscp_fqdn_resolution</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                          |
| Example     | <ul style="list-style-type: none"> <li>ocscp_worker_fqdn_resolution_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_worker_fqdn_resolution_total{ocscp_fqdn_resolution="dns"}</li> <li>ocscp_worker_fqdn_resolution_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> </ul> |

**Table 5-151 ocscp\_worker\_interplmn\_fqdn\_resolution\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of messages for which inter-plmn fqdn is resolved by DNS or from nfProfile.                                                                                                                                                                                                                                                |
| Type        | Counter                                                                                                                                                                                                                                                                                                                           |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_service_type</li> <li>ocscp_fqdn_resolution</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                        |
| Example     | <ul style="list-style-type: none"> <li>ocscp_worker_interplmn_fqdn_resolution_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_worker_interplmn_fqdn_resolution_total{ocscp_fqdn_resolution="dns"}</li> <li>ocscp_worker_interplmn_fqdn_resolution_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> </ul> |

**Table 5-152 ocscp\_worker\_http\_req\_host\_type\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>Number of messages with http host as IP or FQDN.</p> <p><b>Note:</b> When a message request is implicit or of default notification type, the value of the ocscp_worker_http_req_host_type_total metric is updated based on the host of the message request, with value IP or FQDN that is independent of the configuration of the Egress Host Preference feature.</p> |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                  |

**Table 5-152 (Cont.) ocscp\_worker\_http\_req\_host\_type\_total**

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_nf_service_type</li> <li>host_type</li> <li>ocscp_fqdn</li> </ul> <p><b>Note:</b> These dimensions are available based on the availability of the User-Agent header in incoming message requests. SCP should be able to decode that particular format only if the User-Agent header is available in certain allowed configurable formats.</p> |
| Example   | <ul style="list-style-type: none"> <li>ocscp_worker_http_req_host_type_total{ocscp_nf_service_type="nudm-uecm"}</li> <li>ocscp_worker_http_req_host_type_total{host_type="fqdn"}</li> <li>ocscp_worker_http_req_host_type_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> </ul>                                                                                                                                                                                              |

**Table 5-153 ocscp\_worker\_cpu\_pod\_overload\_control\_status**

| Field       | Details                                                                                                                                                                                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates CPU utilization of SCP worker at any level.                                                                                                                                                                                                                                                                            |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>scp-service</li> <li>ocscp_threshold_level</li> </ul>                                                                                                                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_worker_cpu_pod_overload_control_status{pod_name="ocscp-scp-worker-647595788d-7tbx9",scp_service="scp-worker",ocscp_threshold_level="major"}</li> <li>ocscp_worker_cpu_pod_overload_control_status{pod_name="ocscp-scp-worker-647595788d-7tbx9",scp_service="scp-worker"}</li> </ul> |

**Table 5-154 ocscp\_worker\_pod\_overload\_control\_pendingTrans\_utilization\_minor**

| Field       | Details                                                                                                                                 |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates pending transaction utilization of SCP worker at minor level.                                                                 |
| Type        | Gauge                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>pod</li> <li>scp-service</li> </ul>                                                              |
| Example     | ocscp_worker_pod_overload_control_pendingTrans_utilization_minor{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"} |

**Table 5-155 ocscp\_worker\_pod\_overload\_control\_pendingTrans\_utilization\_major**

| Field       | Details                                                                                                                                 |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates pending transaction utilization of SCP worker at major level.                                                                 |
| Type        | Gauge                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>pod</li> <li>scp-service</li> </ul>                                                              |
| Example     | ocscp_worker_pod_overload_control_pendingTrans_utilization_major{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"} |

**Table 5-156 ocscp\_worker\_pod\_overload\_control\_pendingTrans\_utilization\_critical**

| Field       | Details                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates pending transaction utilization of SCP worker at critical level.                                                                 |
| Type        | Gauge                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>pod</li> <li>scp-service</li> </ul>                                                                 |
| Example     | ocscp_worker_pod_overload_control_pendingTrans_utilization_critical{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"} |

**Table 5-157 ocscp\_worker\_pod\_overload\_control\_pendingTrans\_utilization\_warn**

| Field       | Details                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates pending transaction utilization of SCP worker at warn level.                                                                 |
| Type        | Gauge                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>pod</li> <li>scp-service</li> </ul>                                                             |
| Example     | ocscp_worker_pod_overload_control_pendingTrans_utilization_warn{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"} |

**Table 5-158 ocscp\_worker\_pendingTrans\_pod\_overload\_control\_status**

| Field       | Details                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------|
| Description | Indicates pending transaction utilization of SCP worker at any level.                                          |
| Type        | Gauge                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>scp-service</li> <li>ocscp_threshold_level</li> </ul> |

**Table 5-158 (Cont.) ocscp\_worker\_pendingTrans\_pod\_overload\_control\_status**

| Field   | Details                                                                                                                                                                                                                                                                                                                                            |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_worker_pendingTrans_pod_overload_control_status{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"}</li> <li>ocscp_worker_pendingTrans_pod_overload_control_status{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker",ocscp_threshold_level="major"}</li> </ul> |

**Table 5-159 ocscp\_worker\_pod\_overload\_control\_resource\_utilization\_minor**

| Field       | Details                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates overload control resource utilization of SCP worker at minor level.                                                       |
| Type        | Gauge                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>pod</li> <li>scp-service</li> </ul>                                                          |
| Example     | ocscp_worker_pod_overload_control_resource_utilization_minor{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"} |

**Table 5-160 ocscp\_worker\_pod\_overload\_control\_resource\_utilization\_major**

| Field       | Details                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates overload control resource utilization of SCP worker at major level.                                                       |
| Type        | Gauge                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>pod</li> <li>scp-service</li> </ul>                                                          |
| Example     | ocscp_worker_pod_overload_control_resource_utilization_major{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"} |

**Table 5-161 ocscp\_worker\_pod\_overload\_control\_resource\_utilization\_critical**

| Field       | Details                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates overload control resource utilization of SCP worker at critical level.                                                       |
| Type        | Gauge                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>pod</li> <li>scp-service</li> </ul>                                                             |
| Example     | ocscp_worker_pod_overload_control_resource_utilization_critical{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"} |

**Table 5-162 ocscp\_worker\_pod\_overload\_control\_resource\_utilization\_warn**

| Field       | Details                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates overload control resource utilization of SCP worker at warn level.                                                       |
| Type        | Gauge                                                                                                                              |
| Dimension   | <ul style="list-style-type: none"> <li>pod</li> <li>scp-service</li> </ul>                                                         |
| Example     | ocscp_worker_pod_overload_control_resource_utilization_warn{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"} |

**Table 5-163 ocscp\_worker\_pod\_overload\_control\_status**

| Field       | Details                                                                                                                                                                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates overload control resource utilization of SCP worker at any level.                                                                                                                                                                                                                                              |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                    |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>scp-service</li> <li>ocscp_threshold_level</li> </ul>                                                                                                                                                                                                           |
| Example     | <ul style="list-style-type: none"> <li>ocscp_worker_pod_overload_control_status{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker"}</li> <li>ocscp_worker_pod_overload_control_status{pod_name="ocscp-scp-worker-668c75fbc8-kptfv",scp_service="scp-worker",ocscp_threshold_level="major"}</li> </ul> |

**Table 5-164 ocscp\_worker\_cca\_validation\_performed\_total**

| Field       | Details                                                                                            |
|-------------|----------------------------------------------------------------------------------------------------|
| Description | Indicates the number of requests on which CCA validation is performed.                             |
| Type        | Counter                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> </ul>                                       |
| Example     | ocscp_worker_cca_validation_performed_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"} |

**Table 5-165 ocscp\_worker\_cca\_validation\_failed\_total**

| Field       | Details                                                                                                                                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of requests that failed CCA validation.                                                                                                                                                                         |
| Type        | Counter                                                                                                                                                                                                                              |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>cca_consumer_nflInstanceId (not_available in case header is not present)</li> <li>san_consumer_nflInstanceId</li> <li>validation_type (subject/headerpresence)</li> </ul> |

Table 5-165 (Cont.) ocscp\_worker\_cca\_validation\_failed\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_worker_cca_validation_failed_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_worker_cca_validation_failed_total{cca_consume_r_nflInstanceId="2faf1bbc-6e4a-4454-a507-a14ef8e1bc22"}</li> <li>ocscp_worker_cca_validation_failed_total{san_consume_r_nflInstanceId="2faf1bbc-6e4a-4454-a507-a14ef8e1bc22"}</li> <li>ocscp_worker_cca_validation_failed_total{validation_type="headerpresence"}</li> </ul> |

Table 5-166 ocscp\_worker\_cca\_validation\_feature\_enabled\_without\_https

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the cache queue utilization.<br>Metrics Pegging Condition: This metric value shows the current utilization of the queue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Dimension   | <ul style="list-style-type: none"> <li>queue_name : name of the queue (scpCacheExecutorQueue, accessTokenAppEvExecutorQueue, accessTokenCohEvExecutorQueue)</li> <li>queueCapacity : The maximum size of queue is 30000 for scpCacheExecutorQueue and for others it 10000</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                          |
| Example     | <ul style="list-style-type: none"> <li>The following example returns the cache queue utilization metric for scpCacheExecutorQueue: <ul style="list-style-type: none"> <li>ocscp_cache_queue_utilization{queueName="scpCacheExecutorQueue"}</li> </ul> </li> <li>The following example returns all cache queues utilization metric with queueCapacity: <ul style="list-style-type: none"> <li>ocscp_cache_queue_utilization{queueCapacity="30000"}</li> </ul> </li> <li>The following example returns all cache queue utilization metrics with utilization greater than 0: <ul style="list-style-type: none"> <li>ocscp_worker_queue_utilization &gt; 0</li> </ul> </li> </ul> |

Table 5-167 ocscp\_cache\_queue\_alert

| Field       | Details                                                                                                                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the cache queue alert.<br>Metrics Pegging Condition: This metric value is either 0 or 1. Based on severity, the value will be 1 for that severity, and correspondingly, for other severities, the value will be 0. |
| Type        | Gauge                                                                                                                                                                                                                        |

Table 5-167 (Cont.) ocscp\_cache\_queue\_alert

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>queue_name : name of the queue (scpCacheExecutorQueue, accessTokenAppEvExecutorQueue, accessTokenCohEvExecutorQueue)</li> <li>queueCapacity : The maximum size of queue is 30000 for scpCacheExecutorQueue and for others it 10000</li> <li>severity: CRITICAL, MAJOR, MINOR, NORMAL</li> </ul>                                                                                                                                                                                                                                                                                                                                                                    |
| Example   | <ul style="list-style-type: none"> <li>The following example returns the cache queue alert metric for scpCacheExecutorQueue; for severity one instance will be 1, and all others will be either 0 or not pegged: <ul style="list-style-type: none"> <li>ocscp_cache_queue_alert{queueName="scpUpdateSSLCertsQueue"}</li> </ul> </li> <li>The following example returns all cache queue alert metrics with a value of 1: <ul style="list-style-type: none"> <li>ocscp_cache_queue_alert &gt; 0</li> </ul> </li> <li>The following example returns the cache queue alert metric for severity MAJOR: <ul style="list-style-type: none"> <li>ocscp_cache_queue_alert{severity="MAJOR"}</li> </ul> </li> </ul> |

Table 5-168 ocscp\_load\_manager\_queue\_utilization

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the load manager queue utilization.<br>Metrics Pegging Condition: This metric value shows the current utilisation of the queue.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Dimension   | <ul style="list-style-type: none"> <li>queue_name : name of the queue (sutLciCohEvExecutorQueue, sutLciAppEvExecutorQueue, peerLciCohEvExecutorQueue, peerLciAppEvExecutorQueue, loadCohEvExecutorQueue, loadAppEvExecutorQueue)</li> <li>queueCapacity : 10000</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Example     | <ul style="list-style-type: none"> <li>The following example returns the load manager queue utilization metric for sutLciCohEvExecutorQueue: <ul style="list-style-type: none"> <li>ocscp_load_manager_queue_utilization{queueName="sutLciCohEvExecutorQueue"}</li> </ul> </li> <li>The following example returns all load manager queues utilization metric with queueCapacity: <ul style="list-style-type: none"> <li>ocscp_load_manager_queue_utilization{queueCapacity="10000"}</li> </ul> </li> <li>The following example returns all load manager queue utilization metrics with utilization greater than 0: <ul style="list-style-type: none"> <li>ocscp_load_manager_queue_utilization &gt; 0</li> </ul> </li> </ul> |

**Table 5-169 ocscp\_load\_manager\_queue\_alert**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the load manager queue alert.<br>Metrics Pegging Condition: This metric value is either 0 or 1. Based on severity, the value will be 1 for that severity, and correspondingly, for other severities, the value will be 0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>queue_name : name of the queue (sutLciCohEvExecutorQueue, sutLciAppEvExecutorQueue, peerLciCohEvExecutorQueue, peerLciAppEvExecutorQueue, loadCohEvExecutorQueue, loadAppEvExecutorQueue)</li> <li>queueCapacity : 10000</li> <li>severity: CRITICAL, MAJOR, MINOR, NORMAL</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Example     | <ul style="list-style-type: none"> <li>The following example returns the load manager queue alert metric for sutLciCohEvExecutorQueue; for severity one instance will be 1, and all others will be either 0 or not pegged: <ul style="list-style-type: none"> <li>ocscp_load_manager_queue_alert{queueName="sutLciCohEvExecutorQueue"}</li> </ul> </li> <li>The following example returns all load manager queue alert metrics with a value of 1: <ul style="list-style-type: none"> <li>ocscp_load_manager_queue_alert&gt; 0</li> </ul> </li> <li>The following example returns the load manager queue alert metric for severity MAJOR: <ul style="list-style-type: none"> <li>ocscp_load_manager_queue_alert{severity="MAJOR"}</li> </ul> </li> </ul> |

**Table 5-170 ocscp\_global\_egress\_rl\_remote\_participant\_is\_duplicate**

| Field       | Details                                                                                                                                                                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | This metric keeps track of duplicate remote coherence participants.                                                                                                                                                                                                                        |
| Type        | Gauge                                                                                                                                                                                                                                                                                      |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>scp_nf_instance_id</li> <li>scp_local_coh_cluster_name</li> <li>scp_remote_coh_cluster_name</li> <li>scp_remote_coh_cluster_nf_instance_id</li> <li>scp_remote_coh_cluster_fqdn</li> <li>scp_remote_coh_cluster_port</li> </ul> |



Table 5-170 (Cont.) ocscp\_global\_egress\_rl\_remote\_participant\_is\_duplicate

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <pre>ocscp_global_egress_rl_remote_participant_is_duplicate{ap p="ocscp-scp-cache", app_kubernetes_io_component="microService", app_kubernetes_io_instance="ocscp", app_kubernetes_io_managed_by="Helm", app_kubernetes_io_name="scp-cache", app_kubernetes_io_part_of="ocscp", app_kubernetes_io_version="&lt;SCP release version&gt;", coherenceCluster="scp-coherence-cluster", helm_sh_chart="scp-cache-23.4.4-beta.22", instance="192.168.140.194:8091", job="kubernetes-pods", microservice="scp-cache", namespace="scpsvc", pod="ocscp-scp-cache-dc9b4775b-vhmtx", pod_template_hash="dc9b4775b", ocscp_fqdn="ocscp-scp- worker.scpsvc.svc.cluster.local", scp_local_coh_cluster_name="scp-coherence-cluster", scp_nf_instance_id="6faf1bbc-6e4a-4454-a507- a14ef8e1bc5e", scp_remote_coh_cluster_fqdn="ocats-scp- ocats-scpglbratelimitstub.scpsvc.svc.cluster.local", scp_remote_coh_cluster_name="scpstub-coherence- cluster", scp_remote_coh_cluster_nf_instance_id="6faf1bbc-6e4a-44 54-a507-a14ef8e1bc5e", scp_remote_coh_cluster_port="30001", vendor="oracle"}</pre> |

Table 5-171 ocscp\_worker\_health\_check\_rx\_req\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of health check requests received by SCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>ocscp_fqdn</li> <li>ocscp_nf_instance_id</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_consumer_nf_unique_id</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Example     | <ul style="list-style-type: none"> <li>ocscp_worker_health_check_rx_req_total{pod_name="ocscp-scp-worker-6dbf7ff8b6-g284z"}</li> <li>ocscp_worker_health_check_rx_req_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_worker_health_check_rx_req_total{ocscp_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_health_check_rx_req_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_worker_health_check_rx_req_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_health_check_rx_req_total{ocscp_consumer_nf_type="SMF"}</li> <li>ocscp_worker_health_check_rx_req_total{ocscp_consumer_nf_unique_id="SE1SMSF1"}</li> </ul> |

**Table 5-172 ocscp\_worker\_health\_check\_success\_res\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of success responses sent by SCP in response to the health check status query                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>ocscp_fqdn</li> <li>ocscp_nf_instance_id</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_consumer_nf_unique_id</li> <li>successRspType</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Example     | <ul style="list-style-type: none"> <li>ocscp_worker_health_check_success_res_total{pod_name="ocscp-scp-worker-6dbf7ff8b6-g284z"}</li> <li>ocscp_worker_health_check_success_res_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_worker_health_check_success_res_total{ocscp_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_health_check_success_res_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_worker_health_check_success_res_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_health_check_success_res_total{ocscp_consumer_nf_type="SMF"}</li> <li>ocscp_worker_health_check_success_res_total{ocscp_consumer_nf_unique_id="SE1SMSF1"}</li> <li>ocscp_worker_health_check_success_res_total{successRspType="200"}</li> </ul> |

**Table 5-173 ocscp\_worker\_health\_check\_error\_res\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of error responses sent by SCP in response to the health check status query                                                                                                                                                                                                                                  |
| Type        | Counter                                                                                                                                                                                                                                                                                                             |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>ocscp_fqdn</li> <li>ocscp_nf_instance_id</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_consumer_nf_unique_id</li> <li>status</li> <li>cause</li> <li>detail</li> <li>title</li> </ul> |

Table 5-173 (Cont.) ocscp\_worker\_health\_check\_error\_res\_total

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_worker_health_check_error_res_total{pod_name="ocscp-scp-worker-6dbf7ff8b6-g284z"}</li> <li>ocscp_worker_health_check_error_res_total{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_worker_health_check_error_res_total{ocscp_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_health_check_error_res_total{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_worker_health_check_error_res_total{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_health_check_error_res_total{ocscp_consumer_nf_type="SMF"}</li> <li>ocscp_worker_health_check_error_res_total{cause="NF_CONGESTION_RISK"}</li> <li>ocscp_worker_health_check_error_res_total{detail="NF service is overloaded/congested"}</li> <li>ocscp_worker_health_check_error_res_total{status="503"}</li> <li>ocscp_worker_health_check_error_res_total{title="NF service is overloaded/congested"}</li> </ul> |

Table 5-174 ocscp\_interscp\_health\_check\_status\_success\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of health check success status of peer SCP based on Outlier Detection and Health Check features                                                                                                                                                                                                                                                                                                                                                                                                |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>interScpHost</li> <li>pod_name</li> <li>ocscp_nf_instance_id</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                                                                                                                                    |
| Example     | <ul style="list-style-type: none"> <li>ocscp_interscp_health_check_status_success_total{interScpHost="scp51svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_interscp_health_check_status_success_total{ocscp_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_interscp_health_check_status_success_total{pod_name="ocscp-scp-worker-6dbf7ff8b6-g284z"}</li> <li>ocscp_interscp_health_check_status_success_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-175 ocscp\_interscp\_health\_check\_status\_failure\_total

| Field       | Details                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------|
| Description | Number of health check failure status of peer SCP based on Outlier Detection and Health check features |
| Type        | Counter                                                                                                |

Table 5-175 (Cont.) ocscp\_interscp\_health\_check\_status\_failure\_total

| Field     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>interScpHost</li> <li>pod_name</li> <li>ocscp_nf_instance_id</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                                                                                                                                    |
| Example   | <ul style="list-style-type: none"> <li>ocscp_interscp_health_check_status_failure_total{interScpHost="scp51svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_interscp_health_check_status_failure_total{ocscp_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_interscp_health_check_status_failure_total{pod_name="ocscp-scp-worker-6dbf7ff8b6-g284z"}</li> <li>ocscp_interscp_health_check_status_failure_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-176 ocscp\_health\_check\_status\_failed

| Field       | Details                                                                                                                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>SCP health check status.</p> <p>The value can be either 0 or 1.</p> <p>0 indicates SCP health check status is successful.</p> <p>1 indicates SCP health check status has failed.</p>                                                                                                                             |
| Type        | Gauge                                                                                                                                                                                                                                                                                                               |
| Dimension   | <ul style="list-style-type: none"> <li>pod_name</li> <li>ocscp_fqdn</li> <li>ocscp_nf_instance_id</li> <li>ocscp_consumer_host</li> <li>ocscp_consumer_nf_instance_id</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_consumer_nf_unique_id</li> <li>status</li> <li>cause</li> <li>detail</li> <li>title</li> </ul> |

Table 5-176 (Cont.) ocscp\_health\_check\_status\_failed

| Field   | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Example | <ul style="list-style-type: none"> <li>ocscp_health_check_status_failed{pod_name="ocscp-scp-worker-6dbf7ff8b6-g284z"}</li> <li>ocscp_health_check_status_failed{ocscp_fqdn="ocscp-scp-worker.ny-ocscp-01.svc.thrust2"}</li> <li>ocscp_health_check_status_failed{ocscp_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_health_check_status_failed{ocscp_consumer_host="smf1.scpsvc.svc.cluster.local"}</li> <li>ocscp_health_check_status_failed{ocscp_consumer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_health_check_status_failed{ocscp_consumer_nf_type="SMF"}</li> <li>ocscp_health_check_status_failed{cause="NF_CONGESTION_RISK"}</li> <li>ocscp_health_check_status_failed{detail="NF service is overloaded/congested"}</li> <li>ocscp_health_check_status_failed{status="503"}</li> <li>ocscp_health_check_status_failed{title="NF service is overloaded/congested"}</li> </ul> |

Table 5-177 ocscp\_interscp\_health\_check\_status\_failed

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>Inter-SCP health check status based on Outlier Detection and Health Check features</p> <p>The value can be either 0 or 1.</p> <p>0 indicates inter-SCP health check status is successful.</p> <p>1 indicates inter-SCP health check status has failed.</p>                                                                                                                                                                                                                    |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>interScpHost</li> <li>pod_name</li> <li>ocscp_nf_instance_id</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                                                                                                                               |
| Example     | <ul style="list-style-type: none"> <li>ocscp_interscp_health_check_status_failure_total{interScpHost="scp51svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_interscp_health_check_status_failed{ocscp_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_interscp_health_check_status_failed{pod_name="ocscp-scp-worker-6dbf7ff8b6-g284z"}</li> <li>ocscp_interscp_health_check_status_failed{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-178 ocscp\_oauth\_access\_token\_cache\_match\_total

| Field       | Details                                                                           |
|-------------|-----------------------------------------------------------------------------------|
| Description | Number of times requests fetched by access token from cache in SCP-nrfProxy-oauth |
| Type        | Counter                                                                           |

**Table 5-178 (Cont.) ocscp\_oauth\_access\_token\_cache\_match\_total**

| Field     | Details    |
|-----------|------------|
| Dimension | ocscp_fqdn |
| Example   | -          |

**Table 5-179 ocscp\_worker\_access\_token\_forwarded\_in\_tx\_res\_total**

| Field       | Details                                                 |
|-------------|---------------------------------------------------------|
| Description | Number of responses in the 3gpp-Sbi-Access-Token header |
| Type        | Counter                                                 |
| Dimension   | ocscp_fqdn                                              |
| Example     | -                                                       |

**Table 5-180 ocscp\_worker\_access\_token\_forwarded\_in\_tx\_req\_total**

| Field       | Details                                                |
|-------------|--------------------------------------------------------|
| Description | Number of requests in the 3gpp-Sbi-Access-Token header |
| Type        | Counter                                                |
| Dimension   | ocscp_fqdn                                             |
| Example     | -                                                      |

**Table 5-181 ocscp\_worker\_access\_token\_cache\_match\_total**

| Field       | Details                                                                |
|-------------|------------------------------------------------------------------------|
| Description | Number of times requests fetched access token from cache in SCP-Worker |
| Type        | Counter                                                                |
| Dimension   | ocscp_fqdn                                                             |
| Example     | -                                                                      |

**Table 5-182 ocscp\_nrf\_oauth\_error\_counts\_total**

| Field       | Details                                                                        |
|-------------|--------------------------------------------------------------------------------|
| Description | Error responses received from NRF                                              |
| Type        | Counter                                                                        |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_sub</li> <li>ocscp_aud</li> </ul> |
| Example     | -                                                                              |

**Table 5-183 ocscp\_oauth\_access\_token\_tx\_rsp\_total**

| Field       | Details                                          |
|-------------|--------------------------------------------------|
| Description | Responses from SCP-nrfProxy-oauth to SCP-Worker. |
| Type        | Counter                                          |

**Table 5-183 (Cont.) ocscp\_oauth\_access\_token\_tx\_rsp\_total**

| Field     | Details                                                                                                                                    |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_response_code</li> <li>requester_nfType</li> <li>target_nfType</li> </ul> |
| Example   | -                                                                                                                                          |

**Table 5-184 ocscp\_oauth\_access\_token\_rx\_res\_total**

| Field       | Details                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Responses from NRF to SCP-nrfProxy-oauth through SCP-Worker.                                                                               |
| Type        | Counter                                                                                                                                    |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_response_code</li> <li>requester_nfType</li> <li>target_nfType</li> </ul> |
| Example     | -                                                                                                                                          |

**Table 5-185 ocscp\_oauth\_access\_token\_tx\_req\_total**

| Field       | Details                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------|
| Description | Requests generated by SCP-nrfProxy-oauth toward NRF through SCP-Worker.                                       |
| Type        | Counter                                                                                                       |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>requester_nfType</li> <li>target_nfType</li> </ul> |
| Example     | -                                                                                                             |

**Table 5-186 ocscp\_oauth\_access\_token\_rx\_req\_total**

| Field       | Details                                                      |
|-------------|--------------------------------------------------------------|
| Description | Requests received in the SCP-nrfProxy-oauth from SCP-Worker. |
| Type        | Counter                                                      |
| Dimension   | ocscp_fqdn                                                   |
| Example     | -                                                            |

**Table 5-187 ocscp\_worker\_access\_token\_rx\_res\_total**

| Field       | Details                                                      |
|-------------|--------------------------------------------------------------|
| Description | Access token response from SCP-nrfProxy-oauth to SCP-Worker. |
| Type        | Counter                                                      |

**Table 5-187 (Cont.) ocscp\_worker\_access\_token\_rx\_res\_total**

| Field     | Details                                                                                                                                                                                                                                         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_consumer_nf_type</li> <li>ocscp_response_code</li> <li>ocscp_response_code_class</li> </ul>                              |
| Example   | ocscp_worker_access_token_rx_res_total{ocscp_consumer_nf_type="AMF",ocscp_nf_service_type="nsmf-pdusession",ocscp_nf_type="SMF",ocscp_response_code="200",ocscp_response_code_class="2",ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"} |

**Table 5-188 ocscp\_worker\_access\_token\_tx\_req\_total**

| Field       | Details                                                                                                                                                                                 |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Access token request from SCP-Worker to SCP-nrfProxy-oauth.                                                                                                                             |
| Type        | Counter                                                                                                                                                                                 |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>ocscp_nf_type</li> <li>ocscp_nf_service_type</li> <li>ocscp_consumer_nf_type</li> </ul>                                      |
| Example     | ocscp_worker_access_token_tx_req_total{ocscp_consumer_nf_type="AMF",ocscp_nf_service_type="nsmf-pdusession",ocscp_nf_type="SMF",ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"} |

**Table 5-189 ocscp\_audit\_interscp\_health\_check\_tx\_req\_total**

| Field       | Details                                                                                                                                                                                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of inter-SCP health check requests triggered by SCPC-Audit to SCP-Worker                                                                                                                                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                            |
| Dimension   | <ul style="list-style-type: none"> <li>interScpHost</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                 |
| Example     | <ul style="list-style-type: none"> <li>ocscp_audit_interscp_health_check_tx_req_total{interScpHost="scp51svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_audit_interscp_health_check_tx_req_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

**Table 5-190 ocscp\_audit\_interscp\_health\_check\_rx\_res\_total**

| Field       | Details                                                                           |
|-------------|-----------------------------------------------------------------------------------|
| Description | Number of inter-SCP health check responses received by SCPC-Audit from SCP-Worker |
| Type        | Counter                                                                           |



**Table 5-190 (Cont.) ocscp\_audit\_interscp\_health\_check\_rx\_res\_total**

| Field     | Details                                                                                                                                                                                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>interScpHost</li> <li>ocscp_fqdn</li> <li>responseCode</li> </ul>                                                                                                                                                                                                                                       |
| Example   | <ul style="list-style-type: none"> <li>ocscp_audit_interscp_health_check_rx_res_total{interScpHost="scp51svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_audit_interscp_health_check_rx_res_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_audit_interscp_health_check_rx_res_total{responseCode="200"}</li> </ul> |

**Table 5-191 ocscp\_notification\_lock\_operation\_time**

| Field       | Details                                                                                                                                                                                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the time taken to acquire and release the lock                                                                                                                                                                                                          |
| Type        | Counter                                                                                                                                                                                                                                                           |
| Dimension   | <ul style="list-style-type: none"> <li>nfInstanceId: NfInstanceId of the notification for which the lock operation is performed</li> <li>lockEvent: lock event (Released or Acquire)</li> <li>timeInMs: time taken by the lock event</li> </ul>                   |
| Example     | <ul style="list-style-type: none"> <li>ocscp_notification_lock_operation_time{namespace="ocscp"}</li> <li>ocscp_notification_lock_operation_time{lockEvent="ACQUIRED_LOCK"}</li> <li>ocscp_notification_lock_operation_time{lockEvent="RELEASED_LOCK"}</li> </ul> |

**Table 5-192 ocscp\_ignored\_processed\_nf\_notification\_total**

| Field       | Details                                                                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the notifications that are not processed (ignored) because another notification with the same nfInstanceId is processed by another thread.                                       |
| Type        | Counter                                                                                                                                                                                    |
| Dimension   | <ul style="list-style-type: none"> <li>nfType: NfType of the notification</li> <li>nfInstanceId: NfInstanceId of the notification</li> </ul>                                               |
| Example     | <ul style="list-style-type: none"> <li>ocscp_ignored_processed_nf_notification_total{namespace="ocscp" }</li> <li>ocscp_ignored_processed_nf_notification_total{nfType="AUSF" }</li> </ul> |

**Table 5-193 ocscp\_notification\_queue\_waiting\_time**

| Field       | Details                                                            |
|-------------|--------------------------------------------------------------------|
| Description | Indicates the time taken by the notification in the waiting queue. |
| Type        | Counter                                                            |

**Table 5-193 (Cont.) ocscp\_notification\_queue\_waiting\_time**

| Field     | Details                                                                                                                                                                                                        |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension | <ul style="list-style-type: none"> <li>• nfType: NfType of the notification</li> <li>• nfInstanceId: NfInstanceId of the notification</li> <li>• timeInMs: time taken by the notification in queue.</li> </ul> |
| Example   | ocscp_notification_queue_waiting_time {namespace="ocscp"}                                                                                                                                                      |

**Table 5-194 ocscp\_notification\_profile\_processing\_time**

| Field       | Details                                                                                                                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the total time taken to process notifications.                                                                                                                                                                                                                                                 |
| Type        | Counter                                                                                                                                                                                                                                                                                                  |
| Dimension   | <ul style="list-style-type: none"> <li>• nfType: NfType of the notification</li> <li>• nfInstanceId: NfInstanceId of the notification</li> <li>• nfProfileProcessingStatus: Status of the notification processing</li> <li>• processingTimeInMs: Total Time taken for notification processing</li> </ul> |
| Example     | ocscp_notification_profile_processing_time {nfType = "AUSF"}                                                                                                                                                                                                                                             |

**Table 5-195 ocscp\_metric\_5gsbi\_upstream\_destination\_rejection\_total**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Tracks the total number of upstream destinations rejected by SCP due to certain unhealthy conditions of the host, such as CircuitBreaker, Producer Congestion Control, etc.                                                                                                                                                                                                                                                                                                                                                                                                          |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Dimension   | <ul style="list-style-type: none"> <li>• ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>• ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>• ocscp_nf_end_point (Default value = NA)</li> <li>• ocscp_producer_fqdn (default value = NA, Contains fqdn of producer)</li> <li>• ocscp_authority</li> <li>• ocscp_cause</li> </ul>                                                                                                                                                                                                                                 |
| Example     | <ul style="list-style-type: none"> <li>• ocscp_metric_5gsbi_upstream_destination_rejection_total{ocscp_nf_type="PCF"}</li> <li>• ocscp_metric_5gsbi_upstream_destination_rejection_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>• ocscp_metric_5gsbi_upstream_destination_rejection_total{ocscp_cause="CircuitBreaking"}</li> <li>• ocscp_metric_5gsbi_upstream_destination_rejection_total{ocscp_nf_end_point="NA"}</li> <li>• ocscp_metric_5gsbi_upstream_destination_rejection_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:9443"}</li> </ul> |

Table 5-196 ocscp\_metric\_5gsbi\_rx\_res\_failure\_total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Tracks the total number of upstream response failures at SCP with a specific cause, such as ConnectionTimeout and UnknownHostException so on.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Dimension   | <ul style="list-style-type: none"> <li>ocscp_nf_type (e.g., UDM, PCF, AMF, etc.)</li> <li>ocscp_nf_service_type (e.g., nudm-uecm, nudm-sdm, etc.)</li> <li>ocscp_nf_end_point (Default value = NA)</li> <li>ocscp_response_code(e.g., 201, 503, 404, etc.)</li> <li>ocscp_response_code_class (e.g., 2, 5, etc.)</li> <li>ocscp_authority</li> <li>scheme(e.g., https)</li> <li>ocscp_cause</li> </ul>                                                                                                                                                           |
| Example     | <ul style="list-style-type: none"> <li>ocscp_metric_5gsbi_rx_res_failure_total{ocscp_nf_type="PCF"}</li> <li>ocscp_metric_5gsbi_rx_res_failure_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_metric_5gsbi_rx_res_failure_total{scheme="https"}</li> <li>ocscp_metric_5gsbi_rx_res_failure_total{ocscp_nf_end_point="NA"}</li> <li>ocscp_metric_5gsbi_rx_res_failure_total{ocscp_authority="ocscp-scp-worker.scpsvc.svc.cluster.local:9443"}</li> <li>ocscp_metric_5gsbi_rx_res_failure_total{ocscp_cause="UnknownHostException"}</li> </ul> |

Table 5-197 ocscp\_configuration\_dnssrv\_nrf\_invalid\_data

| Field       | Details                                                                                                                                                                                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>Indicates the number of invalid DNS SRV records received by SCP from the DNS SRV server through alternate resolution.</p> <p>For instance, an invalid target FQDN, an invalid weight, an invalid priority, or an invalid port might all result in invalid DNS SRV records.</p>                                                |
| Type        | Counter                                                                                                                                                                                                                                                                                                                          |
| Dimensions  | <ul style="list-style-type: none"> <li>nrfSrvFqdn</li> <li>targetFqdn</li> <li>cause</li> </ul>                                                                                                                                                                                                                                  |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_configuration_dnssrv_nrf_invalid_data{nrfSrvFqdn="nrf1svc_scpsvc.svc.cluster.local"}</li> <li>ocscp_configuration_dnssrv_nrf_invalid_data{targetFqdn="nrf1svc_scpsvc.svc.cluster.local"}</li> <li>ocscp_configuration_dnssrv_nrf_invalid_data{cause="INVALIDTARGETFQDN"}</li> </ul> |

Table 5-198 ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_failure\_count\_total

| Field       | Details                                                                                                                                                                                                                                                                                             |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of failed nonmigrated tasks of the DNS SRV-based NRF Info feature.<br>The nonmigrated tasks are as follows: <ul style="list-style-type: none"> <li>Capacity or priority update of target FQDN</li> <li>New NRF SRV FQDN addition or deletion</li> <li>NF Set update</li> </ul> |
| Type        | Counter                                                                                                                                                                                                                                                                                             |
| Dimensions  | <ul style="list-style-type: none"> <li>nrfSrvFqdn</li> <li>failureReason</li> </ul>                                                                                                                                                                                                                 |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure_count={nrfSrvFqdn="nrf1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure_count={failureReason="START_NRF_RULE_PROCESSING"}</li> </ul>              |

Table 5-199 ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_success\_count\_total

| Field       | Details                                                                                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of successful nonmigrated tasks.                                                                                                                   |
| Type        | Counter                                                                                                                                                                 |
| Dimensions  | <ul style="list-style-type: none"> <li>nrfSrvFqdn</li> </ul>                                                                                                            |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_success_count_total={nrfSrvFqdn="nrf1svc.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-200 ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_failure

| Field       | Details                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the status of the nonmigrated task of the DNS SRV based NRF Info feature. The status of nonmigrated tasks will be either 0 or 1.<br>The nonmigrated tasks are as follows: <ul style="list-style-type: none"> <li>Capacity or priority update of target FQDN</li> <li>New NRF SRV FQDN addition or deletion</li> <li>NF Set update</li> </ul> |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                  |
| Dimensions  | <ul style="list-style-type: none"> <li>nrfSrvFqdn</li> <li>failureReason</li> <li>taskId</li> <li>taskName</li> <li>taskState</li> <li>eventName</li> <li>msName</li> </ul>                                                                                                                                                                            |

Table 5-200 (Cont.) ocscp\_configuration\_dnssrv\_nrf\_non\_migration\_task\_failure

| Field    | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examples | <ul style="list-style-type: none"> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure={nrfSrvFqdn="nrf1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure={failureReason="RETRY_EVENT_COUNT_EXPIRED"}</li> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure={taskId=1234}</li> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure={taskName="NRF_SET_DELETED_TASK"}</li> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure={eventName="START_NRF_RULE_PROCESSING"}</li> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure={msName="scpc-notification"}</li> <li>ocscp_configuration_dnssrv_nrf_non_migration_task_failure={taskState="UNSUB_DEREG_COMPLETED"}</li> </ul> |

Table 5-201 ocscp\_configuration\_dnssrv\_nrf\_migration\_task\_failure

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>Indicates the status of the migrated task of the DNS SRV based NRF Info feature. The status of migrated tasks will be either 0 or 1.</p> <p>The migrated tasks are as follows:</p> <ul style="list-style-type: none"> <li>Static(custom.values.yaml file) to DNS SRV based NRF migration</li> <li>DNS SRV based NRF to static(custom.values.yaml) migration</li> </ul> <p>If there is any failure in the following migration task, then the value will become 1, otherwise the value will be 0.</p> |
| Type        | Gauge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Dimensions  | <ul style="list-style-type: none"> <li>nrfSrvFqdn</li> <li>failureReason</li> <li>taskId</li> <li>taskName</li> <li>taskState</li> <li>eventName</li> <li>msName</li> </ul>                                                                                                                                                                                                                                                                                                                            |

Table 5-201 (Cont.) ocscp\_configuration\_dnssrv\_nrf\_migration\_task\_failure

| Field    | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examples | <ul style="list-style-type: none"> <li>ocscp_configuration_dnssrv_nrf_migration_task_failure={nrfSrvFqdn="nrf1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_configuration_dnssrv_nrf_migration_task_failure={failureReason=WAIT_TIME_FOR_COMPLETION_RESP_ELAPSED}</li> <li>ocscp_configuration_dnssrv_nrf_migration_task_failure={taskId=1234}</li> <li>ocscp_configuration_dnssrv_nrf_migration_task_failure={taskName="MIGRATION_OF_NRF_INFO_FROM_STATIC_TO_DNS"}</li> <li>ocscp_configuration_dnssrv_nrf_migration_task_failure={eventName="FEATURE_ENABLED"}</li> <li>ocscp_configuration_dnssrv_nrf_migration_task_failure={msName="scpc-configuration"}</li> <li>ocscp_configuration_dnssrv_nrf_migration_task_failure={taskState="WAITING_FOR_DNS_SRV_DATA"}</li> </ul> |

Table 5-202 ocscp\_configuration\_dnssrv\_nrf\_duplicate\_target\_detected

| Field       | Details                                                                                                                                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates when duplicate target FQDNs are detected across different NRF SRV FQDNs.                                                                                                                                                                                                    |
| Type        | Gauge                                                                                                                                                                                                                                                                                 |
| Dimensions  | <ul style="list-style-type: none"> <li>nrfSrvFqdn</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                      |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_configuration_dnssrv_nrf_duplicate_target_detected={nrfSrvFqdn="nrf1svc.scpsvc.svc.cluster.local"}</li> <li>ocscp_configuration_dnssrv_nrf_duplicate_target_detected={ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-203 ocscp.subscription.nrf.deregistration.success.total

| Field       | Details                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of successful deregistrations with NRF.                                                                                                |
| Type        | Counter                                                                                                                                                     |
| Dimensions  | <ul style="list-style-type: none"> <li>nrfRegionOrSetId</li> </ul>                                                                                          |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_subscription_nrf_deregistration_success_total={nrfRegionOrSetId="setnrf1.nrfset.5gc.mnc012.mcc345"}</li> </ul> |

Table 5-204 ocscp.subscription.nrf.deregistration.failure.total

| Field       | Details                                                            |
|-------------|--------------------------------------------------------------------|
| Description | Indicates the number of failed deregistrations with NRF.           |
| Type        | Counter                                                            |
| Dimensions  | <ul style="list-style-type: none"> <li>nrfRegionOrSetId</li> </ul> |

Table 5-204 (Cont.) ocscp.subscription.nrf.deregistration.failure.total

| Field    | Details                                                                                                                                                     |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examples | <ul style="list-style-type: none"> <li>ocscp_subscription_nrf_deregistration_failure_total={nrfRegionOrSetId="setnrf1.nrfset.5gc.mnc012.mcc345"}</li> </ul> |

Table 5-205 ocscp.worker.peer.oci.conveyance.total

| Field       | Details                                                                                                                                                                                                                                                                                                                                                               |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of messages routed by SCP with peer NF's Overload Control Information (OCI) header.                                                                                                                                                                                                                                                              |
| Type        | Counter                                                                                                                                                                                                                                                                                                                                                               |
| Dimensions  | <ul style="list-style-type: none"> <li>ocscp_peer_nf_instance_id</li> <li>ocscp_peer_nf_service_type</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                                   |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_worker_peer_oci_conveyance_total{ocscp_peer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_peer_oci_conveyance_total{ocscp_peer_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_worker_peer_oci_conveyance_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-206 ocscp.worker.oci.conveyance.total

| Field       | Details                                                                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of messages routed by SCP with SCP's OCI header.                                                                                                                                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                  |
| Dimensions  | <ul style="list-style-type: none"> <li>ocscp_peer_nf_instance_id</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                          |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_worker_oci_conveyance_total{ocscp_peer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_oci_conveyance_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-207 ocscp.worker.oci.enforced.total

| Field       | Details                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of messages on which OCI is enforced causing those messages to be responded with error or alternate routed. |
| Type        | Counter                                                                                                                          |

Table 5-207 (Cont.) ocscp\_worker\_oci\_enforced\_total

| Field      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions | <ul style="list-style-type: none"> <li>ocscp_producer_nf_instance_id</li> <li>ocscp_nf_service_type</li> <li>action <ul style="list-style-type: none"> <li>error_sent</li> <li>rerouted</li> </ul> </li> <li>ocscp_smp_priority</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                                |
| Examples   | <ul style="list-style-type: none"> <li>ocscp_worker_oci_enforced_total{ocscp_producer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_worker_oci_enforced_total{ocscp_nf_service_type="npcf-smpolicycontrol"}</li> <li>ocscp_worker_oci_enforced_total{action="rerouted"}</li> <li>ocscp_worker_oci_enforced_total{ocscp_smp_priority="10"}</li> <li>ocscp_worker_oci_enforced_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-208 ocscp\_worker\_rx\_unsupported\_oci\_scope\_total

| Field       | Details                                                                                                                                                                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of messages received with unsupported OCI scope from peer.                                                                                                                                                                                                           |
| Type        | Counter                                                                                                                                                                                                                                                                                   |
| Dimensions  | <ul style="list-style-type: none"> <li>scope</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                                                                               |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_worker_rx_unsupported_oci_scope_total{scope="S-NSSAI: {"sst": 1, "sd": "A08923"}; DNN: internet.mnc012.mcc345.gprs"}</li> <li>ocscp_worker_rx_unsupported_oci_scope_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-209 ocscp\_metric\_nf\_oci\_rx\_total

| Field       | Details                                                                                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Indicates the number of messages received with OCI.                                                                                                                                                                                            |
| Type        | Counter                                                                                                                                                                                                                                        |
| Dimensions  | <ul style="list-style-type: none"> <li>ocscp_peer_nf_instance_id</li> <li>ocscp_fqdn</li> </ul>                                                                                                                                                |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_metric_nf_oci_rx_total{ocscp_peer_nf_instance_id="6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e"}</li> <li>ocscp_metric_nf_oci_rx_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> </ul> |

Table 5-210 ocscp\_metric\_trafficfeed\_partition\_unhealthy

| Field       | Details                                     |
|-------------|---------------------------------------------|
| Description | No leader is available for Kafka partition. |



Table 5-210 (Cont.) ocscp\_metric\_trafficfeed\_partition\_unhealthy

| Field      | Details                                                                                                                                                                                             |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type       | Gauge                                                                                                                                                                                               |
| Dimensions | <ul style="list-style-type: none"> <li>kafka_partition_id</li> <li>topic</li> <li>cause               <ul style="list-style-type: none"> <li>no_leader</li> <li>unreachable</li> </ul> </li> </ul>  |
| Examples   | ocscp_metric_trafficfeed_partition_unhealthy{ocscp_cause="no_leader",ocscp_nf_service_type="nudm-uecm",ocscp_trafficfeed_triggerpoint="requestEgress",kafka_partition_id="NA",kafka_broker_id="NA"} |

Table 5-211 ocscp\_metric\_trafficfeed\_success\_total

| Field       | Details                                                                                                                                                                                                                                           |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | <p>Number of messages sent to traffic feed.</p> <p>This metric is unavailable when "acks" is set to "0".</p> <p>To make it available, change "acks" to "1" or "all".</p>                                                                          |
| Type        | Counter                                                                                                                                                                                                                                           |
| Dimensions  | <ul style="list-style-type: none"> <li>nfServiceType (e.g. nudm-uecm, nudm-sdm, etc.)</li> <li>triggerpoint (e.g. requestIngress, requestEgress, responseIngress, responseEgress)</li> <li>kafka_partition_id</li> <li>kafka_broker_id</li> </ul> |
| Examples    | ocscp_metric_trafficfeed_success_total{ocscp_nf_service_type="nausf-auth",ocscp_trafficfeed_triggerpoint="requestEgress",kafka_partition_id="NA",kafka_broker_id="NA"}                                                                            |

Table 5-212 ocscp\_metric\_trafficfeed\_cluster\_unhealthy

| Field       | Details                                                             |
|-------------|---------------------------------------------------------------------|
| Description | The whole traffic feed Kafka cluster is down.                       |
| Type        | Gauge                                                               |
| Dimensions  | cause (unreachable)                                                 |
| Examples    | ocscp_metric_trafficfeed_cluster_unhealthy{ocscp_cause=unreachable} |

Table 5-213 ocscp\_ignore\_unknown\_service\_total

| Field       | Details                                                                                             |
|-------------|-----------------------------------------------------------------------------------------------------|
| Description | The total number of unknown services ignored in the NF profile.                                     |
| Type        | Counter                                                                                             |
| Dimensions  | <ul style="list-style-type: none"> <li>nfInstanceId</li> <li>nfType</li> <li>serviceName</li> </ul> |

Table 5-213 (Cont.) ocscp\_ignore\_unknown\_service\_total

| Field    | Details                                                                                                                                                                                                                                                              |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examples | <ul style="list-style-type: none"> <li>ocscp_ignore_unknown_service_total{nfInstanceId=6faf1bbc-6e4a-4454-a507-a14ef8e1bc5e}</li> <li>ocscp_ignore_unknown_service_total{nfType=UDM}</li> <li>ocscp_ignore_unknown_service_total{serviceName=ndm_unknown}</li> </ul> |

Table 5-214 ocscp\_metric\_message\_current\_request\_rate\_total

| Field       | Details                                                                                                                                                                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of current request rate per rate limit bucket key.                                                                                                                                                                                                    |
| Type        | Counter                                                                                                                                                                                                                                                                |
| Dimensions  | <ul style="list-style-type: none"> <li>ocscp_fqdn</li> <li>bucketKey</li> </ul>                                                                                                                                                                                        |
| Examples    | <ul style="list-style-type: none"> <li>ocscp_metric_message_current_request_rate_total{ocscp_fqdn="ocscp-scp-worker.scpsvc.svc.cluster.local"}</li> <li>ocscp_metric_message_current_request_rate_total{bucketKey="egress_pcf1svc.ny-ocscp-01.svc.thrust2"}</li> </ul> |

Table 5-215 coherence\_cache\_hits

| Field       | Details                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of cache hits since the last statistics reset. A cache hit refers to a read operation invocation for which an entry exists in this map. |
| Type        | Counter                                                                                                                                                  |
| Dimensions  | <ul style="list-style-type: none"> <li>coherenceCluster</li> <li>name (cache name)</li> </ul>                                                            |
| Examples    | coherence_cache_hits{coherenceCluster="scp-coherence-cluster"}                                                                                           |

Table 5-216 coherence\_cache\_size

| Field       | Details                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------|
| Description | The total number of entries in cache.                                                         |
| Type        | Counter                                                                                       |
| Dimensions  | <ul style="list-style-type: none"> <li>coherenceCluster</li> <li>name (cache name)</li> </ul> |
| Examples    | coherence_cache_size{coherenceCluster="scp-coherence-cluster"}                                |

## 5.1.2 Mediation Metrics

The following table describes metric supported by the Mediation feature:

**Table 5-217 ocscp\_med\_total\_rule\_count**

| Field                                                          | Details                                                                                                                                                                                                |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of Mediation rules configured.                                                                                                                                                            |
| Type                                                           | Gauge                                                                                                                                                                                                  |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (nf-mediation,nf-mediation-test, iwf-mediation, iwf-mediation-test)</li> <li>• nflInstanceid</li> <li>• vendor</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | ocscp_med_total_rule_count{app= "nf-mediation",nflInstanceid="IWF1",vendor="oracle",kubernetes_namespace="medsvc"}                                                                                     |

**Table 5-218 ocscp\_med\_active\_rule\_count**

| Field                                                          | Details                                                                                                                                                                                                |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Displays the total number of rules invoked at a time.                                                                                                                                                  |
| Type                                                           | Gauge                                                                                                                                                                                                  |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (nf-mediation,nf-mediation-test, iwf-mediation, iwf-mediation-test)</li> <li>• nflInstanceid</li> <li>• vendor</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | ocscp_med_active_rule_count_total{app="nf-mediation",nflInstanceid="IWF1",vendor="oracle",kubernetes_namespace="medsvc"}                                                                               |

**Table 5-219 ocscp\_med\_individual\_rule\_exec\_count\_total**

| Field                                                          | Details                                                                                                                                                                                                                                             |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of times a particular rule gets invoked.                                                                                                                                                                                               |
| Type                                                           | Counter                                                                                                                                                                                                                                             |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (nf-mediation,nf-mediation-test, iwf-mediation, iwf-mediation-test)</li> <li>• nflInstanceid</li> <li>• vendor</li> <li>• kubernetes_namespace</li> <li>• ruleName</li> <li>• ruleGroupName</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | sum(ocscp_med_individual_rule_exec_count_total{app="nf-mediation"}) by (ruleName,ruleGroupName)                                                                                                                                                     |

**Table 5-220 ocscp\_med\_http\_req\_total**

| Field       | Details                                 |
|-------------|-----------------------------------------|
| Description | Total number of ingress messages to NF. |
| Type        | Counter                                 |

**Table 5-220 (Cont.) ocscp\_med\_http\_req\_total**

| Field                                                          | Details                                                                                                                                                                                                                              |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension                                                      | <ul style="list-style-type: none"> <li>app (nf-mediation, iwf-mediation)</li> <li>nflInstanceid</li> <li>vendor</li> <li>kubernetes_namespace</li> <li>ruleGroupName</li> <li>msgType (consumerRequest, producerResponse)</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | <code>ocscp_med_req_total{msgType="consumerRequest",app="nf-mediation",ruleGroupName="scp-agenda"}</code>                                                                                                                            |

**Table 5-221 ocscp\_med\_http\_rsp\_total**

| Field                                                          | Details                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of egress messages.                                                                                                                                                                                                                                                                   |
| Type                                                           | Counter                                                                                                                                                                                                                                                                                            |
| Dimension                                                      | <ul style="list-style-type: none"> <li>app (nf-mediation, iwf-mediation)</li> <li>nflInstanceid</li> <li>vendor</li> <li>kubernetes_namespace</li> <li>ruleGroupName</li> <li>statusCode (supports specific codes:: 200, 500, 503)</li> <li>msgType (consumerRequest, producerResponse)</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | <code>ocscp_med_rsp_total{msgType="consumerRequest",ruleGroupName="scp-agenda",statusCode~="2.*"}</code>                                                                                                                                                                                           |

**Table 5-222 ocscp\_med\_test\_req\_total**

| Field                                                          | Details                                                                                                                                                                                                                                        |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of incoming messages to the NF Test mode.                                                                                                                                                                                         |
| Type                                                           | Counter                                                                                                                                                                                                                                        |
| Dimension                                                      | <ul style="list-style-type: none"> <li>app (nf-mediation-test, iwf-mediation-test)</li> <li>nflInstanceid</li> <li>vendor</li> <li>kubernetes_namespace</li> <li>ruleGroupName</li> <li>msgType (consumerRequest, producerResponse)</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | <code>ocscp_med_test_req_total{msgType="consumerRequest",app="nf-mediation-test",ruleGroupName="scp-agenda"}</code>                                                                                                                            |

**Table 5-223 ocscp\_med\_test\_rsp\_total**

| Field       | Details                                    |
|-------------|--------------------------------------------|
| Description | Total number of response by the Test mode. |
| Type        | Counter                                    |

**Table 5-223 (Cont.) ocscp\_med\_test\_rsp\_total**

| Field                                                          | Details                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (nf-mediation-test, iwf-mediation-test)</li> <li>• nfInstanceId</li> <li>• vendor</li> <li>• kubernetes_namespace</li> <li>• ruleGroupName</li> <li>• statusCode (supports specific codes:: 200, 500, 503)</li> <li>• msgType (consumerRequest, producerResponse)</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | ocscp_med_test_rsp_total{msgType="consumerRequest"}                                                                                                                                                                                                                                                                       |

**Table 5-224 ocscp\_med\_msg\_forwarded\_to\_test\_mode\_total**

| Field                                                          | Details                                         |
|----------------------------------------------------------------|-------------------------------------------------|
| Description                                                    | Total Number of Requests forwarded to Test mode |
| Type                                                           | Counter                                         |
| Dimension                                                      | app(nf-mediation, iwf-mediation)                |
| Example usage to filter metric by dimension on the Grafana GUI | sum(ocscp_med_msg_forwarded_to_test_mode_total) |

**Table 5-225 ocscp\_med\_rule\_update\_status**

| Field                                                          | Details                                                                                                                                                                                                |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | If rules reloading failed or successful.<br>Value = 0 {failed}<br>Value = 1 {successful}                                                                                                               |
| Type                                                           | Gauge                                                                                                                                                                                                  |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (nf-mediation, nf-mediation-test, iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nfInstanceId</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | ocscp_med_rule_update_status{app="nf-mediation"}                                                                                                                                                       |

**Table 5-226 ocscp\_med\_individual\_rule\_processing\_time**

| Field       | Details                                                                                                                                                                                                                                             |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Processing time of the every rule invoked.                                                                                                                                                                                                          |
| Type        | Histogram                                                                                                                                                                                                                                           |
| Dimension   | <ul style="list-style-type: none"> <li>• app (nf-mediation, nf-mediation-test, iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nfInstanceId</li> <li>• kubernetes_namespace</li> <li>• ruleName</li> <li>• ruleGroupName</li> </ul> |

**Table 5-226 (Cont.) ocscp\_med\_individual\_rule\_processing\_time**

| Field                                                          | Details |
|----------------------------------------------------------------|---------|
| Example usage to filter metric by dimension on the Grafana GUI | -       |

**Table 5-227 ocscp\_med\_msg\_processing\_time\_seconds**

| Field                                                          | Details                                                                                                                                                                                                |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Processing time of messages received by Mediation.                                                                                                                                                     |
| Type                                                           | Histogram                                                                                                                                                                                              |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (nf-mediation, nf-mediation-test, iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nfInstanceId</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | -                                                                                                                                                                                                      |

**Table 5-228 ocscp\_med\_forward\_to\_ext\_total**

| Field                                                          | Details                                                                                                                                                               |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of messages forwarded to external.                                                                                                                       |
| Type                                                           | Counter                                                                                                                                                               |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nfInstanceId</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | -                                                                                                                                                                     |

**Table 5-229 ocscp\_med\_incoming\_rsp\_from\_ext\_total**

| Field                                                          | Details                                                                                                                                                               |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of responses from external.                                                                                                                              |
| Type                                                           | Counter                                                                                                                                                               |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nfInstanceId</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | -                                                                                                                                                                     |

**Table 5-230 ocscp\_med\_incoming\_d2h\_req\_total**

| Field       | Details                                                                               |
|-------------|---------------------------------------------------------------------------------------|
| Description | Total number of requests from D2H service as a part of the protocol translation mode. |

**Table 5-230 (Cont.) ocscp\_med\_incoming\_d2h\_req\_total**

| Field                                                          | Details                                                                                                                                                                |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                                                           | Counter                                                                                                                                                                |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nflInstanceid</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | -                                                                                                                                                                      |

**Table 5-231 ocscp\_med\_outgoing\_rsp\_to\_d2h\_total**

| Field                                                          | Details                                                                                                                                                                |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of responses to D2H service as a part of protocol translation mode.                                                                                       |
| Type                                                           | Counter                                                                                                                                                                |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nflInstanceid</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | -                                                                                                                                                                      |

**Table 5-232 ocscp\_med\_forward\_to\_h2d\_total**

| Field                                                          | Details                                                                                                                                                                |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of messages forwarded to H2D as a part of protocol translation mode.                                                                                      |
| Type                                                           | Counter                                                                                                                                                                |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nflInstanceid</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | -                                                                                                                                                                      |

**Table 5-233 ocscp\_med\_incoming\_rsp\_from\_h2d\_total**

| Field                                                          | Details                                                                                                                                                                |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                                                    | Total number of responses received from H2D as a part of protocol translation as a service.                                                                            |
| Type                                                           | Counter                                                                                                                                                                |
| Dimension                                                      | <ul style="list-style-type: none"> <li>• app (iwf-mediation, iwf-mediation-test)</li> <li>• vendor</li> <li>• nflInstanceid</li> <li>• kubernetes_namespace</li> </ul> |
| Example usage to filter metric by dimension on the Grafana GUI | -                                                                                                                                                                      |

**Note**

In the above table, <metricPrefix> indicates metric prefix that can be customized. The default metric prefix is ocmed.



# 6

## Alerts

This section provides information about the supported alerts and how to configure the alerts.

### **Note**

The performance and capacity of the SCP system may vary based on the call model, feature or interface configuration, network conditions, and underlying CNE and hardware environment.

You can configure alerts in Prometheus and ScpAlertrules.yaml file.

The following table provides information about Service Communication Proxy (SCP) alerts.

### **Caution**

User, computer and applications, and character encoding settings may cause an issue when copy-pasting commands or any content from PDF. The PDF reader version also affects the copy-pasting functionality. It is recommended to verify the pasted content when the hyphens or any special characters are part of the copied content.

### **Note**

- `kubect l` commands might vary based on the platform deployment. Replace `kubect l` with Kubernetes environment-specific command line tool to configure Kubernetes resources through kube-api server. The instructions provided in this document are as per the Oracle Communications Cloud Native Environment (OCCNE) version of kube-api server.
- The alert file can be customized as required by the deployment environment. For example, namespace can be added as a filtered criteria to the alert expression to filter alerts only for a specific namespace.

## 6.1 System level alerts

This section lists the system level alerts.

### 6.1.1 SCPNotificationPodMemoryUsage

**Table 6-1 SCPNotificationPodMemoryUsage**

| Field    | Description |
|----------|-------------|
| Severity | Major       |

Table 6-1 (Cont.) SCPNotificationPodMemoryUsage

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions              | sum(container_memory_usage_bytes{image!="",pod=~".*scpc-notification.+"}) by (pod,namespace, instance) > 3006477107                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.3001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Description             | Notify Notification service Pod memory usage if it is above threshold<br>Threshold value is 85% of allocated (4GB) memory: <b>3.4 GB</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Actions     | <p><b>Cause:</b> When high notification rate or very large NF profile size is present in notifications.</p> <p><b>Diagnostic Information:</b> Monitor the notification metric: <code>ocscp_nrf_notifications_requests_nf_total</code>.<br/>Notification usage reduces after some time when it crosses 2.5 GB or 3 GB.</p> <p><b>Recovery:</b> This alert is cleared automatically when the scpc-notification pod memory usage reduces below the defined threshold.<br/>Reduce the notification rate. These notifications are generated by NRF and can be controlled through NRF.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.1.2 SCPWorkerPodMemoryUsage

Table 6-2 SCPWorkerPodMemoryUsage

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Conditions              | sum(container_memory_usage_bytes{image!="",pod=~".*scp-worker.+"}) by (pod,namespace, instance) > 6012954214                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Description             | Notify Worker per Pod memory usage is above threshold<br>Threshold value is 85% of allocated (8GB) memory: <b>7.3 GB</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Recommended Actions     | <p><b>Cause:</b> When there is high traffic rate, alternate routing, more number of routing rules and rules size, and due to network or producer NF latency.</p> <p><b>Diagnostic Information:</b> Monitor traffic rate, alerts, and latency on the KPI Dashboard.</p> <p>Check the traffic rates of the following metrics if they are too high:</p> <ul style="list-style-type: none"> <li>• <code>ocscp_metric_http_rx_req_total</code></li> <li>• <code>ocscp_metric_http_tx_req_total</code></li> <li>• <code>ocscp_metric_http_rx_res_total</code></li> <li>• <code>ocscp_metric_http_tx_res_total</code></li> </ul> <p>Check the upstream response time by using the following command and ensure whether upstream is taking too long to respond:<br/><code>ocscp_metric_upstream_service_time_total</code>.</p> <p>Check the following platform metric for current memory usage by the scp-worker pod: <code>container_memory_usage_bytes</code>.</p> <p><b>Recovery:</b> This alert is cleared automatically when the scp-worker pod memory usage reduces below the defined threshold. Reduce the traffic rate and improve the latency.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.1.3 SCPInstanceDown

**Table 6-3 SCPInstanceDown**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Conditions              | kube_pod_status_ready{pod =~ '.*scp-worker.* .scpc-notification.* .scpc-subscription.* .scpc-configuration.* .scpc-audit.* .scpc-alternate-resolution.* ,condition =~ 'true'} !=1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description             | Notify that if any pod in ocsdp release is down. Provides information like pod name, instance id and app name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Recommended Actions     | <p><b>Cause:</b> When the following issues occur:</p> <ul style="list-style-type: none"> <li>The Control plane pods, such as configuration, subscription, notification, audit, and alternate-resolution are down due to connection failure with DB.</li> <li>Pod restarts due to kubernetes liveness or readiness probe failures.</li> <li>Application restarts or starts failure.</li> </ul> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Check if DB services are active by running the following command:</li> </ul> <pre>kubectl describe pod &lt;podname&gt; -n &lt;namespace&gt;</pre> <ul style="list-style-type: none"> <li>Check kubernetes events for probe failures in the platform logs.</li> <li>Check if any exception is reported in the SCP application logs.</li> </ul> <p><b>Recovery:</b> This alert is cleared automatically when the inactive pod is active. Recover DB services if down. Collect the application logs and contact <a href="#">My Oracle Support</a> for any assistance.</p> |

## 6.2 Application level alerts

This section lists the application level alerts.

### 6.2.1 SCPCcaFeatureEnabledWithoutHttps

**Table 6-4 SCPCcaFeatureEnabledWithoutHttps**

| Field                   | Description                                                                           |
|-------------------------|---------------------------------------------------------------------------------------|
| Severity                | Info                                                                                  |
| Condition               | ocscp_worker_cca_validation_feature_enabled_without_https > 0                         |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.9022                                                       |
| Description             | An alert is raised when the CCA validation feature is enabled without enabling HTTPS. |

Table 6-4 (Cont.) SCPCcaFeatureEnabledWithoutHttps

| Field               | Description                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p><b>Cause:</b> CCA validation feature is enabled without enabling HTTPS.</p> <p><b>Diagnostic Information:</b><br/>Deploy HTTPS SCP deployment.</p> <p><b>Recovery:</b> The alert is cleared automatically if either the CCA feature is disabled or deployment is changed to HTTPS.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.2 SCPIngressTrafficRateAboveMinorThreshold

Table 6-5 SCPIngressTrafficRateAboveMinorThreshold

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Condition               | sum(rate(ocscp_metric_http_rx_req_total{app_kubernetes_io_name="scp-worker"}[2m]))by (kubernetes_namespace,ocscp_locality,kubernetes_pod_name)>= 1200 to 1400                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description             | Notify that Traffic rate is from 1200 to 1400 mps (user configure minor threshold value) with Locality and current value of traffic rate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Actions     | <p><b>Cause:</b> When the Consumer NF sends more traffic than expected.</p> <p><b>Diagnostic Information:</b><br/>Monitor the ingress traffic to pod using the KPI Dashboard.<br/>Refer to the rate of ocscp_metric_http_rx_req_total metric on the Grafana GUI.</p> <p><b>Recovery:</b> This alert is cleared automatically when the ingress traffic reduces below the minor threshold or exceeds the major threshold. If this alert is not cleared, then check the Consumer NF for an uneven distribution of traffic per connection or for any other issue.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.3 SCPIngressTrafficRateAboveMajorThreshold

Table 6-6 SCPIngressTrafficRateAboveMajorThreshold

| Field                   | Description                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | major                                                                                                                                                          |
| Conditions              | sum(rate(ocscp_metric_http_rx_req_total{app_kubernetes_io_name="scp-worker"}[2m]))by (kubernetes_namespace,ocscp_locality,kubernetes_pod_name) >= 1400 to 1600 |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7001                                                                                                                                |
| Description             | Notify that Traffic rate is from 1400 to 1600 mps (user configure major threshold value) with Locality and current value of traffic rate.                      |

Table 6-6 (Cont.) SCPIngressTrafficRateAboveMajorThreshold

| Field               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p><b>Cause:</b> When the Consumer NF sends more traffic than expected.</p> <p><b>Diagnostic Information:</b> Monitor the ingress traffic to pod using the KPI Dashboard.</p> <p>Refer to the rate of ocscp_metric_http_rx_req_total metric on the Grafana GUI.</p> <p><b>Recovery:</b> This alert is cleared automatically when the ingress traffic reduces below the major threshold or exceeds the critical threshold. If this alert is not cleared, then check the Consumer NF for an uneven distribution of traffic per connection or for any other issue.</p> <p>If this alert continues for a long duration, then reduce the ingress traffic from consumer to pod.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.4 SCPIngressTrafficRateAboveCriticalThreshold

Table 6-7 SCPIngressTrafficRateAboveCriticalThreshold

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Conditions              | sum(rate(ocscp_metric_http_rx_req_total{app_kubernetes_io_name="scp-worker"}[2m]))by(kubernetes_namespace,ocscp_locality,kubernetes_pod_name) >= 1600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Description             | Notify that Traffic rate is above 1600mps (user configure critical threshold value) with Locality and current value of traffic rate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Recommended Actions     | <p><b>Cause:</b> When the Consumer NF sends more traffic than expected.</p> <p><b>Diagnostic Information:</b> Monitor the ingress traffic to pod using the KPI Dashboard.</p> <p>Refer to the rate of the ocscp_metric_http_rx_req_total metric on the Grafana GUI.</p> <p><b>Recovery:</b> This alert is cleared automatically when the ingress traffic reduces below the critical threshold. If this alert is not cleared, then check the Consumer NF for an uneven distribution of traffic per connection or for any other issue.</p> <p>If this alert continues for a long duration, then reduce the ingress traffic from consumer to pod.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.5 SCPRoutingFailedForProducer

Table 6-8 SCPRoutingFailedForProducer

| Field    | Description |
|----------|-------------|
| Severity | Info        |

Table 6-8 (Cont.) SCPRoutingFailedForProducer

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions              | increase(ocscp_metric_routing_attempt_fail_total{app_kubernetes_io_name="scp-worker"}[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description             | Notify that Routing failed for producer. Provides detail such as NFService Type, NFType, Locality, producer FQDN and value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Recommended Actions     | <p><b>Cause:</b> When routing fails to select a producer NF due to unavailability of routing rules for an NF service or producer.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Check whether the routing rules are configured for the NF for which routing failed.</li> <li>Check the notification logs for any error while processing the notification of the NF for which routing failed. Then, run the following command to get the notification logs: <code>kubectl logs &lt;podname&gt; -n &lt;namespace&gt;</code></li> <li>Check whether the NF is reachable or not by using one of the following steps: <ul style="list-style-type: none"> <li>Run the ping command from primary/secondary nodes using IP of service. Example of a ping command: <code>ping &lt;IPAddress&gt;</code>.</li> <li>Run the ping command from inside the pod, if FQDN of service is used.</li> <li>Instead of using the ping command, you can collect tcpdump for ensuring the connectivity. tcpdump must be run on the debug container for scp-worker microservice. Example of a tcpdump: <code>tcpdump -w capture.pcap -i &lt;pod interface&gt;</code>.</li> </ul> </li> </ul> <p><b>Recovery:</b> This alert is cleared automatically when the routing is complete for a producer NF or no more traffic is received in the next Prometheus scrape interval.</p> <p>Check if the NF is deregistered. Register the NF to create routing rules if rules do not exist.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.6 SCPAuditErrorResponse

Table 6-9 SCPAuditErrorResponse

| Field                   | Description                                                                                                                                                                                                                       |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                              |
| Conditions              | ocscp_audit_error_response > 0                                                                                                                                                                                                    |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.4001                                                                                                                                                                                                   |
| Description             | <p>Alert is raised when Audit module receives a 3xx, 4xx, or 5xx error from NRF. This alert is labeled with specific nftype, nrfRegionOrSetId, and auditmethod.</p> <p><b>Note:</b> Alert is cleared on the next audit cycle.</p> |

Table 6-9 (Cont.) SCPAuditErrorResponse

| Field               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p><b>Cause:</b> When the configured NRF sends error responses, down, or not reachable.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Check if NRF is up and reachable. To check the NRF status, see <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i>.</li> <li>Check if the NF is reachable or not using one of the following steps: <ul style="list-style-type: none"> <li>Run the ping command from primary/secondary nodes using IP of NRF. Example of a ping command: <code>ping &lt;IpAddress&gt;</code>.</li> <li>Run the ping command from inside the pod if FQDN of NRF is used.</li> <li>Instead of using ping, you can collect tcpdump for ensuring connectivity. Example of a tcpdump: <code>tcpdump -w capture.pcap -i &lt;pod interface&gt;</code>.</li> </ul> </li> <li>Monitor audit and worker service logs: <code>kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</code></li> <li>Check jaeger traces for scp-worker.</li> </ul> <p><b>Recovery:</b> The alert is cleared automatically during the next audit cycle and when no more errors are received. Collect audit and worker service logs and contact <a href="#">My Oracle Support</a> for any assistance.</p> |

## 6.2.7 SCPAuditEmptyNFArrayResponse

Table 6-10 SCPAuditEmptyNFArrayResponse

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Conditions              | <code>ocscp_audit_2xx_empty_nf_array_rx_total &gt; 0</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.4002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Description             | <p>Alert is generated when Audit module receives a 2xx response with empty NFInstance array from NRF. Alert is labeled with specific nftype, nrfRegionOrSetId, and auditmethod.</p> <p>Alert is cleared if Audit receives a success response with non-empty NFInstance array or on next audit cycle if topology source is changed to LOCAL.</p>                                                                                                                                                                                                                                                                     |
| Recommended Actions     | <p><b>Cause:</b> When NRF does not have any NF registered or due to any error condition on NRF.</p> <p><b>Diagnostic Information:</b> Check if NRF contains any registered NF and validate as required. For more information, refer to NRF documents.</p> <p><b>Recovery:</b> This alert is cleared automatically if Audit receives a success response with non-empty NFInstance array or during the next audit cycle when the topology source is changed to LOCAL.</p> <p>Register a NF with NRF or change the topology source to LOCAL.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.8 DuplicateLocalityFoundInForeignNF

**Table 6-11 DuplicateLocalityFoundInForeignNF**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Conditions              | ocscp_notification_duplicate_foreign_location > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.3002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Description             | Alert is raised when an unknown NF or SCP is registered with duplicate locality from the present region.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Recommended Actions     | <p><b>Cause:</b> When SCP discovers a duplicate locality of an NF from an unknown region.</p> <p><b>Diagnostic Information:</b> Check logs for NF notification received by running the following command: <code>kubectl -n &lt;namespace&gt; logs &lt;pod name&gt;</code>.</p> <p>Check the following metric to get the NFInstanceId information for which this alert is raised: <code>ocscp_notification_duplicate_foreign_location (nfInstanceId)</code>.</p> <p>From the metric, get the NF Instance ID, Locality, and serving_scope.</p> <p>Check the NF Profile of the corresponding NF in the unknown region as identified by the serving_scope.</p> <p>Check and correct the locality in the NF Profile to ensure it aligns with localities of that unknown region that should be different from locality of SCP which reported this alert.</p> <p><b>Recovery:</b> This alert is cleared automatically if an unknown NF or SCP is deregistered or registers update with the correct locality.</p> <p>Re-register NF with correct locality information.</p> <p>Collect logs for notification and audit service.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.9 ForeignNFLocalityNotServed

**Table 6-12 ForeignNFLocalityNotServed**

| Field                   | Description                                                                     |
|-------------------------|---------------------------------------------------------------------------------|
| Severity                | Critical                                                                        |
| Conditions              | ocscp_notification_foreign_nf_locality_unserved > 0                             |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.3003                                                 |
| Description             | Alert is raised when a Foreign Producer NF's locality is not served by any SCP. |



Table 6-12 (Cont.) ForeignNFLocalityNotServed

| Field               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p><b>Cause:</b> When SCP discovers an unknown Producer NF's without any locality served by an SCP.</p> <p><b>Diagnostic Information:</b> Check logs for received NF notification by running the following command: <code>kubectl get pods -n &lt;namespace&gt;</code>.</p> <p><b>Note:</b> Use the complete name of notification pod in the following command: <code>kubectl logs &lt;pod&gt; -n &lt;namespace&gt;</code>.</p> <p>Check the following metric to get the NFInstanceId information for which this alert is raised: <code>ocscp_notification_foreign_nf_locality_unserved(nfInstanceId)</code>.</p> <p><b>Recovery:</b> This alert is cleared automatically if the unknown NF is deregistered or registers update received with locality served by SCP.</p> <p>Re-register NF with correct locality information.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.10 UnknownLocalityFoundInForeignNF

Table 6-13 UnknownLocalityFoundInForeignNF

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Conditions              | <code>ocscp_notification_foreign_nf_locality_absent &gt; 0</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.3004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Description             | Alert will be raised when a Foreign Producer NF's locality is unknown.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Recommended Actions     | <p><b>Cause:</b> When SCP discovers an unknown Producer NF's without locality information.</p> <p><b>Diagnostic Information:</b> Check logs for the received NF notification by running the following command: <code>kubectl get pods -n &lt;namespace&gt;</code>.</p> <p>Use the complete name of notification pod in the following command: <code>kubectl logs &lt;pod&gt; -n &lt;namespace&gt; -f --tail=0</code></p> <p>Check the following metric to get the NFInstanceId information for which this alert is raised: <code>ocscp_notification_foreign_nf_locality_absent(nfInstanceId)</code>.</p> <p><b>Recovery:</b> This alert is cleared automatically if unknown NF is deregistered or registers update received with locality known to SCP.</p> <p>Re-register NF with correct locality information.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.11 SCPUpsstreamResponseTimeout

Table 6-14 SCPUpsstreamResponseTimeout

| Field    | Description |
|----------|-------------|
| Severity | info        |

Table 6-14 (Cont.) SCPUstreamResponseTimeout

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions              | <code>idelta(ocscp_metric_upstream_response_timeout_total[2m]) &gt; 0</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7011                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Description             | Alert is raised when Upstream connection to a producer NF fails                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Recommended Actions     | <p><b>Cause:</b> When a producer NF is down, not reachable, or latency is high.</p> <p><b>Diagnostic Information:</b> Check whether the producer NF is up and network connectivity to the producer NF is established by using one of the following steps:</p> <ul style="list-style-type: none"> <li>Run the ping command from primary/secondary nodes by using IP of producer NF. Example of a ping command: <code>ping &lt;IPAddress&gt;</code>.</li> <li>Run the ping command from inside the pod, if FQDN of producer NF is used.</li> <li>Instead of using the ping command, you can collect tcpdump for ensuring the connectivity. tcpdump must be run on the debug container for scp-worker microservice. Example of a tcpdump: <code>tcpdump -w capture.pcap -i &lt;pod interface&gt;</code>.</li> </ul> <p>Check the upstream response time by using the following metric and determine if upstream is taking too long to respond:<br/>ocscp_metric_upstream_service_time (producer FQDN)</p> <p><b>Recovery:</b> This alert is cleared automatically in the next scrape interval if the system does not observe any error.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.12 SCPSingleNFInstanceAvailableForNFType

Table 6-15 SCPSingleNFInstanceAvailableForNFType

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Conditions              | <code>ocscp_no_nf_instance == 0</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.3005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Description             | Alert is raised when there is a single NFInstance available with SCP for an NFType.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Actions     | <p><b>Cause:</b> When the <code>preventiveAuditOnLastNFInstanceDeletion</code> attribute is set to true, SCP has single NFInstance available for an NFType.</p> <p><b>Diagnostic Information:</b> Check all SCP NRFs for specific NFType in the alert if only one NFInstance is available.</p> <p>For information about registered NFs, see <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i>.</p> <p>Check the number of NFs of a particular type by using API or CNC console of SCP. For information about procedures to check the NFs available with SCP, see "Configuring Service Communication Proxy using the CNC Console" in <i>Oracle Communications Cloud Native Core, Service Communication Proxy User Guide</i>.</p> <p><b>Recovery:</b> This alert is cleared automatically in the next scrape interval if more than one NFInstance is available for a specified NFType in the alert.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.13 SCPNoNfInstanceForNFType

**Table 6-16 SCPNoNfInstanceForNFType**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Conditions              | ocscp_no_nf_instance == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.3006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Description             | Alert is raised when there is a no NFInstance available with SCP for a NFType                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Recommended Actions     | <p><b>Cause:</b> When the preventiveAuditOnLastNFInstanceDeletion flag is set to true, SCP has no NFInstance available for a NFType.</p> <p><b>Diagnostic Information:</b> Check all SCP NRFs for specific NFType in the alert if no NFInstance is available.</p> <p>For information about registered NFs, see <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i>.</p> <p>Check the number of NFs of a particular type by using API or CNC console of SCP. For information about procedures to check the NFs available with SCP, see "Configuring Service Communication Proxy using the CNC Console" in <i>Oracle Communications Cloud Native Core, Service Communication Proxy User Guide</i>.</p> <p><b>Recovery:</b> This alert is cleared automatically in the next scrape interval if at least one NFInstance is available for a specified NFType in the alert.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.14 SCPIngressTrafficRateExceededConfiguredLimit

**Table 6-17 SCPIngressTrafficRateExceededConfiguredLimit**

| Alert Parameters | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description      | Ingress traffic rate exceeds configured rate limit for consumer fqdn: {{ \$labels.ocscp_consumer_fqdn }}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Summary          | 'Ingress traffic rate exceeds configured rate limit for consumer fqdn: ocscpconsumerfqdn = {{ \$labels.ocscp_consumer_host }}, consumernfinstanceid = {{ \$labels.ocscp_consumer_nf_instance_id }}, consumernftype = {{ \$labels.ocscp_consumer_nf_type }}, configuredingressrate = {{ \$labels.ocscp_configured_ingress_rate }}, namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, scp_fqdn: ' {{ \$labels.scp_fqdn }} ', timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }} {{ end }} and value = {{ \$value }} ' |
| Severity         | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Condition        | This alert is raised when the ingress traffic rate exceeds the configured rate for consumer FQDN.<br>increase(ocscp_metric_ingress_rate_limiting_throttle_req_total[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID              | 1.3.6.1.4.1.323.5.3.35.1.2.7012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used      | ocscp_metric_ingress_rate_limiting_throttle_req_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

Table 6-17 (Cont.) SCPIngressTrafficRateExceededConfiguredLimit

| Alert Parameters           | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p><b>Cause:</b><br/>When the ingress traffic rate exceeds the configured rate limit for the consumer FQDN.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Check the ingress traffic rate from the consumer FQDN.</li> <li>To check the ingress rate, refer to the following metrics:<br/>cscp_metric_http_rx_req_total</li> <li>Check the ingress rate limit configuration as described in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> </ul> <p><b>Recovery:</b><br/>This alert is cleared when no more requests get suppressed due to ingress rate limiting in the next scrape interval.<br/>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.15 SCPIngressTrafficRoutedWithoutRateLimitTreatment

Table 6-18 SCPIngressTrafficRoutedWithoutRateLimitTreatment

| Alert Parameters           | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | Ingress traffic routed without rate limit treatment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Summary</b>             | 'Ingress traffic routed without rate limit treatment: consumernf_type = {{ \$labels.ocscp_consumer_nf_type }}, consumernf_instance_id = {{ \$labels.ocscp_consumer_nf_instance_id }}, consumerfqdn = {{ \$labels.ocscp_consumer_host }}, cause = {{ \$labels.ocscp_cause }}, namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, scp_fqdn: ' {{ \$labels.scp_fqdn }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} and value = {{ \$value }}'                                                                                                                                                                                                                                                              |
| <b>Severity</b>            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Condition</b>           | This alert is raised when the ingress traffic routes without rate limiting treatment.<br>increase(ocscp_metric_ingress_rate_limiting_not_applied_req_total[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.35.1.2.7013                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Metric Used</b>         | ocscp_metric_ingress_rate_limiting_not_applied_req_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Recommended Actions</b> | <p><b>Cause:</b><br/>When the ingress traffic routes without rate limiting treatment.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Check the ingress rate limiting configurations for the untreated FQDNs that can be obtained from the following metric:<br/>ocscp_metric_ingress_rate_limiting_not_applied_req_total(ocscp_consumer_fqdn)</li> <li>Check the ingress rate limit configuration as described in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> </ul> <p><b>Recovery:</b><br/>This alert is cleared when no more requests get routed without ingress rate limiting treatment in the next scrape interval.<br/>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.16 SCPEgressTrafficRateExceededConfiguredLimit

**Table 6-19 SCPEgressTrafficRateExceededConfiguredLimit**

| Field                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Summary</b>                 | 'Egress traffic rate exceeds configured rate limit: producerntype = {{labels.ocscp_nf_type}}, producerntfservicetype = {{labels.ocscp_nf_service_type}}, producerninstanceid = {{labels.ocscp_nf_instance_id}}, producerfqdn = {{labels.ocscp_producer_fqdn}}, consumerntype = {{labels.ocscp_consumer_nf_type}}, consumerntinstanceid = {{labels.ocscp_consumer_nf_instance_id}}, consumerfqdn = {{labels.ocscp_consumer_host}}, configuredegressrate = {{labels.ocscp_configured_egress_rate}}, namespace: {{labels.kubernetes_namespace}}, podname: {{labels.kubernetes_pod_name}}, scp_fqdn: ' {{labels.scp_fqdn}} ', timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} and value = {{ \$value }} ' |
| <b>Severity</b>                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Conditions</b>              | idelta(ocscp_metric_egress_rate_limiting_throttle_req_total{app_kubernetes_io_name="scp-worker"}[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>OID used for SNMP Traps</b> | 1.3.6.1.4.1.323.5.3.35.1.2.7014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>             | Alert is raised when the egress traffic rate exceed the configured rate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Recommended Actions</b>     | <p><b>Cause:</b> When the egress traffic rate exceeds the configured rate.</p> <p><b>Diagnostic Information:</b> Check the egress traffic rate by using the following metric: ocscp_metric_http_tx_req_total.</p> <p>Check the egress rate limit configuration as described in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</p> <p><b>Recovery:</b> This alert is cleared when no more requests get suppressed due to egress rate limiting in the next scrape interval.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p>                                                                                                                                     |

## 6.2.17 SCPEgressTrafficRoutedWithoutRateLimitTreatment

**Table 6-20 SCPEgressTrafficRoutedWithoutRateLimitTreatment**

| Field                          | Description                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Severity</b>                | Major                                                                                                        |
| <b>Conditions</b>              | idelta(ocscp_metric_egress_rate_limiting_not_applied_req_total{app_kubernetes_io_name="scp-worker"}[2m]) > 0 |
| <b>OID used for SNMP Traps</b> | 1.3.6.1.4.1.323.5.3.35.1.2.7015                                                                              |
| <b>Description</b>             | Alert is raised when egress traffic routes without rate limiting.                                            |

Table 6-20 (Cont.) SCPEgressTrafficRoutedWithoutRateLimitTreatment

| Field               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p><b>Cause:</b> When the egress traffic routes without rate limiting treatment.</p> <p><b>Diagnostic Information:</b> Check the egress rate limiting configurations for the untreated producer FQDN.</p> <p>Obtain the producer FQDN by using the following metric:<br/>ocscp_metric_egress_rate_limiting_not_applied_req_total(ocscp_producer_fqdn)</p> <p>Check the egress rate limit configuration as described in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</p> <p><b>Recovery:</b> This alert is cleared when no more requests get routed without egress rate limiting treatment in the next scrape interval.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.18 SCPNotificatoinRejectTopologySourceLocal

Table 6-21 SCPNotificatoinRejectTopologySourceLocal

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Conditions              | increase(ocscp_notifications_rejected_topologysource_local_total[15m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.3007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Description             | Alert is raised when SCP rejects a notification from NRF due to topology source set to LOCAL for NF Type.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Recommended Actions     | <p><b>Cause:</b> When NF Topology Source Info is set to LOCAL.</p> <p><b>Diagnostic Information:</b> Check the topology source information of an NF Type.</p> <p>For information about the topology source APIs, see <i>Oracle Communications Cloud Native Core, Service Communication Proxy User Guide</i>.</p> <p><b>Recovery:</b> This alert is cleared automatically after 15 minutes when NF Topology Source Info is set to NRF from LOCAL.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.19 SCPNotificationProcessingFailureForNF

Table 6-22 SCPNotificationProcessingFailureForNF

| Field                   | Description                                                      |
|-------------------------|------------------------------------------------------------------|
| Severity                | Major                                                            |
| Conditions              | increase(ocscp_failure_processed_nf_notification_total[15m]) > 0 |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.3008                                  |
| Description             | Alerts is raised when Notification processing has failed on SCP. |

Table 6-22 (Cont.) SCPNotificationProcessingFailureForNF

| Field               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p><b>Cause:</b> When Notification processing has failed on SCP.</p> <p><b>Diagnostic Information:</b> Check notification pod logs for any errors by running the following command:</p> <pre>kubectl logs &lt;notification pod name&gt; -n &lt;scp namespace&gt;</pre> <p>. To get the list of pods, run the following command:</p> <pre>kubectl get pod -n &lt;scp namespace&gt;</pre> <p>Sample logs:</p> <pre>{   "instant":   {     "epochSecond":1620272241,"nanoOfSecond":609935406},   "thread":"runQueueThreadPool1","level":"ERROR","loggerName":"com.oracle.cgbu.cne.scp.soothsayer.Process","message":"{logMsg=Notified profile IP endpoints already present in stored profile, logMsgCode=DUPLICATE_IPENDPOINT_OR_FQDN_FOUND_IN_STORED_PROFILE, rootCause=Notified Profile contains an ipEndPoint {\"ipv4Address\": \"10.75.203.74\", \"transport\": \"TCP\", \"port\": 32673} which is already present in stored Profile with nfInstanceId 93ED74AA-A29C-4450-9D7A-9278CAF6266D for serviceInstanceId audmcl08nv08-udmueauthn-589d6d5bcc-4dslh}\", \"endOfBatch\": false, \"loggerFqcn\": \"org.apache.logging.log4j.spi.AbstractLogger\", \"threadId\": 34, \"threadPriority\": 5, \"messageTimestamp\": \"21-05-06 03:37:21.609+0000\", \"application\": \"ocscp-soothsayer\", \"microservice\": \"ocscp-scp-notification\", \"engVersion\": \"23.4.4\", \"mktgVersion\": \"23.4.4.0.0\", \"vendor\": \"oracle\", \"namespace\": \"scpsvc\", \"node\": \"slave1\", \"pod\": \"ocscp-scp-notification-547f699c96-m7nc8\", \"subsystem\": \"notification\", \"instanceType\": \"prod\", \"processId\": \"1\"}   {     \"instant\":     {       \"epochSecond\":1620272241,\"nanoOfSecond\":734873890},     \"thread\":\"runQueueThreadPool1\",\"level\":\"WARN\",\"loggerName\":\"com.oracle.cgbu.cne.scp.soothsayer.scheduler.RunQueueConsumer\",\"message\":\"{logMsg=Profile Processing failed, nfInstanceId=93ED74AA-A29C-4450-9D7A-9278CAF6266D}\", \"endOfBatch\": false, \"loggerFqcn\": \"org.apache.logging.log4j.spi.AbstractLogger\", \"threadId\": 34, \"threadPriority\": 5, \"messageTimestamp\": \"21-05-06 03:37:21.734+0000\", \"application\": \"ocscp-soothsayer\", \"microservice\": \"ocscp-scp-</pre> |

Table 6-22 (Cont.) SCPNotificationProcessingFailureForNF

| Field | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | <p>notification", "engVersion": "23.4.4", "mktgVersion": "23.4.4.0.0", "vendor": "oracle", "namespace": "scpsvc", "node": "slave1", "pod": "ocscp-scpc-notification-547f699c96-m7nc8", "subsystem": "notification", "instanceType": "prod", "processId": "1"}"</p> <p>For information about the topology source APIs, see <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</p> <p><b>Recovery:</b> This alert is cleared automatically after 15 minutes.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.20 SCPSubscriptionFailureForNFType

Table 6-23 SCPSubscriptionFailureForNFType

| Field                          | Description                                                                                                                              |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Severity</b>                | Critical                                                                                                                                 |
| <b>Conditions</b>              | increase(ocscp_subscription_nf_failure_total[2m]) > 0                                                                                    |
| <b>OID used for SNMP Traps</b> | 1.3.6.1.4.1.323.5.3.35.1.2.2001                                                                                                          |
| <b>Description</b>             | Alerts is raised when SCP subscription to NRF has failed. This alert is labeled with specific nfType, nrfRegionOrSetId, and auditMethod. |



Table 6-23 (Cont.) SCPSubscriptionFailureForNFType

| Field               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p><b>Cause:</b> When the subscription fails for an NF Type with NRF.</p> <p><b>Diagnostic Information:</b></p> <p>Check whether NRF is up. To check the NRF status, see the <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i>.</p> <p>Check whether the NRF is reachable or not by using one of the following steps:</p> <ul style="list-style-type: none"> <li>Run the ping command from primary or secondary nodes using IP of NRF. Example of a ping command: ping &lt;IPAddress&gt;.</li> <li>Run the ping command from inside the pod if FQDN of NRF is used.</li> <li>Instead of using ping, you can collect tcpdump for ensuring the connectivity. Example of a tcpdump: tcpdump -w capture.pcap -i &lt;pod interface&gt;.</li> </ul> <p>If NRF is up, check scp-worker logs to find any error response from NRF. If there are error responses, monitor NRF logs: kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;.</p> <p>Sample logs:</p> <pre>{   "instant":   {"epochSecond":1620275506,"nanoOfSecond":134773910},   "thread":"pool-8-   thread-1","level":"ERROR","loggerName":"com.oracle.cgbu.cne.scp.soothsayer.subscription.processor.SubscriptionDataConsumer","message":"{logMsg=Exception occurred while handling action for subscriber data, action=TO_BE_RENEWED, stackTrace=com.oracle.cgbu.cne.scp.soothsayer.subscription.operations.NrfSubscriptionClient.triggerPatchRequest(NrfSubscriptionClient.java:177)\ncom.oracle.cgbu.cne.scp.soothsayer.subscription.processor.SubscriptionDataConsumer.handleAction(SubscriptionsDataConsumer.java:322)\ncom.oracle.cgbu.cne.scp.soothsayer.subscription.processor.SubscriptionDataConsumer.consumeSQ(SubscriptionsDataConsumer.java:140)\ncom.oracle.cgbu.cne.scp.soothsayer.subscription.processor.SubscriptionDataConsumer.run(SubscriptionsDataConsumer.java:84)\njava.base/java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1130)\njava.base/java.util.concurrent.ThreadPoolExecutor\$Worker.run(ThreadPoolExecutor.java:630)\njava.base/java.lang.Thread.run(Thread.java:832)}",   "endOfBatch":false,   "loggerFqn":"org.apache.logging.log4j.spi.AbstractLogger",   "threadId":33,   "threadPriority":5,   "messageTimestamp":"21-05-06 04:31:46.134+0000",   "application":"ocscp-soothsayer",   "microservice":"ocscp-scp-subscription",   "engVersion":"1.15.0",   "mktgVersion":"1.15.0.0.0",   "vendor":"oracle",   "namespace":"scpsvc",   "node":"master",   "pod":"ocscp-scp-</pre> |

Table 6-23 (Cont.) SCPSubscriptionFailureForNFType

| Field | Description                                                                                                                                                                                                                                                                                                                       |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | <p>subscription-55cfb57cc6-2qp2g", "subsystem": "subscription", "instanceType": "prod", "processId": "1"}<br/><br/> <b>Recovery:</b> This alert is cleared automatically when NRF is up and running or errors are corrected for received error responses.<br/> For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.21 SCPReSubscriptionFailureForNFType

Table 6-24 SCPReSubscriptionFailureForNFType

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Conditions              | increase(ocscp_patch_subscription_nf_failure_total[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.2002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Description             | Alerts is raised when SCP re-subscription to NRF has failed. This alert is labeled with specific nftype, nrfRegionOrSetId, and auditmethod.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Actions     | <p><b>Cause:</b> When the re-subscription fails for an NF Type with NRF.</p> <p><b>Diagnostic Information:</b></p> <p>Check whether NRF is up. To check the NRF status, see the <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i>.</p> <p>Check whether the NRF is reachable or not by using one of the following steps:</p> <ul style="list-style-type: none"> <li>Run the ping command from primary/secondary nodes by using IP of NRF. Example of a ping command: ping &lt;IPAddress&gt;.</li> <li>Run the ping command from inside the pod, if FQDN of NRF is used.</li> <li>Instead of using ping, you can collect tcpdump for ensuring the connectivity. Example of a tcpdump: tcpdump -w capture.pcap -i &lt;pod interface&gt;.</li> </ul> <p>Check scp-worker logs to find any error response from NRF. If there are error responses, monitor NRF logs: kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;.</p> <p><b>Recovery:</b> This alert is cleared automatically when NRF is up and running or errors are corrected for received error responses.<br/> For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.22 SCPNrfRegistrationFailureForRegionOrSetId

Table 6-25 SCPNrfRegistrationFailureForRegionOrSetId

| Field      | Description                                            |
|------------|--------------------------------------------------------|
| Severity   | Major                                                  |
| Conditions | increase(ocscp_nrf_registration_failure_total[2m]) > 0 |

Table 6-25 (Cont.) SCPNrfRegistrationFailureForRegionOrSetId

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Description             | Alerts is raised when SCP registration fails. This alert is labeled with specific nftype, nrfRegionOrSetId, and auditmethod.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Recommended Actions     | <p><b>Cause:</b> When the registration fails for an NF Type with NRF.</p> <p><b>Diagnostic Information:</b></p> <p>Check whether NRF is up. To check the NRF status, see the <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i>.</p> <p>Check whether the NRF is reachable or not by using one of the following steps:</p> <ul style="list-style-type: none"> <li>Run the ping command from primary or secondary nodes by using IP of NRF. Example of a ping command: ping &lt;IPAddress&gt;.</li> <li>Run the ping command from inside the pod if FQDN of NRF is used.</li> <li>Instead of using ping, you can collect tcpdump for ensuring the connectivity. Example of a tcpdump: tcpdump -w capture.pcap -i &lt;pod interface&gt;.</li> </ul> <p>Check scp-worker logs to find any error response from NRF. If there are error responses, monitor NRF logs: kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;.</p> <p>Sample logs:</p> <pre>{   "instant":   {"epochSecond":1620638888,"nanoOfSecond":78728229},"t hread":"registration-0","level":"ERROR","loggerName": "com.oracle.cgbu.cne.scp.soothsayer.subscription.proc essor.NrfRegistrationProcessor","message":{"logMsg=Re gistration will be retried after configured interval, configuredIntervalInSec=6},"endOfBatch":false,"logge rFqn":"org.apache.logging.log4j.spi.AbstractLogger", "threadId":33,"threadPriority":5,"messageTimestamp": "21-05-10 09:28:08.078+0000","application":"ocscp- soothsayer","microservice":"ocscp-scpc- subscription","engVersion":"23.4.4","mktgVersion":"23 .4.4.0.0","vendor":"oracle","namespace":"scpsvc","nod e":"slave1","pod":"ocscp-scpc- subscription-66c68b9db6-6g582","subsystem":"subscript ion","instanceType":"prod","processId":"1"} }</pre> <p><b>Recovery:</b> This alert is cleared automatically when NRF is up and running or errors are corrected for received error responses.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.23 SCPNrfHeartbeatFailureForRegionOrSetId

**Table 6-26 SCPNrfHeartbeatFailureForRegionOrSetId**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Conditions              | increase(ocscp_nrf_heartbeat_failures_total[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.2004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Description             | Alerts is raised when SCP Heartbeat fails.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Recommended Actions     | <p><b>Cause:</b> When the Heartbeat fails for an NF Type with NRF.</p> <p><b>Diagnostic Information:</b></p> <p>Check whether NRF is up. To check the NRF status, see the <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i>.</p> <p>Check whether the NRF is reachable or not by using one of the following steps:</p> <ul style="list-style-type: none"> <li>Run the ping command from primary or secondary nodes by using IP of NRF. Example of a ping command: <code>ping &lt;IPAddress&gt;</code>.</li> <li>Run the ping command from inside the pod if FQDN of NRF is used.</li> <li>Instead of using ping, you can collect tcpdump for ensuring the connectivity. Example of a tcpdump: <code>tcpdump -w capture.pcap -i &lt;pod interface&gt;</code>.</li> </ul> <p>Check scp-worker logs to find any error response from NRF. If there are error responses, monitor NRF logs: <code>kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</code>.</p> <p><b>Recovery:</b> This alert is cleared automatically when NRF is up and running or errors are corrected for received error responses.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.24 SCPDBOperationFailure

**Table 6-27 SCPDBOperationFailure**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Conditions              | increase(ocscp_db_operation_failure_total[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.2005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Description             | Alert is raised for any DB operation failures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Recommended Actions     | <p><b>Cause:</b> When the SCP DB operation fails.</p> <p><b>Diagnostic Information:</b></p> <p>Check whether the DB service is up.</p> <p>Check the status/age of the mysql pod by using the following command: <code>kubectl get pods -n &lt;namespace&gt;</code>. Where, &lt;namespace&gt; is the namespace in which mysql pod is deployed.</p> <p><b>Recovery:</b> This alert is cleared automatically when the DB service is up and running.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.25 SCPGeneratedErrorsResponseForNFService

**Table 6-28 SCPGeneratedErrorsResponseForNFService**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Conditions              | increase(ocscp_metric_scp_generated_response_total[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Description             | Alert is raised for NF type for which SCP generated response is triggered.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Actions     | <p><b>Cause:</b> When the error response is generated for NF Service Type by SCP.</p> <p><b>Diagnostic Information:</b><br/>Monitor scp-worker logs to determine the reason for error responses generated by SCP. Check for error reason in the logs: kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;.</p> <p><b>Recovery:</b> This alert is cleared automatically when the cause for error response at SCP worker is corrected and configured.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.26 SCPCircuitBreakingAppliedForNF

**Table 6-29 SCPCircuitBreakingAppliedForNF**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Conditions              | ocscp_circuit_breaking_applied > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.7017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Description             | Alert is raised for NF when circuit breaking is applied.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Recommended Actions     | <p><b>Cause:</b> When Circuit Breaking applies for producer NF FQDN based on the configured http2MaxRequests value.</p> <p><b>Diagnostic Information:</b><br/>Monitor scp-worker logs for number of error responses when outstanding requests exceed the configured http2MaxRequests value: kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;.</p> <p>Check the latency to upstream producer from SCP. Use the following metric to check the same:<br/>ocscp_metric_upstream_service_time_total(ocscp_producer_fqdn or ocscp_nf_end_point).</p> <p><b>Recovery:</b> This alert is cleared automatically when the configuration for http2MaxRequests for circuit breaking is configured beyond the traffic at worker or lower the traffic than the value configured for circuit breaking.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.27 SCPUpgradeStarted

**Table 6-30 SCPUpgradeStarted**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Conditions              | When the SCP upgrade process for an SCP microservice starts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.6001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Description             | Alert is raised when the SCP upgrade process for an SCP microservice starts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Recommended Actions     | <p><b>Cause:</b> When SCP upgrade is performed for a particular microservice.</p> <p><b>Diagnostic Information:</b> Not applicable.</p> <p><b>Recovery:</b> This alert is cleared automatically in 5 minutes when the <code>customAlertExpiryEnabled</code> parameter is set to <code>false</code> in the <code>ocscp_values.yaml</code> file. Otherwise, it is cleared after a specific duration as specified in the <code>customAlertExpiryDuration</code> parameter when the <code>customAlertExpiryEnabled</code> value is <code>true</code>.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.28 SCPUpgradeFailed

**Table 6-31 SCPUpgradeFailed**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Conditions              | When any SCP microservice upgrade fails during the upgrade process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.6002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Description             | Alert is raised when any SCP microservice upgrade fails.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Recommended Actions     | <p><b>Cause:</b> When any SCP microservice upgrade fails during the upgrade process.</p> <p><b>Diagnostic Information:</b> Monitor new hook-jobs that might have failed after multiple attempts. Also, monitor any failed log.</p> <p>Run the following command to check the pod of hook-job: <code>kubectl get pods -n &lt;namespace&gt;</code>.</p> <p>Run the following command to check the logs: <code>kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</code>.</p> <p><b>Recovery:</b> This alert is cleared automatically in 5 minutes when the <code>customAlertExpiryEnabled</code> parameter is set to <code>false</code> in the <code>ocscp_values.yaml</code> file. Otherwise, it is cleared after a specific duration as specified in the <code>customAlertExpiryDuration</code> parameter when the <code>customAlertExpiryEnabled</code> value is <code>true</code>.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.29 SCPUpgradeSuccessful

Table 6-32 SCPUpgradeSuccessful

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Conditions              | When any SCP microservice upgrade is completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.6003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description             | Alert is raised when any SCP microservice upgrade is completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Recommended Actions     | <p><b>Cause:</b> When any SCP microservice upgrade is completed.</p> <p><b>Diagnostic Information:</b> Not applicable.</p> <p>Run the following command to check the pod of hook-job: <code>kubectl get pods -n &lt;namespace&gt;</code>.</p> <p>Run the following command to check the logs: <code>kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</code>.</p> <p><b>Recovery:</b> This alert is cleared automatically in 5 minutes when the <code>customAlertExpiryEnabled</code> parameter is set to <code>false</code> in the <code>ocscp_values.yaml</code> file. Otherwise, it is cleared after a specific duration as specified in the <code>customAlertExpiryDuration</code> parameter when the <code>customAlertExpiryEnabled</code> value is <code>true</code>.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.30 SCPRollbackStarted

Table 6-33 SCPRollbackStarted

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Conditions              | When the rollback process for an SCP microservice starts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.6004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Description             | Alert is raised when the rollback process for an SCP microservice starts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Recommended Actions     | <p><b>Cause:</b> When the rollback process for an SCP microservice starts.</p> <p><b>Diagnostic Information:</b> Not applicable.</p> <p><b>Recovery:</b> This alert is cleared automatically in 5 minutes when the <code>customAlertExpiryEnabled</code> parameter is set to <code>false</code> in the <code>ocscp_values.yaml</code> file. Otherwise, it is cleared after a specific duration as specified in the <code>customAlertExpiryDuration</code> parameter when the <code>customAlertExpiryEnabled</code> value is <code>true</code>.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.31 SCPRollbackFailed

Table 6-34 SCPRollbackFailed

| Field    | Description |
|----------|-------------|
| Severity | Critical    |

Table 6-34 (Cont.) SCPRollbackFailed

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conditions              | When any SCP microservice rollback fails during the rollback process.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.6005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description             | Alert is raised when any SCP microservice rollback fails.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Actions     | <p><b>Cause:</b> When any SCP microservice rollback fails during the rollback process.</p> <p><b>Diagnostic Information:</b> Monitor new hook-jobs that might have failed after multiple attempts. Also, monitor any failed log.<br/>Run the following command to check the pod of hook-job:</p> <pre>kubectl get pods -n &lt;namespace&gt;</pre> <p>Run the following command to check the logs:</p> <pre>kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</pre> <p><b>Recovery:</b> This alert is cleared automatically in 5 minutes when the customAlertExpiryEnabled parameter is set to false in the ocscp_values.yaml file. Otherwise, it is cleared after a specific duration as specified in the customAlertExpiryDuration parameter when the customAlertExpiryEnabled value is true.<br/>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.32 SCPRollbackSuccessful

Table 6-35 SCPRollbackSuccessful

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Conditions              | When any SCP microservice rollback is completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.6006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Description             | Alert is raised when any SCP microservice rollback is completed.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Actions     | <p><b>Cause:</b> When any SCP microservice rollback is completed.</p> <p><b>Diagnostic Information:</b> Not applicable.</p> <p><b>Recovery:</b> This alert is cleared automatically in 5 minutes when the customAlertExpiryEnabled parameter is set to false in the ocscp_values.yaml file. Otherwise, it is cleared after a specific duration as specified in the customAlertExpiryDuration parameter when the customAlertExpiryEnabled value is true.<br/>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |



## 6.2.33 ScpWorkerPodCpuUtilizationAboveWarnThreshold

**Table 6-36 ScpWorkerPodCpuUtilizationAboveWarnThreshold**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | CPU utilization of SCP worker at warn level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Summary</b>            | CPU utilization of SCP worker at warn level. namespace: <code>{{ \$labels.kubernetes_namespace }}</code> , podname: <code>{{ \$labels.kubernetes_pod_name }}</code> , timestamp: <code>{{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}</code> and value = <code>{{ \$value }}</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Severity</b>           | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Condition</b>          | This alert is raised when CPU utilization of SCP-Worker reaches the WARN level.<br><code>ocscp_worker_pod_overload_control_cpu_utilization_warn &gt; 0</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.7018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Metric Used</b>        | <code>ocscp_worker_pod_overload_control_cpu_utilization_warn</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Recommended Action</b> | <p><b>Cause:</b> When CPU utilization of scp-worker reaches the WARN level.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Get the configured threshold level values using Pod Overload Control Policy REST APIs. For more information about Pod Overload Control Policy, see <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> <li>2. Check the CPU threshold level status from the scp-worker pod logs under the warn level.</li> </ol> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>• Reduce the incoming service request rate.</li> <li>• This alert is automatically cleared when CPU utilization is reduced to below WARN threshold level.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.34 ScpWorkerPodCpuUtilizationAboveMinorThreshold

**Table 6-37 ScpWorkerPodCpuUtilizationAboveMinorThreshold**

| Field              | Details                                                                                                                                                                                                                                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | CPU utilization of SCP worker at minor level                                                                                                                                                                                                                                                                        |
| <b>Summary</b>     | CPU utilization of SCP worker at minor level. namespace: <code>{{ \$labels.kubernetes_namespace }}</code> , podname: <code>{{ \$labels.kubernetes_pod_name }}</code> , timestamp: <code>{{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}</code> and value = <code>{{ \$value }}</code> |
| <b>Severity</b>    | Minor                                                                                                                                                                                                                                                                                                               |
| <b>Condition</b>   | This alert is raised when CPU utilization of scp-worker reaches the MINOR level.<br><code>ocscp_worker_pod_overload_control_cpu_utilization_minor &gt; 0</code>                                                                                                                                                     |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.35.1.2.7019                                                                                                                                                                                                                                                                                     |
| <b>Metric Used</b> | <code>ocscp_worker_pod_overload_control_cpu_utilization_minor</code>                                                                                                                                                                                                                                                |

Table 6-37 (Cont.) ScpWorkerPodCpuUtilizationAboveMinorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> When CPU utilization of SCP-Worker reaches the MINOR level.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Get the configured threshold level values using Pod Overload Control Policy REST APIs. For more information about Pod Overload Control Policy, see <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> <li>2. Check the CPU threshold level status from the scp-worker pod logs under the warn level.</li> </ol> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>• Reduce the incoming service request rate.</li> <li>• This alert is automatically cleared when CPU utilization is reduced to below MINOR threshold level.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.35 ScpWorkerPodCpuUtilizationAboveMajorThreshold

Table 6-38 ScpWorkerPodCpuUtilizationAboveMajorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | CPU utilization of SCP worker at major level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Summary            | CPU utilization of SCP worker at major level. namespace: <code>{{labels.kubernetes_namespace}}</code> , podname: <code>{{labels.kubernetes_pod_name}}</code> , timestamp: <code>{{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}</code> and value = <code>{{ \$value }}</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Condition          | This alert is raised when CPU utilization of scp-worker reaches the MAJOR level.<br><code>ocscp_worker_pod_overload_control_cpu_utilization_major &gt; 0</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.7020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric Used        | <code>ocscp_worker_pod_overload_control_cpu_utilization_major</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Recommended Action | <p><b>Cause:</b> When CPU utilization of SCP-Worker reaches the MAJOR level.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Get the configured threshold level values using Pod Overload Control Policy REST APIs. For more information about Pod Overload Control Policy, see <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> <li>2. Check the CPU threshold level status from the scp-worker pod logs under the warn level.</li> </ol> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>• Reduce the incoming service request rate.</li> <li>• This alert is automatically cleared when CPU utilization is reduced to below MAJOR threshold level.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.36 ScpWorkerPodCpuUtilizationAboveCriticalThreshold

**Table 6-39 ScpWorkerPodCpuUtilizationAboveCriticalThreshold**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | CPU utilization of SCP worker at critical level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Summary</b>            | CPU utilization of SCP worker at critical level. namespace: {{labels.kubernetes_namespace}}, podname: {{labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} and value = {{ \$value }}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Severity</b>           | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Condition</b>          | This alert is raised when CPU utilization of scp-worker reaches the CRITICAL level.<br>ocscp_worker_pod_overload_control_cpu_utilization_critical > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.7021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Metric Used</b>        | ocscp_worker_pod_overload_control_cpu_utilization_critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Recommended Action</b> | <p><b>Cause:</b> When CPU utilization of scp-worker reaches the CRITICAL level.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Get the configured threshold level values using Pod Overload Control Policy REST APIs. For more information about Pod Overload Control Policy, see <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> <li>2. Check the CPU threshold level status from the scp-worker pod logs under the warn level.</li> </ol> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>• Reduce the incoming service request rate.</li> <li>• This alert is automatically cleared when CPU utilization is reduced to below CRITICAL threshold level.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.37 SCPUnhealthyPeerSCPDetected

**Table 6-40 SCPUnhealthyPeerSCPDetected**

| Field              | Details                                                                                                                                                                                                                                                                                                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | Next hop SCP is marked unhealthy                                                                                                                                                                                                                                                                              |
| <b>Summary</b>     | 'Next hop SCP is marked unhealthy. peerScpFqdn: {{labels.peerScpName}}, scpFqdn: {{labels.scpFqdn}}, namespace: {{labels.kubernetes_namespace}}, podname: {{labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} and value = {{ \$value }}' |
| <b>Severity</b>    | Info                                                                                                                                                                                                                                                                                                          |
| <b>Condition</b>   | This alert is raised when the peer SCP is marked as unhealthy.<br>ocscp_peer_scp_unhealthy > 0                                                                                                                                                                                                                |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.35.1.2.7022                                                                                                                                                                                                                                                                               |
| <b>Metric Used</b> | ocscp_peer_scp_unhealthy                                                                                                                                                                                                                                                                                      |

Table 6-40 (Cont.) SCPUnhealthyPeerSCPDetected

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> The peer SCP is marked as unhealthy because of consecutive failure responses.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check transport failures and routing errors on the peer SCP.</li> <li>2. Run the ping command from master or slave nodes using IP of Service.<br/>Sample command: ping &lt;IPAddress&gt;.</li> <li>3. If FQDN of service is used, run the ping command from inside the pod.</li> <li>4. If the pod does not support the ping command, get the debug container of SCP pod.</li> <li>5. If you do not want to use the ping command, collect tcpdump to establish the connection.<br/>Sample command: tcpdump -w capture.pcap -i &lt;pod interface&gt;</li> </ol> <p><b>Recovery:</b> This alert is automatically cleared after the degradation time is over. Degradation time = Number of consecutive degradations multiplied by configured base ejection.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.38 SCPDnsSrvQueryFailure

Table 6-41 SCPDnsSrvQueryFailure

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | DNS SRV Query failed with cause {{\$labels.cause}}                                                                                                                                                                                                                                                                                                                               |
| Summary            | 'DNS SRV Query failed with cause {{\$labels.cause}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                          |
| Severity           | Critical                                                                                                                                                                                                                                                                                                                                                                         |
| Condition          | This alert is raised when the DNS server lookup for the SRV query fails due to network or timeout error.<br>ocscp_alternate_resolution_dnssrv_rx_error_res == 1                                                                                                                                                                                                                  |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.8001                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used        | ocscp_alternate_resolution_dnssrv_rx_error_res                                                                                                                                                                                                                                                                                                                                   |
| Recommended Action | <p><b>Cause:</b> When the DNS SRV lookup fails due to network or timeout error.</p> <p><b>Diagnostic Information:</b> Check the DNS SRV server status and re-establish the status to normal.</p> <p><b>Recovery:</b> This alert is automatically cleared when SCP performs a successful DNS SRV query.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.39 SCPPProducerOverloadThrottled

**Table 6-42 SCPPProducerOverloadThrottled**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | Producer is in Throttled Overload state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Summary</b>            | 'Producer is in Throttled Overload state. producerFqdn: {{labels.producerFqdn}}, scpFqdn: {{labels.scp_fqdn}}, namespace: {{labels.kubernetes_namespace}}, podname: {{labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Severity</b>           | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Condition</b>          | This alert is raised when the producer NF is in the throttled congestion state.<br>ocscp_producer_load_throttled == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.7023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Metric Used</b>        | ocscp_producer_load_throttled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Recommended Action</b> | <p><b>Cause:</b> When the load of producer NF is higher than the throttled threshold configured for the service.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check and configure the throttled threshold for each service using Routing Options REST APIs configurations as described in "Configuring Routing Options" in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> <li>2. Check the load for each service using the NF Profile REST APIs as described in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the NF profile is deregistered or changed with load less than the throttled abatement threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.40 SCPPProducerOverloadAlternateRouted

**Table 6-43 SCPPProducerOverloadAlternateRouted**

| Field              | Details                                                                                                                                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | Producer is in Alternate Route Overload state                                                                                                                                                                                                                                                      |
| <b>Summary</b>     | 'Producer is in Alternate Route Overload state. producerFqdn: {{labels.producerFqdn}}, scpFqdn: {{labels.scp_fqdn}}, namespace: {{labels.kubernetes_namespace}}, podname: {{labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} |
| <b>Severity</b>    | Info                                                                                                                                                                                                                                                                                               |
| <b>Condition</b>   | This alert is raised when the producer NF is in the alternate routing congestion state.<br>ocscp_producer_load_alternateRoute == 1                                                                                                                                                                 |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.35.1.2.7024                                                                                                                                                                                                                                                                    |

Table 6-43 (Cont.) SCPProducerOverloadAlternateRouted

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used        | ocscp_producer_load_alternateRoute                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Recommended Action | <p><b>Cause:</b> When the load of producer NF is higher than alternate routing threshold configured for the service.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check and configure the alternate routing threshold for each service using Routing Options REST APIs configurations as described in "Configuring Routing Options" in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> <li>2. Check the load for each service using the NF Profile REST APIs as described in <i>Oracle Communications Cloud Native Core, Service Communication Proxy REST Specification Guide</i>.</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the NF profile is deregistered or changed with load less than the alternate routing abatement threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.41 SCPSeppNotConfigured

Table 6-44 SCPSeppNotConfigured

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | SEPP is not configured for PLMN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Summary            | 'SEPP is not configured for PLMN'Summary: 'SEPP is not configured for PLMN. plmnid: {{ \$labels.plmn_id }}, scpfdn: {{ \$labels.scp_fqdn }}, namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                                                  |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Condition          | This alert is raised when Security Edge Protection Proxy (SEPP) is not configured.<br>ocscp_metric_sepp_not_configured_current == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.7025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Metric Used        | cscp_metric_sepp_not_configured_current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Action | <p><b>Cause:</b> When SEPP routing related rules are not configured at SCP for selected PLMN in the inter-PLMN routing.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check whether SEPP profile is registered or SEPP related configuration is made at SCP.</li> <li>2. Verify the routing rules created for selected inter-PLMN in the PLMN_SEPP_MAPPING table.</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the SEPP related routing rules are created at SCP for selected PLMN in the inter-PLMN routing.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.42 SCPSeppRoutingFailed

**Table 6-45 SCPSeppRoutingFailed**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | Routing towards SEPP failed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Summary</b>            | Routing towards SEPP failed. sepp_fqdn: {{\$labels.ocscp_sepp_fqdn}}, scpfqdn: {{\$labels.scp_fqdn}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Severity</b>           | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Condition</b>          | This alert is raised when routing towards SEPP fails.<br>ocscp_metric_sepp_routing_attempt_fail_current == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.7026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Metric Used</b>        | ocscp_metric_sepp_routing_attempt_fail_current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Recommended Action</b> | <p><b>Cause:</b> Inter-PLMN routing failed for the selected SEPP instances.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check whether selected SEPP is up and healthy.</li> <li>2. Check if selected SEPP is reachable.</li> <li>3. Use the ping command from primary or secondary nodes using IP of SEPP.<br/>Sample ping command is ping &lt;IpAddress&gt;</li> <li>4. If FQDN of SEPP is used, try ping command from inside the pod.</li> <li>5. Alternative to ping, collect tcpdump for ensuring proper connectivity.<br/>Sample command: tcpdump -w capture.pcap -i &lt;pod interface&gt;</li> <li>6. Check scp-worker logs for any error response from selected SEPP. If there are error responses, monitor selected SEPP logs by running this command: kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</li> </ol> <p><b>Recovery:</b> This alert clears automatically when routing is successful for selected SEPP.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.43 SCPWorkerSSLCertificateExpire

**Table 6-46 SCPWorkerSSLCertificateExpire**

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | Whenever an SCP SSL certificate is about to expire, an alert will be raised before the configured interval time.                                                                                                                                                                                                                                                       |
| <b>Summary</b>     | 'SCP Worker SSL Certificate is about to expire, ocscp_worker_fqdn: {{\$labels.ocscp_producer_fqdn}}, scpfqdn: {{\$labels.scp_fqdn}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}, certificatetype: {{\$labels.certificatetype}} {{ .   first   value   humanizeTimestamp }}{{ end }} |

Table 6-46 (Cont.) SCPWorkerSSLCertificateExpire

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Condition          | ocscp_metric_ssl_certificate_expire_total > 0                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.8024                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Metric Used        | ocscp_metric_ssl_certificate_expire_total                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Action | <p><b>Cause:</b> The SCP TLS or SSL certificate expires before the configured time.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. When this alert is raised, it means that the SSL certificates configured for SCP are about to expire.</li> <li>2. Verify the certificate expiry date.</li> </ol> <p><b>Recovery:</b> Update the SCP SSL Secret with renewed SSL certificate. For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.44 SCPWorkerHTTPSConnectionFailure

Table 6-47 SCPWorkerHTTPSConnectionFailure

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | SCP Worker HTTPS Connection Establishment is failed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Summary            | Scp Worker HTTPS Connection Establishment is failed<br>ocscp_worker_fqdn: {{\$labels.ocscp_producer_fqdn}}, scp_fqdn: {{\$labels.scp_fqdn}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }                                                                                                                                                                                                                                                                                                                                                                               |
| Severity           | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Condition          | This alert is raised when an egress connection fails.<br>increase(ocscp_metric_https_egress_connection_failure_total{app_kubernetes_io_name="scp-worker"} [10m] ) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.8025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Used        | ocscp_metric_https_egress_connection_failure_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Recommended Action | <p><b>Cause:</b> SCP fails to send a message request to a producer NF due to HTTPS connection errors with the producer NF.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check the errors of the ocscp_metric_https_egress_connection_failure_total metric on the Grafana dashboard.</li> <li>2. Run the following command to monitor scp-worker logs: <pre>kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</pre> </li> </ol> <p><b>Recovery:</b> Ensure that all Transport Layer Security (TLS) or Secure Sockets Layer (SSL) certificates are configured at SCP and producer NFs are valid. For any assistance, contact <a href="#">My Oracle Support</a>.</p> |



## 6.2.45 SCPGlobalEgressRLRemoteParticipantConnectivityFailure

**Table 6-48 SCPGlobalEgressRLRemoteParticipantConnectivityFailure**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | 'SCP Global Egress RL Remote Participant Connectivity Failure for participant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Summary</b>            | 'SCP Global Egress RL Remote Participant Connectivity Failure for participant: {{ \$labels.scp_remote_coh_cluster_name }}, scp_fqdn: {{ \$labels.scp_fqdn }}, scp_local_coh_cluster_name: {{ \$labels.scp_local_coh_cluster_name }}, scp_remote_coh_cluster_fqdn: {{ \$labels.scp_remote_coh_cluster_fqdn }}, scp_remote_coh_cluster_port: {{ \$labels.scp_remote_coh_cluster_port }}, namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                               |
| <b>Severity</b>           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Condition</b>          | This alert is raised when the remote participant SCP connection is not established or goes down.<br>ocscp_global_egress_rl_remote_participant_connectivity_failure == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.9001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Metric Used</b>        | ocscp_global_egress_rl_bucketkey_not_rate_controlled_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Recommended Action</b> | <p><b>Cause:</b> When the remote participant SCP connection is not established or down.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check whether the FQDN or IP port are properly configured with remote SCP's scp-cache microservice.</li> <li>2. Check whether clusterName and NFInstanceId are configured for the remote SCP.</li> <li>3. Check whether communication path is active between the two SCP's scp-cache microservice.</li> <li>4. Run the following command to monitor scp-cache logs: <code>kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</code></li> </ol> <p><b>Recovery:</b> This alert clears automatically if the connection is established with the remote participant SCP.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.46 SCPGlobalEgressRLRemoteParticipantWithDuplicateNFInstanceId

**Table 6-49 SCPGlobalEgressRLRemoteParticipantWithDuplicateNFInstanceId**

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | SCP global egress RL remote participant configured with duplicate NF InstanceId for participant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Summary</b>     | 'SCP Global Egress RL Remote Participant Configured With Duplicate NFInstanceId for participant: {{ \$labels.scp_remote_coh_cluster_name }}, scp_fqdn: {{ \$labels.scp_fqdn }}, scp_nf_instance_id: {{ \$labels.scp_nf_instance_id }}, scp_local_coh_cluster_name: {{ \$labels.scp_local_coh_cluster_name }}, scp_remote_coh_cluster_fqdn: {{ \$labels.scp_remote_coh_cluster_fqdn }}, scp_remote_coh_cluster_port: {{ \$labels.scp_remote_coh_cluster_port }}, namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}' |
| <b>Severity</b>    | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

Table 6-49 (Cont.) SCPGlobalEgressRLRemoteParticipantWithDuplicateNFInstanceId

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Condition          | This alert is raised when a duplicate remote coherence participant is found.<br>ocscp_global_egress_rl_remote_participant_is_duplicate == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Metric Used        | ocscp_global_egress_rl_remote_participant_is_duplicate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Recommended Action | <p><b>Cause:</b> Duplicate configuration of remote coherence participants with local SCP.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Ensure Global Rate Limit feature is enabled.</li> <li>2. Check whether the clusterName and NFInstanceId of local SCPs and remote SCPs are not duplicates.</li> <li>3. Check whether the clusterName and NFInstanceId of the first remote SCP and the second remote SCP are not duplicates.</li> <li>4. Configure unique values for clusterName and NFInstanceId for local SCPs as well as remote SCPs.</li> </ol> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>This alert is cleared automatically if no duplicate configurations between local and remote SCPs are found.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.47 SCPMediationConnectivityFailure

Table 6-50 SCPMediationConnectivityFailure

| Field       | Details                                                                                                                                                                                                                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'SCP Mediation Connectivity Failed, scp_fqdn                                                                                                                                                                                                         |
| Summary     | 'SCP Mediation Connectivity Failed, scp_fqdn: {{\$labels.scp_fqdn}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }' |
| Severity    | Major                                                                                                                                                                                                                                                |
| Condition   | This alert is raised when Mediation connection is not established or request to Mediation is not successful.<br>ocscp_mediation_http_not_reachable == 1                                                                                              |
| OID         | 1.3.6.1.4.1.323.5.3.35.1.2.9002                                                                                                                                                                                                                      |
| Metric Used | ocscp_mediation_http_not_reachable                                                                                                                                                                                                                   |

Table 6-50 (Cont.) SCPMediationConnectivityFailure

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> The remote Mediation connection is not established or request to Mediation is not successful.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check the errors of the <code>ocscp_mediation_http_not_reachable</code> metric on the Grafana dashboard.</li> <li>2. Run the following command to check the status of the mediation pod: <pre>kubectl get pods -n &lt;namespace&gt;</pre> </li> </ol> <p><b>Recovery:</b></p> <ol style="list-style-type: none"> <li>1. If the mediation pod is not in the ready state, run the following command to check the scp-mediation logs: <pre>kubectl logs &lt;pod name&gt; -n &lt;namespace&gt;</pre> </li> <li>2. If the mediation pod is absent, then redeploy or upgrade SCP with <code>mediationService</code> set to <code>true</code>.</li> </ol> <p>This alert clears automatically when the connection is established with Mediation when Mediation is invoked from any of the trigger points.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.48 SCPNotificationQueuesUtilizationAboveMinorThreshold

Table 6-51 SCPNotificationQueuesUtilizationAboveMinorThreshold

| Field       | Details                                                                                                                                                                                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Notification Queues Utilization Above Minor Threshold'                                                                                          |
| Summary     | 'SCP Notification Queues Utilization Above Minor Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}' |
| Severity    | Minor                                                                                                                                                                                                                                                                              |
| Condition   | This alert is raised when the queues in the notification service are utilized above 65% of the maximum size (user configure minor threshold value).<br><code>ocscp_notification_queue_alert{severity="MINOR"} == 1</code>                                                          |
| OID         | 1.3.6.1.4.1.323.5.3.35.1.2.3009                                                                                                                                                                                                                                                    |
| Metric Used | <code>ocscp_notification_queue_alert</code>                                                                                                                                                                                                                                        |

Table 6-51 (Cont.) SCPNotificationQueuesUtilizationAboveMinorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> The Notification module is getting more traffic than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor Notification traffic to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_notification_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when notification traffic goes below minor threshold or exceeds major threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.49 SCPNotificationQueuesUtilizationAboveMajorThreshold

Table 6-52 SCPNotificationQueuesUtilizationAboveMajorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'instancetype: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Notification Queues Utilization Above Major Threshold'                                                                                                                                                                                                                                                                                                                                                                                              |
| Summary            | 'SCP Notification Queues Utilization Above Major Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                                     |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Condition          | This alert is raised when the queues in the notification service is utilized above 75% of the maximum size (user configure major threshold value).<br>ocscp_notification_queue_alert{severity="MAJOR"} == 1                                                                                                                                                                                                                                                                                                                                                                            |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.3010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Metric Used        | ocscp_notification_queue_alert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Recommended Action | <p><b>Cause:</b> The Notification module is getting more traffic than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor Notification traffic to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_notification_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when notification traffic goes below major threshold or above critical major threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.50 SCPNotificationQueuesUtilizationAboveCriticalThreshold

**Table 6-53 SCPNotificationQueuesUtilizationAboveCriticalThreshold**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Notification Queues Utilization Above Critical Threshold'                                                                                                                                                                                                                                                                                                                                                            |
| <b>Summary</b>            | 'SCP Notification Queues Utilization Above Critical Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                  |
| <b>Severity</b>           | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Condition</b>          | This alert is raised when the queues in notification service are utilized above 85% of the maximum size (user configure critical threshold value).<br>ocscp_notification_queue_alert{severity="CRITICAL"} == 1                                                                                                                                                                                                                                                                                                                                          |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.3011                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Metric Used</b>        | ocscp_notification_queue_alert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Recommended Action</b> | <p><b>Cause:</b> The Notification module is getting more traffic than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor Notification traffic to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_notification_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when notification traffic goes below critical threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.51 SCPNrfProxyQueuesUtilizationAboveMinorThreshold

**Table 6-54 SCPNrfProxyQueuesUtilizationAboveMinorThreshold**

| Field              | Details                                                                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Nrfproxy Queues Utilization Above Minor Threshold'                                                                                           |
| <b>Summary</b>     | 'SCP Nrfproxy Queues Utilization Above Minor Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}' |
| <b>Severity</b>    | Minor                                                                                                                                                                                                                                                                           |
| <b>Condition</b>   | This alert is raised when the task queues in scp-nrfproxy service are utilized above 65% of the maximum size (user configure minor threshold value).<br>ocscp_nrfproxy_queue_alert{severity="MINOR"} == 1                                                                       |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.35.1.2.9010                                                                                                                                                                                                                                                 |
| <b>Metric Used</b> | ocscp_nrfproxy_queue_alert                                                                                                                                                                                                                                                      |

Table 6-54 (Cont.) SCPNrfProxyQueuesUtilizationAboveMinorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> NrfProxy task queues are getting filled and the traffic is more than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards nrfProxy to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_nrfproxy_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the traffic goes below minor threshold or above major threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.52 SCPNrfProxyQueuesUtilizationAboveMajorThreshold

Table 6-55 SCPNrfProxyQueuesUtilizationAboveMajorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'instancetype: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Nrfproxy Queues Utilization Above Major Threshold'                                                                                                                                                                                                                                                                                                                                                                                                   |
| Summary            | 'SCP Nrfproxy Queues Utilization Above Major Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                                          |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Condition          | This alert is raised when the task queues in scp-nrfproxy service are utilized above 75% of the maximum size (user configure major threshold value).<br>ocscp_nrfproxy_queue_alert{severity="MAJOR"} == 1                                                                                                                                                                                                                                                                                                                                                                               |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9011                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Metric Used        | ocscp_nrfproxy_queue_alert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Action | <p><b>Cause:</b> NrfProxy task queues are getting filled and the traffic is more than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards nrfProxy to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_nrfproxy_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the traffic goes below major threshold or above critical threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.53 SCPNrfProxyQueuesUtilizationAboveCriticalThreshold

**Table 6-56 SCPNrfProxyQueuesUtilizationAboveCriticalThreshold**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Nrfproxy Queues Utilization Above Critical Threshold'                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Summary</b>            | 'SCP Nrfproxy Queues Utilization Above Critical Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                             |
| <b>Severity</b>           | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Condition</b>          | This alert is raised when the task queues in scp-nrfproxy service are utilized above 85% of the maximum size (user configure critical threshold value).<br>ocscp_nrfproxy_queue_alert{severity="CRITICAL"} == 1                                                                                                                                                                                                                                                                                                                                                |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.9012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Metric Used</b>        | ocscp_nrfproxy_queue_alert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Recommended Action</b> | <p><b>Cause:</b> NrfProxy task queues are getting filled and the traffic is more than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards nrfProxy to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_nrfproxy_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the traffic goes below critical threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.54 SCPWorkerQueuesUtilizationAboveMinorThreshold

**Table 6-57 SCPWorkerQueuesUtilizationAboveMinorThreshold**

| Field              | Details                                                                                                                                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Worker Queues Utilization Above Minor Threshold'                                                                                           |
| <b>Summary</b>     | 'SCP Worker Queues Utilization Above Minor Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}' |
| <b>Severity</b>    | Minor                                                                                                                                                                                                                                                                         |
| <b>Condition</b>   | This alert is raised when task queues in scp-worker service are utilized above 65% of the maximum size (user configure minor threshold value).<br>ocscp_worker_queue_alert{severity="MINOR"} == 1                                                                             |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.35.1.2.9007                                                                                                                                                                                                                                               |
| <b>Metric Used</b> | ocscp_worker_queue_alert                                                                                                                                                                                                                                                      |

Table 6-57 (Cont.) SCPWorkerQueuesUtilizationAboveMinorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> Worker task queues are getting filled and the traffic is more than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards nrfProxy to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_worker_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the traffic goes below minor threshold or above major threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.55 SCPWorkerQueuesUtilizationAboveMajorThreshold

Table 6-58 SCPWorkerQueuesUtilizationAboveMajorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Worker Queues Utilization Above Major Threshold'                                                                                                                                                                                                                                                                                                                                                                                                      |
| Summary            | 'SCP Worker Queues Utilization Above Major Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                                             |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Condition          | This alert is raised when task queues in scp-worker service are utilized above 75% of the maximum size (user configure major threshold value).<br>ocscp_worker_queue_alert{severity="MAJOR"} == 1                                                                                                                                                                                                                                                                                                                                                                                        |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9008                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Metric Used        | ocscp_worker_queue_alert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Recommended Action | <p><b>Cause:</b> Worker task queues are getting filled and the traffic is more than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards nrfProxy to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_worker_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the traffic goes below major threshold or goes above critical threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |



## 6.2.56 SCPWorkerQueuesUtilizationAboveCriticalThreshold

**Table 6-59 SCPWorkerQueuesUtilizationAboveCriticalThreshold**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Worker Queues Utilization Above Critical Threshold'                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Summary</b>            | 'SCP Worker Queues Utilization Above Critical Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                           |
| <b>Severity</b>           | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Condition</b>          | This alert is raised when task queues in scp-worker service are utilized above 85% of the maximum size (user configure critical threshold value).<br>ocscp_worker_queue_alert{severity="CRITICAL"} == 1                                                                                                                                                                                                                                                                                                                                                    |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.9009                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Metric Used</b>        | ocscp_worker_queue_alert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Recommended Action</b> | <p><b>Cause:</b> Worker task queues are getting filled and the traffic is more than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards nrfProxy to pod using the KPI dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard:<br/>ocscp_worker_queue_utilization</li> </ol> <p><b>Recovery:</b> This alert clears automatically when the traffic goes below critical threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.57 SCPCacheQueuesUtilizationAboveMinorThreshold

**Table 6-60 SCPCacheQueuesUtilizationAboveMinorThreshold**

| Field              | Details                                                                                                                                                                                                                                                                      |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Cache Queues Utilization Above Minor Threshold'                                                                                           |
| <b>Summary</b>     | 'SCP Cache Queues Utilization Above Minor Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}' |
| <b>Severity</b>    | Minor                                                                                                                                                                                                                                                                        |
| <b>Condition</b>   | This alert is raised when the task queues in the scp-cache service are utilized above 65% of their maximum size (the user-configured minor threshold value).<br>ocscp_cache_queue_alert{severity="MINOR"} == 1                                                               |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.35.1.2.13002                                                                                                                                                                                                                                             |
| <b>Metric Used</b> | ocscp_cache_queue_utilization                                                                                                                                                                                                                                                |

Table 6-60 (Cont.) SCPCacheQueuesUtilizationAboveMinorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> When the cache task queues are getting filled, and traffic is higher than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards the cache pod using the KPI Dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard: ocsdp_cache_queue_utilization.</li> </ol> <p><b>Recovery:</b> The alert is cleared automatically when minor threshold or goes above major threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.58 SCPCacheQueuesUtilizationAboveMajorThreshold

Table 6-61 SCPCacheQueuesUtilizationAboveMajorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'instancetype: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Cache Queues Utilization Above Major Threshold'                                                                                                                                                                                                                                                                                                                                                                                                            |
| Summary            | SCP Cache Queues Utilization Above Major Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}                                                                                                                                                                                                                                                                                                                     |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Condition          | This alert is raised when the task queues in the scp-cache service are utilized above 75% of their maximum size (the user-configured major threshold value).<br>ocsdp_cache_queue_alert{severity="MAJOR"} == 1                                                                                                                                                                                                                                                                                                                                                                                |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.13001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used        | ocsdp_cache_queue_utilization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Recommended Action | <p><b>Cause:</b> When the cache task queues are getting filled, and traffic is higher than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards the cache pod using the KPI Dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard: ocsdp_cache_queue_utilization.</li> </ol> <p><b>Recovery:</b> The alert is cleared automatically when traffic falls below a major threshold or goes above a critical threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.59 SCPCacheQueuesUtilizationAboveCriticalThreshold

**Table 6-62 SCPCacheQueuesUtilizationAboveCriticalThreshold**

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Cache Queues Utilization Above Critical Threshold'                                                                                                                                                                                                                                                                                                                                                                         |
| Summary            | 'SCP Cache Queues Utilization Above Critical Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                               |
| Severity           | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Condition          | This alert is raised when the task queues in the scp-cache service are utilized above 85% of their maximum size (the user-configured critical threshold value).<br>ocscp_cache_queue_alert{severity="CRITICAL"} == 1                                                                                                                                                                                                                                                                                                                                          |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.13000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used        | ocscp_cache_queue_utilization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Recommended Action | <p><b>Cause:</b> When the cache task queues are getting filled, and traffic is higher than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards the cache pod using the KPI Dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard: ocscp_cache_queue_utilization.</li> </ol> <p><b>Recovery:</b> The alert is cleared automatically when traffic falls below a critical threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.60 SCPLoadManagerQueuesUtilizationAboveMinorThreshold

**Table 6-63 SCPLoadManagerQueuesUtilizationAboveMinorThreshold**

| Field       | Details                                                                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Load Manage Queues Utilization Above Minor Threshold'                                                                                            |
| Summary     | 'SCP Load Manager Queues Utilization Above Minor Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}' |
| Severity    | Minor                                                                                                                                                                                                                                                                               |
| Condition   | This alert is raised when the task queues in the scp-load-manager service are utilized above 65% of their maximum size (the user-configured minor threshold value).<br>ocscp_load_manager_queue_alert{severity="MINOR"}                                                             |
| OID         | 1.3.6.1.4.1.323.5.3.35.1.2.11002                                                                                                                                                                                                                                                    |
| Metric Used | ocscp_load_manager_queue_utilization                                                                                                                                                                                                                                                |

Table 6-63 (Cont.) SCPLoadManagerQueuesUtilizationAboveMinorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> When the cache task queues are getting filled, and traffic is higher than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards the cache pod using the KPI Dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard: ocsdp_load_manager_queue_utilization.</li> </ol> <p><b>Recovery:</b> The alert is cleared automatically when traffic falls below a minor threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.61 SCPLoadManagerQueuesUtilizationAboveMajorThreshold

Table 6-64 SCPLoadManagerQueuesUtilizationAboveMajorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Load Manage Queues Utilization Above Major Threshold'                                                                                                                                                                                                                                                                                                                                                                          |
| Summary            | 'SCP Load Manager Queues Utilization Above Major Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Condition          | This alert is raised when the task queues in the scp-load-manager service are utilized above 75% of their maximum size (the user-configured major threshold value).<br>ocsdp_load_manager_queue_alert{severity="MAJOR"} == 1                                                                                                                                                                                                                                                                                                                                      |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.11001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used        | ocsdp_load_manager_queue_utilization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Action | <p><b>Cause:</b> When the cache task queues are getting filled, and traffic is higher than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards the cache pod using the KPI Dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard: ocsdp_load_manager_queue_utilization.</li> </ol> <p><b>Recovery:</b> The alert is cleared automatically when traffic falls below a major threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.62 SCPLoadManagerQueuesUtilizationAboveCriticalThreshold

**Table 6-65 SCPLoadManagerQueuesUtilizationAboveCriticalThreshold**

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: SCP Load Manager Queues Utilization Above Critical Threshold'                                                                                                                                                                                                                                                                                                                                                                         |
| Summary            | 'SCP Load Manager Queues Utilization Above Critical Threshold, instancename: {{\$labels.instance}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                               |
| Severity           | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Condition          | This alert is raised when the task queues in the scp-load-manager service are utilized above 85% of their maximum size (the user-configured critical threshold value).<br>ocscp_load_manager_queue_alert{severity="CRITICAL"} == 1                                                                                                                                                                                                                                                                                                                                   |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.11000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric Used        | ocscp_load_manager_queue_utilization                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Recommended Action | <p><b>Cause:</b> When the cache task queues are getting filled, and traffic is higher than expected.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Monitor traffic towards the cache pod using the KPI Dashboard.</li> <li>2. Refer to rate of the following metric on the Grafana dashboard: ocscp_load_manager_queue_utilization.</li> </ol> <p><b>Recovery:</b> The alert is cleared automatically when traffic falls below a critical threshold.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.63 SCPProducerNfSetUnhealthy

**Table 6-66 SCPProducerNfSetUnhealthy**

| Field       | Details                                                                                                                                                                                                                                                                       |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | All producer NFs in NF set are marked unhealthy                                                                                                                                                                                                                               |
| Summary     | 'All producer NFs in NF set are marked unhealthy. nfSet: {{\$labels.ocscp_nf_setid}}, scpFqdn: {{\$labels.scp_fqdn}}, namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}' |
| Severity    | Info                                                                                                                                                                                                                                                                          |
| Condition   | This alert is raised when all producer NFs in an NF Set are marked unhealthy.<br>ocscp_metric_nf_set_unhealthy > 0                                                                                                                                                            |
| OID         | 1.3.6.1.4.1.323.5.3.35.1.2.7027                                                                                                                                                                                                                                               |
| Metric Used | ocscp_metric_nf_set_unhealthy                                                                                                                                                                                                                                                 |

Table 6-66 (Cont.) SCPProducerNfSetUnhealthy

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> All the producer NFs are marked unhealthy because of consecutive failure responses.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check transport failures and routing errors on producer NFs.</li> <li>2. Run the ping command from primary or secondary nodes using IP of Service. Sample command: ping &lt;IPAddress&gt;.</li> <li>3. If FQDN of service is used, run the ping command from inside the pod.</li> <li>4. If the pod does not support the ping command, get the debug container of SCP pod.</li> <li>5. If you do not want to use the ping command, collect tcpdump to establish the connection. Sample command: tcpdump -w capture.pcap -i &lt;pod interface&gt;</li> </ol> <p><b>Recovery:</b> This alert is automatically cleared after the degradation time is over. Degradation time = Number of consecutive degradations multiplied by configured base ejection.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.64 SCPPeerSeppUnhealthy

Table 6-67 SCPPeerSeppUnhealthy

| Field       | Details                                                                                                                                                                                                                        |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Peer Sepp is marked unhealthy                                                                                                                                                                                                  |
| Summary     | 'Peer Sepp is marked unhealthy. seppFqdn: {{\$labels.ocscp_sepp_fqdn}}, namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}' |
| Severity    | Info                                                                                                                                                                                                                           |
| Condition   | This alert is raised when peer SEPP is marked unhealthy.<br>ocscp_sepp_unhealthy > 0                                                                                                                                           |
| OID         | 1.3.6.1.4.1.323.5.3.35.1.2.7028                                                                                                                                                                                                |
| Metric Used | ocscp_sepp_unhealthy                                                                                                                                                                                                           |

Table 6-67 (Cont.) SCPPeerSeppUnhealthy

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> The peer SEPP is marked unhealthy because of consecutive failure responses.</p> <p><b>Diagnostic Information:</b></p> <ol style="list-style-type: none"> <li>1. Check transport failures and routing errors on peer SCP.</li> <li>2. Run the ping command from primary or secondary nodes using IP of Service.<br/>Sample command: ping &lt;IPAddress&gt;.</li> <li>3. If FQDN of service is used, run the ping command from inside the pod.</li> <li>4. If the pod does not support the ping command, get the debug container of SCP pod.</li> <li>5. If you do not want to use the ping command, collect tcpdump to establish the connection.<br/>Sample command: tcpdump -w capture.pcap -i &lt;pod interface&gt;</li> </ol> <p><b>Recovery:</b> This alert is automatically cleared after the degradation time is over. Degradation time = Number of consecutive degradations multiplied by configured base ejection.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.65 SCPMicroServiceUnreachable

Table 6-68 SCPMicroServiceUnreachable

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'instancename: {{\$labels.instance}}, namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}: SCP communication between the micro-services indicated by source and destination has failed'                                                                                                                                                                                                                   |
| Summary            | Summary: 'SCP communication between the micro-services indicated by source and destination has failed: {{\$labels.instance}}, namespace: {{\$labels.namespace}}, source:{{\$labels.source}}, destination: {{\$labels.destination}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }{'                                                             |
| Severity           | Critical                                                                                                                                                                                                                                                                                                                                                                                                           |
| Condition          | This alert is raised when the communication between SCP microservices indicated by source and destination has failed.<br>ocscp_metric_svc_unreachable==1                                                                                                                                                                                                                                                           |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.7029                                                                                                                                                                                                                                                                                                                                                                                    |
| Metric Used        | ocscp_metric_svc_unreachable                                                                                                                                                                                                                                                                                                                                                                                       |
| Recommended Action | <p><b>Cause:</b> Communication between SCP microservices has failed.</p> <p><b>Diagnostic Information:</b> Verify whether endpoints of all the services are in Running and Ready state. If not, restart the services.</p> <p><b>Recovery:</b> This alert clears automatically when the required services are in Running and Ready state.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.66 SCPTrafficFeedSendFailed

Table 6-69 SCPTrafficFeedSendFailed

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'Sending messages to Traffic Feed failed. Cause : {{\$labels.ocscp_cause}}'                                                                                                                                                                                                                                                                                                                                                                                                                |
| Summary            | 'Sending messages to Traffic Feed failed, cause: {{\$labels.ocscp_cause}}, scp_fqdn: {{\$labels.scp_fqdn}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                              |
| Severity           | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Condition          | This alert is raised when sending messages to traffic feed fails.<br>increase(ocscp_metric_trafficfeed_attempted_total{app_kubernetes_io_name="scp-worker"}[1h]) > 0                                                                                                                                                                                                                                                                                                                       |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9003                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Metric Used        | ocscp_metric_trafficfeed_attempted_total                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Action | <b>Cause:</b> Sending of message to traffic feed failed.<br><b>Diagnostic Information:</b> <ul style="list-style-type: none"> <li>Check failure reason.</li> <li>Check if the traffic feed OCNADD configuration is correct.</li> <li>Check if the OCNADD server is reachable and available.</li> </ul> <b>Recovery:</b> This alert clears automatically after 24 hrs if sending messages to traffic feed stops failing.<br>For any assistance, contact <a href="#">My Oracle Support</a> . |

## 6.2.67 SCPTrafficFeedKafkaClusterUnhealthy

Table 6-70 SCPTrafficFeedKafkaClusterUnhealthy

| Field              | Details                                                                                                                                                                                                                                                                                                                                      |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'Kafka cluster is marked unhealthy, Cause : {{\$labels.ocscp_cause}}'                                                                                                                                                                                                                                                                        |
| Summary            | 'Kafka cluster is marked unhealthy, cause: {{\$labels.ocscp_cause}}, scp_fqdn: {{\$labels.ocscp_fqdn}}, namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                    |
| Severity           | Critical                                                                                                                                                                                                                                                                                                                                     |
| Condition          | This alert is raised when the Kafka cluster is unhealthy.<br>ocscp_metric_trafficfeed_cluster_unhealthy == 1                                                                                                                                                                                                                                 |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9026                                                                                                                                                                                                                                                                                                              |
| Metric Used        | ocscp_metric_trafficfeed_cluster_unhealthy                                                                                                                                                                                                                                                                                                   |
| Recommended Action | <b>Cause:</b> The Kafka cluster is unhealthy.<br><b>Diagnostic Information:</b> <ul style="list-style-type: none"> <li>Check and diagnose OCNADD Kafka cluster.</li> </ul> <b>Recovery:</b> This alert clears when the Kafka cluster recovers from the failure condition.<br>For any assistance, contact <a href="#">My Oracle Support</a> . |



## 6.2.68 SCPTrafficFeedPartitionUnhealthy

Table 6-71 SCPTrafficFeedPartitionUnhealthy

| Field              | Details                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'Kafka partition {{ \$labels.kafka_partition_id }} is marked unhealthy, Cause : {{ \$labels.ocscp_cause }}'                                                                                                                                                                                                                                                           |
| Summary            | 'Kafka cluster is marked unhealthy, cause: {{ \$labels.ocscp_cause }}, partition_id: {{ \$labels.kafka_partition_id }}, topic: {{ \$labels.topic }}, scp_fqdn: {{ \$labels.ocscp_fqdn }}, namespace: {{ \$labels.namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}' |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                 |
| Condition          | This alert is raised when the Kafka partition is unhealthy.<br>ocscp_metric_trafficfeed_partition_unhealthy == 1                                                                                                                                                                                                                                                      |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9025                                                                                                                                                                                                                                                                                                                                       |
| Metric Used        | ocscp_metric_trafficfeed_partition_unhealthy                                                                                                                                                                                                                                                                                                                          |
| Recommended Action | <b>Cause:</b> The Kafka partition is unhealthy.<br><b>Diagnostic Information:</b> <ul style="list-style-type: none"> <li>Check and diagnose OCNADD Kafka cluster.</li> </ul> <b>Recovery:</b> This alert clears when the Kafka partition recovers from the failure condition.<br>For any assistance, contact <a href="#">My Oracle Support</a> .                      |

## 6.2.69 SCPServiceMeshFailure

Table 6-72 SCPServiceMeshFailure

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'SCP servicemesh failure encountered'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Summary     | 'SCP servicemesh failure encountered for nfservicetype: {{ \$labels.ocscp_nf_service_type }}, nftype: {{ \$labels.ocscp_nf_type }}, nfinstanceid: {{ \$labels.ocscp_nf_instance_id }}, serviceinstanceid: {{ \$labels.ocscp_service_instance_id }}, producerfqdn: {{ \$labels.ocscp_producer_fqdn }}, responsecode: {{ \$labels.ocscp_response_code }}, serverheader: {{ \$labels.ocscp_server_header }}, namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'SeverityInfo |
| Severity    | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Condition   | This alert is raised when service mesh failure occurs.<br>increase(ocscp_metric_sidecarproxy_failures_total[2m]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OID         | 1.3.6.1.4.1.323.5.3.35.1.2.7030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Metric Used | ocscp_metric_sidecarproxy_failures_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Table 6-72 (Cont.) SCPServiceMeshFailure

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> Service mesh failure observed at SCP.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Service mesh is unable to reach peer NF due to connection failures or host is not known to service mesh or some other errors at service mesh.</li> <li>Verify the service mesh logs to detect error details.</li> <li>Check sidecar status of peer NF.</li> </ul> <p><b>Recovery:</b> This alert clears automatically after 2 minutes if there is no service mesh failure observed by SCP with the same dimensions.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.70 SCPHealthCheckFailedForPeerSCP

Table 6-73 SCPHealthCheckFailedForPeerSCP

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | 'SCP HealthCheck failed for peer SCP'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Summary            | 'SCP HealthCheck failed for peer SCP. namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                                                                                                                               |
| Severity           | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Condition          | This alert is raised when peer SCP or inter-SCP becomes unhealthy due to health check status and outlier detection.<br>ocscp_interscp_health_check_status_failed == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used        | ocscp_interscp_health_check_status_failed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Recommended Action | <p><b>Cause:</b> When peer SCP is unhealthy to receive any SBI message requests due to health check and outlier detection.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Monitor if the overall average load of peer SCP is greater than the configured threshold value.</li> <li>Check outlier detection.</li> </ul> <p><b>Recovery:</b> This alert clears automatically if SCP-C decides SCP-P is healthy or available based on the current and previous status of outlier detection and health check.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.71 SCPHealthCheckFailed

Table 6-74 SCPHealthCheckFailed

| Field       | Details                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'SCP HealthCheck failed'                                                                                                                                                                                   |
| Summary     | 'SCP HealthCheck failed. namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}' |

Table 6-74 (Cont.) SCPHealthCheckFailed

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity           | Info                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Condition          | This alert is raised when SCP is unhealthy because the overall average load of SCP is greater than the configured threshold.<br>ocscp_health_check_status_failed == 1                                                                                                                                                                                                                                                                          |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9024                                                                                                                                                                                                                                                                                                                                                                                                                |
| Metric Used        | ocscp_health_check_status_failed                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Action | <b>Cause:</b> When SCP is unhealthy to receive any SBI message requests due to the overall average load.<br><b>Diagnostic Information:</b> Monitor if the overall average load of SCP is greater than the configured threshold value.<br><b>Recovery:</b> This alert clears automatically when the overall average load of SCP is less than the configured threshold value.<br>For any assistance, contact <a href="#">My Oracle Support</a> . |

## 6.2.72 ScpWorkerPodPendingTransUtilizationAboveMinorThreshold

Table 6-75 ScpWorkerPodPendingTransUtilizationAboveMinorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | Worker Pending Transaction lead to minor level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Summary            | 'Worker Pending Transaction lead to minor level.namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                                                                                                                                   |
| Severity           | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Condition          | This alert is raised when pending transaction utilization of SCP-Worker reaches MINOR level.<br>ocscp_worker_pod_overload_control_pendingTrans_utilization_minor > 0                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Used        | ocscp_worker_pod_overload_control_pendingTrans_utilization_minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Recommended Action | <b>Cause:</b> When pending transactions utilization of SCP-Worker reaches MINOR level.<br><b>Diagnostic Information:</b> <ul style="list-style-type: none"> <li>Monitor pending transactions usage while processing traffic. The threshold value of minor pending transaction utilization can be checked from database.</li> <li>Check MINOR level logs of SCP-Worker for pending transaction status.</li> </ul> <b>Recovery:</b> This alert clears automatically when pending transaction utilization is below MINOR threshold level.<br>For any assistance, contact <a href="#">My Oracle Support</a> . |

## 6.2.73 ScpWorkerPodPendingTransUtilizationAboveMajorThreshold

Table 6-76 ScpWorkerPodPendingTransUtilizationAboveMajorThreshold

| Field       | Details                                        |
|-------------|------------------------------------------------|
| Description | Worker Pending Transaction lead to major level |

Table 6-76 (Cont.) ScpWorkerPodPendingTransUtilizationAboveMajorThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary            | Worker Pending Transaction lead to major level. namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}                                                                                                                                                                                                                                                                                                                                                                                                    |
| Severity           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Condition          | This alert is raised when pending transaction utilization of SCP-Worker reaches MAJOR level.<br>ocscp_worker_pod_overload_control_pendingTrans_utilization_major > 0                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Used        | ocscp_worker_pod_overload_control_pendingTrans_utilization_major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Recommended Action | <b>Cause:</b> When pending transactions utilization of SCP-Worker reaches MAJOR level.<br><b>Diagnostic Information:</b> <ul style="list-style-type: none"> <li>Monitor pending transactions usage while processing traffic. The threshold value of major pending transaction utilization can be checked from database.</li> <li>Check MAJOR level logs of SCP-Worker for pending transaction status.</li> </ul> <b>Recovery:</b> This alert clears automatically when pending transaction utilization is below MAJOR threshold level.<br>For any assistance, contact <a href="#">My Oracle Support</a> . |

## 6.2.74 ScpWorkerPodPendingTransUtilizationAboveCriticalThreshold

Table 6-77 ScpWorkerPodPendingTransUtilizationAboveCriticalThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | Worker Pending Transaction lead to critical level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Summary            | 'Worker Pending Transaction lead to critical level. namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}                                                                                                                                                                                                                                                                                                                                                                                                            |
| Severity           | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Condition          | This alert is raised when pending transaction utilization of SCP-Worker reaches CRITICAL level.<br>ocscp_worker_pod_overload_control_pendingTrans_utilization_critical > 0                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used        | ocscp_worker_pod_overload_control_pendingTrans_utilization_critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Action | <b>Cause:</b> When pending transactions utilization of SCP-Worker reaches CRITICAL level.<br><b>Diagnostic Information:</b> <ul style="list-style-type: none"> <li>Monitor pending transactions usage while processing traffic. The threshold value of critical pending transaction utilization can be checked from database.</li> <li>Check CRITICAL level logs of SCP-Worker for pending transaction status.</li> </ul> <b>Recovery:</b> This alert clears automatically when pending transaction utilization is below CRITICAL threshold level.<br>For any assistance, contact <a href="#">My Oracle Support</a> . |

## 6.2.75 ScpWorkerPodPendingTransUtilizationAboveWarnThreshold

**Table 6-78 ScpWorkerPodPendingTransUtilizationAboveWarnThreshold**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | Worker Pending Transaction lead to Warn level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Summary</b>            | 'Worker Pending Transaction lead to warn level. namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Severity</b>           | Warn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Condition</b>          | This alert is raised when pending transaction utilization of SCP-Worker reaches WARN level.<br>ocscp_worker_pod_overload_control_pendingTrans_utilization_warn > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.9017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Metric Used</b>        | ocscp_worker_pod_overload_control_pendingTrans_utilization_warn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Recommended Action</b> | <p><b>Cause:</b> When pending transactions utilization of SCP-Worker reaches WARN level.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Monitor pending transactions usage while processing traffic. The threshold value of warn pending transaction utilization can be checked from database.</li> <li>Check WARN level logs of SCP-Worker for pending transaction status.</li> </ul> <p><b>Recovery:</b> This alert clears automatically when pending transaction utilization is below WARN threshold level.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.76 ScpWorkerPodResourceUtilizationAboveMinorThreshold

**Table 6-79 ScpWorkerPodResourceUtilizationAboveMinorThreshold**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | Worker overload control lead to minor level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Summary</b>            | 'Worker overload control lead to minor level.namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}'                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Severity</b>           | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Condition</b>          | This alert is raised when overload control resource utilization of SCP-Worker reaches MINOR level.<br>ocscp_worker_pod_overload_control_resource_utilization_minor > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.9018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Metric Used</b>        | ocscp_worker_pod_overload_control_resource_utilization_minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Recommended Action</b> | <p><b>Cause:</b> When overload control resource utilization of SCP-Worker reaches MINOR level.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Monitor pending transactions usage while processing traffic. The threshold value of minor overload control resource utilization can be checked from database.</li> <li>Check MINOR level logs of SCP-Worker for overload control resource utilization status.</li> </ul> <p><b>Recovery:</b> This alert clears automatically when overload control resource utilization is below MINOR threshold level.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.77 ScpWorkerPodResourceUtilizationAboveMajorThreshold

**Table 6-80 ScpWorkerPodResourceUtilizationAboveMajorThreshold**

| Field                     | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>        | Worker overload control lead to major level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Summary</b>            | 'Worker overload control lead to major level. namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }{'                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Severity</b>           | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Condition</b>          | This alert is raised when overload control resource utilization of SCP-Worker reaches MAJOR level.<br>ocscp_worker_pod_overload_control_resource_utilization_major > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>OID</b>                | 1.3.6.1.4.1.323.5.3.35.1.2.9019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Metric Used</b>        | ocscp_worker_pod_overload_control_resource_utilization_major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Recommended Action</b> | <p><b>Cause:</b> When overload control resource utilization of SCP-Worker reaches MAJOR level.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Monitor pending transactions usage while processing traffic. The threshold value of major overload control resource utilization can be checked from database.</li> <li>Check MAJOR level logs of SCP-Worker for overload control resource utilization status.</li> </ul> <p><b>Recovery:</b> This alert clears automatically when overload control resource utilization is below MAJOR threshold level.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.78 ScpWorkerPodResourceUtilizationAboveWarnThreshold

**Table 6-81 ScpWorkerPodResourceUtilizationAboveWarnThreshold**

| Field              | Details                                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Worker overload control lead to Warn level'                                                                                                                                                       |
| <b>Summary</b>     | 'Worker overload control lead to warn level. namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }{' |
| <b>Severity</b>    | Warning                                                                                                                                                                                            |
| <b>Condition</b>   | This alert is raised when overload control resource utilization of SCP-Worker reaches WARN level.<br>ocscp_worker_pod_overload_control_resource_utilization_warn > 0                               |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.35.1.2.9021                                                                                                                                                                    |
| <b>Metric Used</b> | ocscp_worker_pod_overload_control_resource_utilization_warn                                                                                                                                        |

Table 6-81 (Cont.) ScpWorkerPodResourceUtilizationAboveWarnThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Action | <p><b>Cause:</b> When overload control resource utilization of SCP-Worker reaches WARN level.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Monitor pending transactions usage while processing traffic. The threshold value of warn overload control resource utilization can be checked from database.</li> <li>Check WARN level logs of SCP-Worker for overload control resource utilization status.</li> </ul> <p><b>Recovery:</b> This alert clears automatically when overload control resource utilization is below WARN threshold level.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.79 ScpWorkerPodResourceUtilizationAboveCriticalThreshold

Table 6-82 ScpWorkerPodResourceUtilizationAboveCriticalThreshold

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description        | Worker overload control lead to critical level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Summary            | 'Worker overload control lead to critical level. namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }'                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Severity           | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Condition          | This alert is raised when overload control resource utilization of SCP-Worker reaches CRITICAL level.<br>ocscp_worker_pod_overload_control_resource_utilization_critical > 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OID                | 1.3.6.1.4.1.323.5.3.35.1.2.9020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used        | ocscp_worker_pod_overload_control_resource_utilization_critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Action | <p><b>Cause:</b> When overload control resource utilization of SCP-Worker reaches CRITICAL level.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Monitor pending transactions usage while processing traffic. The threshold value of critical overload control resource utilization can be checked from database.</li> <li>Check CRITICAL level logs of SCP-Worker for overload control resource utilization status.</li> </ul> <p><b>Recovery:</b> This alert clears automatically when overload control resource utilization is below CRITICAL threshold level.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.80 SCPDNSSRVNRFMigrationTaskFailure

Table 6-83 SCPDNSSRVNRFMigrationTaskFailure

| Field                   | Description                                                |
|-------------------------|------------------------------------------------------------|
| Severity                | critical                                                   |
| Condition               | ocscp_configuration_dnssrv_nrf_migration_task_failure == 1 |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.15001                           |

Table 6-83 (Cont.) SCPDNSSRVNRFMigrationTaskFailure

| Field                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | An alert is raised to notify that migration from static to DNS has failed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Recommended Actions</b> | <p><b>Cause:</b></p> <ul style="list-style-type: none"> <li>If migration to DNS task was waiting for DNS SRV data and wait time elapsed.</li> <li>If any migration task fails due to no acknowledgement from other microservices.</li> <li>Wait time elapsed in task completion response for any migration task.</li> </ul> <p><b>Diagnostic Information:</b></p> <p>Monitor that all the DNS SRV configurations are proper and that all SCP pods are up and running in the proper state.</p> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>DNS SRV data, wait time elapsed: Once data is received from DNS, the alert will be cleared.</li> <li>No acknowledgement: Keep retrying for success acknowledgement and clear or remove the alert on receiving success acknowledgement.</li> <li>Wait time elapsed for completion response: Resend the event and wait. Repeat this until a completion response is received, and on receiving a completion response, clear the alert.</li> </ul> <p>In all the raised conditions, the alert will also be cleared on receiving the new migration task.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.81 SCPDNSSRVNRFNonMigrationTaskFailure

Table 6-84 SCPDNSSRVNRFNonMigrationTaskFailure

| Field                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Severity</b>                | critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Condition</b>               | ocscp_configuration_dnssrv_nrf_non_migration_task_failure == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>OID used for SNMP Traps</b> | 1.3.6.1.4.1.323.5.3.35.1.2.15003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>             | An alert is raised to notify that the non-migrated task has failed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Recommended Actions</b>     | <p><b>Cause:</b></p> <ul style="list-style-type: none"> <li>If a non-migrated task fails due to no acknowledgement from other microservices.</li> <li>Wait time elapsed in task completion response.</li> </ul> <p><b>Diagnostic Information:</b></p> <p>Monitor that all the DNS SRV configurations are proper and that all SCP pods are up and running in the proper state.</p> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>No acknowledgement: Keep retrying for success acknowledgement and clear or remove the alert on receiving success acknowledgement.</li> <li>Wait time elapsed: When a new task is submitted for the same SPN, this alert is immediately cleared; if subsequent task processing fails, again, the alert will be raised.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |



## 6.2.82 SCPDNSSRVNRFDuplicateTargetDetected

**Table 6-85 SCPDNSSRVNRFDuplicateTargetDetected**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Condition               | ocscp_configuration_dnssrv_nrf_duplicate_target_detected == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.15002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Description             | An alert is raised to notify that a duplicate target NRF has been detected in the DNS SRV records.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Actions     | <p><b>Cause:</b> This alert is raised when a duplicate target FQDN is received from the DNS SRV for different NRF SRV FQDN(s). In this case, the first NRF SRV FQDN data received in the scpc-configuration service from the scpc-alternate-resolution service shall be processed, but the subsequent NRF SRV FQDN data will be ignored, and this alert shall be raised.</p> <p><b>Diagnostic Information:</b><br/>Monitor that all the DNS SRV configurations are proper and that all SCP pods are up and running in the proper state.</p> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>If for the same NRF SRV FQDN receives non-overlapping target FQDNs, then the alert will be cleared.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.83 SCPHighResponseTimeFromProducer

**Table 6-86 SCPHighResponseTimeFromProducer**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Condition               | (sum(rate(ocscp_metric_upstream_service_time_total{ocscp_upstream_service_time="15000ms"}[2m])) by (kubernetes_namespace) + sum(rate(ocscp_metric_upstream_service_time_total{ocscp_upstream_service_time=">15000ms"}[2m])) by (kubernetes_namespace)) > 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.15004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description             | It notifies when the traffic exceeds 200 messages per second and the response delay from the producer takes more than 10 seconds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Recommended Actions     | <p><b>Cause:</b> More than 200 messages per second have an upstream response time above 10 seconds.</p> <p><b>Diagnostic Information:</b><br/>Monitor metric metricocscp_metric_upstream_service_time_total with ocscp_upstream_service_time="15000ms" and ocscp_upstream_service_time="&gt;15000ms".</p> <p><b>Recovery:</b> An alert is cleared automatically when the number of responses with a response delay of more than 10 seconds falls below 200 messages per second. If Alert is not getting cleared, then check for any producer NFs or specific service request types that are taking more than 10 seconds to respond and take corrective actions if needed. Note that immediate action may not be needed, as this alter is informational. However, having too many requests with a long response delay may cause performance degradation at SCP.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.84 SCPCGroupVersionDetectionFailed

**Table 6-87 SCPCGroupVersionDetectionFailed**

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Condition               | ocscp_worker_cgroup_version_detection_failed == 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.15005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description             | Notify that cgroup version detection has failed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Recommended Actions     | <p><b>Cause:</b> SCP is unable to detect the cgroup version from the underlying kernel with the command "stat -fc %T /sys/fs/cgroup/." The possible expected value is either tmpfs or cgroup2fs.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Option 1: Check worker error level logs for failure of cgroup version detection.</li> <li>Option 2: <ul style="list-style-type: none"> <li>Login to the worker pod and run the command "stat -fc %T /sys/fs/cgroup."</li> <li>Verify whether it outputs either tmpfs or cgroup2fs.</li> </ul> </li> </ul> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>Make sure the cgroup has either tmpfs or cgroup2fs.</li> <li>Do same version upgrade on SCP.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.85 SCPCPUUsageFileReadFailed

**Table 6-88 SCPCPUUsageFileReadFailed**

| Field                   | Description                                                                              |
|-------------------------|------------------------------------------------------------------------------------------|
| Severity                | critical                                                                                 |
| Condition               | ocscp_worker_cpu_usage_file_read_failed == 1                                             |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.15006                                                         |
| Description             | Notify that the CPU usage file read operation failed within the detected cgroup version. |

Table 6-88 (Cont.) SCPCPUUsageFileReadFailed

| Field               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p><b>Cause:</b> SCP encountered a failure in performing a read operation for the CPU usage file within the detected cgroup version. The file path is determined based on the detected cgroup version.</p> <p><b>Diagnostic Information:</b></p> <ul style="list-style-type: none"> <li>Option 1: Check worker warn level logs for failure in performing a read operation for the CPU usage file.</li> <li>Option 2: <ul style="list-style-type: none"> <li>Log in to the worker pod and run the command "stat -fc %T /sys/fs/cgroup" to confirm whether it outputs either 'tmpfs' or 'cgroup2fs'.</li> <li>Depending on the detected cgroup version, inspect the file located at /sys/fs/cgroup/cpu/cpuacct.usage for 'tmpfs' or /sys/fs/cgroup/cpu.stat for 'cgroup2fs'.</li> <li>Ensure that the file exists at the specified path and possesses the required permissions for read operations.</li> </ul> </li> </ul> <p><b>Recovery:</b></p> <ul style="list-style-type: none"> <li>Verify that the files are appropriate according to the cgroup version and possess the necessary permissions for read operations.</li> <li>Perform the same version upgrade on the SCP.</li> </ul> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.2.86 SCPIgnoreUnknownService

Table 6-89 SCPIgnoreUnknownService

| Field                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Severity                | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Condition               | increase(ocscp_ignore_unknown_service_total[24h]) > 0                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.35.1.2.15000                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description             | An alert is raised to notify that SCP ignored an unknown service in the NF profile.                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Actions     | <p><b>Cause:</b> SCP has received the NF profile with an unknown service and processed the profile by ignoring this unknown service.</p> <p><b>Diagnostic Information:</b></p> <p>Check the received NF profile for the unknown services.</p> <p><b>Recovery:</b> If the unknown services are not present in the NF profile in the next scrapping interval, then the alert will be cleared.</p> <p>For any assistance, contact <a href="#">My Oracle Support</a>.</p> |

## 6.3 Configuring Alerts

### 6.3.1 Applying Alerts Rule to CNE without Prometheus Operator

**SCP Helm Chart Release Name:** `_NAME_`

**Prometheus NameSpace:** `_Namespace_`

Perform the following procedure to configure Service Communication Proxy alerts in Prometheus.

1. Run the following command to check the name of the config map used by Prometheus:

```
$kubectl get configmap -n <_Namespace_>
```

Example:

```
$kubectl get configmap -n prometheus-alert2
NAME                                     DATA  AGE
lisa-prometheus-alert2-alertmanager    1      146d
lisa-prometheus-alert2-server          4      146d
```

2. Take a backup of the current config map of Prometheus. This command saves the configmap in the provided file. In the following command, the configmap is stored in the `/tmp/tempConfig.yaml` file:

```
$ kubectl get configmaps <_NAME_>-server -o yaml -n <_Namespace_> /tmp/
tempConfig.yaml
```

Example:

```
$ kubectl get configmaps lisa-prometheus-alert2-server -o yaml -n
prometheus-alert2 > /tmp/tempConfig.yaml
```

3. Check and delete the "alertsscp" rule if it has already configured in the prometheus config map. If configured, this step removes the " alertsscp " rule. This is an optional step if configuring the alerts for the first time.

```
$ sed -i '/etc\config\alertsscp/d' /tmp/tempConfig.yaml
```

4. Add the "alertsscp" rule in the configmap dump file under the ' rule\_files ' tag.

```
$ sed -i '/rule_files:/a\    \- /etc/config/alertsscp' /tmp/
tempConfig.yaml
```

5. Update the configmap using below command. Ensure to use the same configmap name that was used to take a backup of the prometheus configmap.

```
$ kubectl replace configmap <_NAME_>-server -f /tmp/tempConfig.yaml
```

Example:

```
$ kubectl replace configmap lisa-prometheus-alert2-server -f /tmp/
tempConfig.yaml
```

6. Run the following command to patch the configmap with a new "alertsscp" rule:

**Note**

The patch file provided is the `ocscp_csar_23_2_0_0_0.zip` folder provided with SCP, that is, `SCPAlertrules.yaml`.

```
$ kubectl patch configmap _NAME_-server -n _Namespace_ --type merge --  
patch "$(cat ~/SCPAlertrules.yaml)"
```

Example:

```
$ kubectl replace configmap lisa-prometheus-alert2-server -f /tmp/  
tempConfig.yaml
```

**Note**

Prometheus takes about 20 seconds to apply the updated Config map.

## 6.3.2 Applying Alerts Rule to CNE with Prometheus Operator

Perform the following procedure to apply alerts rule to Cloud Native Environment (CNE) with Prometheus Operator (CNE 1.9.0 and later).

- Run the following command to apply SCP alerts file to create Prometheus rules Custom Resource Definition (CRD):

```
kubectl apply -f <file_name> -n <scp namespace>
```

Where,

- `<file_name>` is the SCP alerts file.
- `<scp namespace>` is the SCP namespace.

Example:

```
kubectl apply -f ocscp_alerting_rules_promha_23.4.4.yaml -n scpsvc
```

Sample file delivered with SCP package:

```
ocscp_alerting_rules_promha_23.4.4.yaml
```

## 6.3.3 Configuring Service Communication Proxy Alert using the SCPAlertrules.yaml file

### Note

Default NameSpace is **scpsvc** for Service Communication Proxy. You can update the NameSpace as per the deployment.

To access the scpAlertrules\_<scp release number>.yaml file from the Scripts folder of ocscp\_csar\_23\_2\_0\_0\_0.zip, download the SCP package from [My Oracle Support](#) as described in "Downloading the SCP Package " in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.

### Alerts Details

Description and summary for alerts are added by the Prometheus alert manager.

Alerts are supported for three different resources/routing crosses threshold.

- SCPIngress Traffic Rate Above Threshold
  - Has three threshold level Minor (above 1400 mps to 2000mps), Major (1600 to 1800 mps), Critical (above 1800 mps). These values are configurable.
  - In the description, information is presented similar to: "Ingress Traffic Rate at Locality: <Locality of scp> is above <threshold level (minor/major/critical)> threshold (i.e. <value of threshold>)"
  - In Summary: "Namespace: <Namespace of scp deployment that Locality>, Pod: <SCP-worker Pod name>: Current Ingress Traffic Rate is <Current rate of Ingress traffic > mps which is above 70 Percent of Max MPS(<upper limit of ingress traffic rate per pod>)"

### Note

Ingress traffic rate is per scp-worker pod in a namespace at particular SCP- Locality. Currently, 2000mps is the upper limit for per scp-worker pod.

- SCP Routing Failed For Service
  - It alerts for which NF Service Type and NF Type at particular locality, Routing failed
  - Description: "Routing failed for service"
  - Summary: "Routing failed for service: NFService Type = <Message NF Service Type>, NFType = <Message NF Type>, Locality = <SCP Locality where Routing Failed> and value = <Accumulated failure till now, of such message for NFType and NFService Type>"

### Note

The value field currently does not provide the number of failures in particular time interval, instead it provides the total number of Routing failures.

- SCP Pod Memory Usage: Type of alert is SCPWorkerPodMemoryUsage.
  - Pod memory usage for SCP Pods (Soothsayer and Worker) deployed at a particular node instance is provided.
  - The Soothsayer pod threshold is 8 GB
  - The Worker pod threshold is 4 GB
  - Summary: Instance: "<Node Instance name>, NameSpace: <Namespace of SCP deployment>, Pod: <(Soothsayer/Worker) Pod name>: <Soothsayer/Worker> Pod High Memory usage detected"
  - Summary: "Instance: "<Node Instance name>, Namespace: <Namespace of SCP deployment>, Pod: <(Soothsayer/Worker) Pod name>: Memory usage is above <threshold value>G (current value is: <current value of memory usage>)"

### 6.3.4 Configuring Alert Manager for SNMP Notifier

Grouping of alerts is based on:

- podname
- alertname
- severity
- namespace
- nfServiceType
- nfServiceInstanceid

User needs to add subroutes for SCP alerts in AlertManager config map as below:

1. Take a backup of the current config map of Alertmanager by running the following command:

```
kubectl get configmaps <NAME-alertmanager> -oyaml -n <Namespace> > /tmp/
bkupAlertManagerConfig.yaml
```

Example:

```
kubectl get configmaps occne-prometheus-alertmanager -oyaml -n occne-infra
> /tmp/bkupAlertManagerConfig.yaml
```

2. Edit Configmap to add subroute for SCP Trap OID:

```
kubectl edit configmaps <NAME-alertmanager> -n <Namespace>
```

Example:

```
kubectl edit configmaps occne-prometheus-alertmanager -n occne-infra
```

3. Add the subroute under 'route' in configmap:

```
routes:
  - receiver: default-receiver
    group_interval: 1m
    group_wait: 10s
```

```
repeat_interval: 9y
group_by: [podname, alertname, severity, namespace, nfservicetype,
nfserviceinstanceid, servingscope, nftype]
match_re:
oid: ^1.3.6.1.4.1.323.5.3.35.(.*)
```

### MIB Files for SCP

There are two MIB files which are used to generate the traps. The user need to update these files along with the Alert file in order to fetch the traps in their environment.

- `ocscp_mib_tc_23.4.4.mib`: This is considered as SCP top level mib file, where the Objects and their data types are defined.
- `ocscp_mib_23.4.4.mib`: This file fetches the Objects from the top level mib file and based on the Alert notification, these objects can be selected for display.

#### Note

MIB files are packaged with `ocscp_csar_23_2_0_0_0.zip`. You can download the file from [MOS](#) as described in *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*.



# 7

## KPIs and Traces

This chapter provides information about newly introduced and updated Key Performance Indicators (KPIs) and Traces.

### 7.1 Key Performance Indicators

This section provides information about Key Performance Indicators (KPIs) for Service Communication Proxy (SCP).

#### 7.1.1 Platform KPIs

The following table provides information on Platform metrics.

**Table 7-1 SCP CPU Usage**

| Field       | Details                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------|
| Description | The total SCP CPU utilization per pod.                                                                        |
| Expression  | <code>sum(rate(container_cpu_usage_seconds_total{image!="",namespace="ocscp"}[2m])) by (pod,container)</code> |

**Table 7-2 SCP Memory Usage**

| Field       | Details                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------|
| Description | The total SCP memory utilization per pod.                                                                              |
| Expression  | <code>(avg_over_time(container_memory_working_set_bytes{namespace="ocscp",container=~"istio-proxy scp.*"}[2m]))</code> |

**Table 7-3 SCP Memory Usage Percentage**

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total percentage of SCP memory utilization per pod.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Expression  | <code>round( 100 * avg_over_time(container_memory_working_set_bytes{image!="",container_name!="POD",namespace="ocscp", container=~"scp-nrfproxy"}[2m]) / (8*1073741824) )</code><br><b>Note:</b> Here, scp-nrfproxy is taken as an example; the same holds true for all the other microservices. The hardcoded memory value of 8GB (for nrfproxy) must be replaced in the Grafana dashboard file with the value that is assigned in the deployment environment, and this holds true for all the other microservices. |

**Table 7-4 SCP CPU Usage Percentage**

| Field       | Details                                              |
|-------------|------------------------------------------------------|
| Description | The total percentage of SCP CPU utilization per pod. |

Table 7-4 (Cont.) SCP CPU Usage Percentage

| Field      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Expression | <code>sum(rate(container_cpu_usage_seconds_total{image!="",namespace="ocscp",container="scpc-audit"}[2m])) by (pod,container)*100/3</code><br><b>Note:</b> Here, scp-worker is taken as an example; the same holds true for all the other microservices. The hardcoded CPU value of 8 (for scp-worker) must be replaced in the Grafana dashboard file with the value that is assigned in the deployment environment, and this holds true for all the other microservices. |

Table 7-5 CPU Usage

| Field       | Details                                                                                                              |
|-------------|----------------------------------------------------------------------------------------------------------------------|
| Description | The total percentage of SCP CPU utilization by master and worker pod.                                                |
| Expression  | <code>sum (rate (container_cpu_usage_seconds_total{image!="",node=~"k8s.*",namespace="ocscp"}[2m])) by (node)</code> |

Table 7-6 Memory Usage

| Field       | Details                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------|
| Description | The total percentage of SCP memory utilization by master and worker pod.                                |
| Expression  | <code>sum (container_memory_working_set_bytes{id="/",node=~"k8s.*",namespace="ocscp"}) by (node)</code> |

Table 7-7 Prometheus CPU Utilization

| Field       | Details                                                                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | CPU utilization of Prometheus pods.                                                                                                                            |
| Expression  | <code>sum(rate(container_cpu_usage_seconds_total{pod="occne-prometheus-server-5f48d747b8-lx4zn",container="prometheus-server",namespace="ocscp"} [5m]))</code> |

Table 7-8 Prometheus Memory Utilization

| Field       | Details                                                                                    |
|-------------|--------------------------------------------------------------------------------------------|
| Description | Memory Utilization of Prometheus Pods.                                                     |
| Expression  | <code>container_memory_usage_bytes{container="prometheus-server",namespace="ocscp"}</code> |

Table 7-9 Samples\_scraped\_time

| Field       | Details                                                                    |
|-------------|----------------------------------------------------------------------------|
| Description | Total number of Metrics samples scraped by Prometheus in give time.        |
| Expression  | <code>avg_over_time(scrape_samples_scraped{namespace="ocscp"}[10m])</code> |

## 7.1.2 Application KPIs

The following table provides information on Application KPIs.

**Table 7-10 Ingress Request Rate**

| Field       | Details                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Total number of ingress requests sent to SCP by consumer NFs.                                                                                              |
| Expression  | sum(irate(ocscp_metric_http_rx_req_total{namespace="ocscp", ocscp_consumer_host!="OCSCP-INITIATED-MSG"}[5m])) by (ocscp_nf_type,ocscp_service_instance_id) |

**Table 7-11 Egress Request Rate**

| Field       | Details                                                                              |
|-------------|--------------------------------------------------------------------------------------|
| Description | Total number of egress requests sent to producer NFs by SCP.                         |
| Expression  | sum(irate(ocscp_metric_http_tx_req_total{namespace="ocscp"}[2m])) by (ocscp_nf_type) |

**Table 7-12 Ingress Response Rate**

| Field       | Details                                                                                                               |
|-------------|-----------------------------------------------------------------------------------------------------------------------|
| Description | Total number of ingress responses sent to SCP by producer NFs.                                                        |
| Expression  | sum(irate(ocscp_metric_http_rx_res_total{namespace="ocscp"}[2m])) by (ocscp_response_code_class, ocscp_producer_fqdn) |

**Table 7-13 Egress Response Rate**

| Field       | Details                                                                                                       |
|-------------|---------------------------------------------------------------------------------------------------------------|
| Description | Total number of egress responses sent to consumer NFs by SCP.                                                 |
| Expression  | sum(irate(ocscp_metric_http_tx_res_total{namespace="ocscp", ocscp_consumer_host!="OCSCP-INITIATED-MSG"}[2m])) |

**Table 7-14 Response Processing Time**

| Field       | Details                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------|
| Description | The rate of processing time by SCP for ingress responses into the time buckets.                         |
| Expression  | sum(irate(ocscp_metric_response_processing_time_total{namespace="ocscp"}[2m]))by(ocscp_processing_time) |

**Table 7-15 Request Processing Time**

| Field       | Details                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------|
| Description | The rate of processing time by SCP for ingress requests into the time buckets.                         |
| Expression  | sum(irate(ocscp_metric_request_processing_time_total{namespace="ocscp"}[2m]))by(ocscp_processing_time) |

**Table 7-16 Transaction Success Rate**

| Field       | Details                                                                |
|-------------|------------------------------------------------------------------------|
| Description | The rate of successful transaction response sent by SCP for a request. |

**Table 7-16 (Cont.) Transaction Success Rate**

| Field      | Details                                                                                                                                                                                                                                                                                                                                              |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Expression | $\frac{((\text{sum}(\text{irate}(\text{ocscp\_metric\_http\_tx\_res\_total}\{\text{ocscp\_response\_code\_class}=\text{"2"}, \text{kubernetes\_namespace}=\sim\text{"$namespace"}\}[2\text{m}]))))}{(\text{sum}(\text{irate}(\text{ocscp\_metric\_http\_tx\_res\_total}\{\text{kubernetes\_namespace}=\sim\text{"$namespace"}\}[2\text{m}]))))*100}$ |

**Table 7-17 Response Code Rate**

| Field       | Details                                                                                                                                                                                 |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The rate of different response codes class on SCP.                                                                                                                                      |
| Expression  | $\text{sum}(\text{irate}(\text{ocscp\_metric\_http\_rx\_res\_total}\{\text{kubernetes\_namespace}=\text{"$namespace"}\}[2\text{m}])) \text{ by } (\text{ocscp\_response\_code\_class})$ |

**Table 7-18 scp-worker replicas**

| Field       | Details                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The total number of ready replicas for the scp-worker service.                                                                            |
| Expression  | $\text{kube\_replicaset\_status\_ready\_replicas}\{\text{replicaset}=\sim\text{".*scp-worker.*"}, \text{namespace}=\text{"$namespace"}\}$ |

**Table 7-19 NF Notifications Success**

| Field       | Details                                                                           |
|-------------|-----------------------------------------------------------------------------------|
| Description | The total number of notifications successfully processed by SCP.                  |
| Expression  | $\text{sum}(\text{ocscp\_notification\_nf\_profile\_processing\_success\_total})$ |

**Table 7-20 NF Notifications Failures**

| Field       | Details                                                                           |
|-------------|-----------------------------------------------------------------------------------|
| Description | The total number of notifications failed to be processed by SCP.                  |
| Expression  | $\text{sum}(\text{ocscp\_notification\_nf\_profile\_processing\_failure\_total})$ |

**Table 7-21 Audit Requests Total**

| Field       | Details                                                                              |
|-------------|--------------------------------------------------------------------------------------|
| Description | The total number of audit requests sent by SCP.                                      |
| Expression  | $\text{sum}(\text{ocscp\_audit\_tx\_req\_total}\{\text{namespace}=\text{"ocscp"}\})$ |

**Table 7-22 Audit Responses Total**

| Field       | Details                                                                              |
|-------------|--------------------------------------------------------------------------------------|
| Description | The total number of audit responses received by SCP.                                 |
| Expression  | $\text{sum}(\text{ocscp\_audit\_rx\_res\_total}\{\text{namespace}=\text{"ocscp"}\})$ |

**Table 7-23 NF Subscription Success**

| Field       | Details                                                          |
|-------------|------------------------------------------------------------------|
| Description | The total number of successful subscriptions on SCP per NF type. |
| Expression  | sum(ocscp_subscription_nf_success_total)                         |

**Table 7-24 NF Subscription Failures**

| Field       | Details                                                      |
|-------------|--------------------------------------------------------------|
| Description | The total number of failed subscriptions on SCP per NF type. |
| Expression  | sum(ocscp_subscription_nf_failure_total)                     |

**Table 7-25 NRF Registration Success**

| Field       | Details                                                  |
|-------------|----------------------------------------------------------|
| Description | The total number of successful NRF registrations on SCP. |
| Expression  | sum(ocscp_subscription_nrf_registration_success_total)   |

**Table 7-26 NRF Registration Failure**

| Field       | Details                                                |
|-------------|--------------------------------------------------------|
| Description | The total number of failed NRF registrations on SCP.   |
| Expression  | sum(ocscp_subscription_nrf_registration_failure_total) |

**Table 7-27 NRF Heartbeat Success**

| Field       | Details                                                                |
|-------------|------------------------------------------------------------------------|
| Description | The total number of successful NRF Heartbeats on SCP.                  |
| Expression  | sum(ocscp_subscription_nrf_heartbeat_success_total{namespace="ocscp"}) |

**Table 7-28 NRF Heartbeat Failures**

| Field       | Details                                                                 |
|-------------|-------------------------------------------------------------------------|
| Description | The total number of failed NRF Heartbeats on SCP.                       |
| Expression  | sum(ocscp_subscription_nrf_heartbeat_failures_total{namespace="ocscp"}) |

## 7.1.3 Feature KPIs

The following table provides information on Feature KPIs.

**Table 7-29 Access Token Count in Response**

| Field       | Details                                                          |
|-------------|------------------------------------------------------------------|
| Description | The rate of responses contains the 3gpp-Sbi-Access-Token header. |

**Table 7-29 (Cont.) Access Token Count in Response**

| Field      | Details                                                                                |
|------------|----------------------------------------------------------------------------------------|
| Expression | sum(irate(ocscp_worker_access_token_forwarded_in_tx_res_total{namespace="ocscp"}[2m])) |

**Table 7-30 Received Response count for nnrf-oauth2 service**

| Field       | Details                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Description | Rate of nnrf-oaut2 service responses from NRF.                                                                                         |
| Expression  | sum(irate(ocscp_metric_http_rx_res_total{namespace="ocscp",ocscp_nf_service_type="nnrf-oauth2",ocscp_response_code="200"}[2m]))by(pod) |

**Table 7-31 Coherence Cache Size for AccessToken**

| Field       | Details                                                       |
|-------------|---------------------------------------------------------------|
| Description | Number of access tokens in the cache.                         |
| Expression  | coherence_cache_size{namespace="ocscp",name="accessTokenMap"} |

**Table 7-32 Access Token Count in Transmitted Request**

| Field       | Details                                                                                |
|-------------|----------------------------------------------------------------------------------------|
| Description | Rate of SCP sending the 3gpp-Sbi-Access-Token header in the request.                   |
| Expression  | sum(irate(ocscp_worker_access_token_forwarded_in_tx_req_total{namespace="ocscp"}[2m])) |

**Table 7-33 SCP Worker - Discovery Tx Requests Rate to NRF Proxy**

| Field       | Details                                                                         |
|-------------|---------------------------------------------------------------------------------|
| Description | Rate of worker sends an on-demand discovery request to nrfproxy.                |
| Expression  | sum(irate(ocscp_metric_ondemand_discovery_tx_req_total{namespace="ocscp"}[2m])) |

**Table 7-34 SCP Worker - Discovery Rx Response Rate from NRF Proxy**

| Field       | Details                                                                         |
|-------------|---------------------------------------------------------------------------------|
| Description | Rate of worker receives on-demand discovery response from nrfproxy.             |
| Expression  | sum(irate(ocscp_metric_ondemand_discovery_rx_res_total{namespace="ocscp"}[2m])) |

**Table 7-35 NRF Proxy - Discovery Tx Requests Rate to NRF**

| Field       | Details                                                                       |
|-------------|-------------------------------------------------------------------------------|
| Description | Rate of discovery requests sent to the NRF by nrfproxy.                       |
| Expression  | sum(irate(ocscp_nrf_nf_discovery_tx_req_total{namespace="ocscp"}[2m]))by(pod) |

**Table 7-36 NRF Proxy - Discovery Rx Response Rate from NRF**

| Field       | Details                                                                       |
|-------------|-------------------------------------------------------------------------------|
| Description | Rate of discovery responses received on nrfproxy from NRF.                    |
| Expression  | sum(irate(ocscp_nrf_nf_discovery_rx_res_total{namespace="ocscp"}[2m]))by(pod) |

**Table 7-37 SCP-Worker - Local Discovery Requests Resolution Rate(Cache Hits)**

| Field       | Details                                                                                     |
|-------------|---------------------------------------------------------------------------------------------|
| Description | Rate of worker was able to resolve discovery request using local cache.                     |
| Expression  | sum(irate(ocscp_metric_ondemand_discovery_cache_match_total{namespace="ocscp"}[2m]))by(pod) |

**Table 7-38 NRF Proxy Generated Error response Rate**

| Field       | Details                                                                                 |
|-------------|-----------------------------------------------------------------------------------------|
| Description | Rate of error responses generated by nrfproxy (excluding nrf-returned errors).          |
| Expression  | sum(irate(ocscp_nrfproxy_generated_error_response_total{namespace="ocscp"}[2m]))by(pod) |

**Table 7-39 SCP LCI Tx Rate**

| Field       | Details                                                           |
|-------------|-------------------------------------------------------------------|
| Description | Rate of messages forwarded with SCP's LCI header.                 |
| Expression  | sum(irate(ocscp_metric_scp_lci_tx_total{namespace=~"ocscp"}[2m])) |

**Table 7-40 Per NF Load**

| Field       | Details                           |
|-------------|-----------------------------------|
| Description | The current load of peer NF.      |
| Expression  | ocscp_nf_load{namespace=~"ocscp"} |

**Table 7-41 Peer LCI Rx Rate**

| Field       | Details                                                          |
|-------------|------------------------------------------------------------------|
| Description | Rate of messages received with NF's LCI header.                  |
| Expression  | sum(irate(ocscp_metric_nf_lci_rx_total{namespace=~"ocscp"}[2m])) |

**Table 7-42 Peer LCI Tx Rate**

| Field       | Details                                                          |
|-------------|------------------------------------------------------------------|
| Description | Rate of messages forwarded with NF's LCI header.                 |
| Expression  | sum(irate(ocscp_metric_nf_lci_tx_total{namespace=~"ocscp"}[2m])) |

**Table 7-43 Ingress Rate Limit - Request Throttle Rate**

| Field       | Details                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of requests throttled due to ingress rate limitations.                                                                                                              |
| Expression  | sum(irate(ocscp_metric_ingress_rate_limiting_throttle_req_total{namespace="ocscp"}[2m]))by(ocscp_consumer_fqdn, ocscp_configured_ingress_rate, ocscp_ingress_rl_bucketkey) |

**Table 7-44 Ingress Rate Limit - Rate Limit Not Applied Rate**

| Field       | Details                                                                                                                         |
|-------------|---------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of requests routed without ingress rate limiting treatment.                                                              |
| Expression  | sum(irate(ocscp_metric_ingress_rate_limiting_not_applied_req_total{namespace="ocscp"}[2m]))by(ocscp_consumer_fqdn, ocscp_cause) |

**Table 7-45 Egress Rate Limit - Request Throttle Rate**

| Field       | Details                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of requests throttled due to egress rate limiting.                                                                                                                                                                           |
| Expression  | sum(irate(ocscp_metric_egress_rate_limiting_throttle_req_total{namespace="ocscp"}[2m]))by(ocscp_nf_type, ocscp_producer_fqdn, ocscp_nf_service_type, ocscp_configured_egress_rate, ocscp_egress_rl_bucketkey, ocscp_nf_instance_id) |

**Table 7-46 Egress Rate Limit - Rate Limit Not Applied Rate**

| Field       | Details                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Description | Number of requests routed without egress rate limiting treatment.                                                                             |
| Expression  | sum(irate(ocscp_metric_egress_rate_limiting_not_applied_req_total{namespace="ocscp"}[2m]))by(ocscp_nf_type, ocscp_producer_fqdn, ocscp_cause) |

**Table 7-47 SCP Cache Size**

| Field       | Details                                    |
|-------------|--------------------------------------------|
| Description | Coherence cache size for different caches. |
| Expression  | coherence_cache_size                       |

**Table 7-48 SCP Cache Hits**

| Field       | Details                                                           |
|-------------|-------------------------------------------------------------------|
| Description | Number of coherence cache hits.                                   |
| Expression  | sum(irate(coherence_cache_hits{namespace="ocscp"}[2m])) by (name) |

**Table 7-49 Message Request Rate Per Rate Limit Bucket Key**

| Field       | Details                                      |
|-------------|----------------------------------------------|
| Description | Rate of request received per rate limit key. |



**Table 7-49 (Cont.) Message Request Rate Per Rate Limit Bucket Key**

| Field      | Details                                                                                          |
|------------|--------------------------------------------------------------------------------------------------|
| Expression | sum(irate(ocscp_metric_message_current_request_rate_total{namespace="ocscp"}[2m]))by (bucketKey) |

**Table 7-50 SCP OCI Conveyance Rate**

| Field       | Details                                                               |
|-------------|-----------------------------------------------------------------------|
| Description | Number of messages with SCP's OCI conveyed to peers.                  |
| Expression  | sum(irate(ocscp_worker_oci_conveyance_total{namespace=~"ocscp"}[2m])) |

**Table 7-51 Peer OCI Conveyance Rate**

| Field       | Details                                                                    |
|-------------|----------------------------------------------------------------------------|
| Description | Number of messages with a peer's OCI conveyed to peers.                    |
| Expression  | sum(irate(ocscp_worker_peer_oci_conveyance_total{namespace=~"ocscp"}[2m])) |

**Table 7-52 OCI Enforced Rate**

| Field       | Details                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------|
| Description | Number of messages on which OCI is enforced that are either rerouted to alternate NFs or an error response is sent. |
| Expression  | sum(irate(ocscp_worker_oci_enforced_total{namespace=~"ocscp"}[2m]))                                                 |

**Table 7-53 OCI Unsupported Rx Rate**

| Field       | Details                                                                         |
|-------------|---------------------------------------------------------------------------------|
| Description | Number of messages received with unsupported scope.                             |
| Expression  | sum(irate(ocscp_worker_rx_unsupported_oci_scope_total{namespace=~"ocscp"}[2m])) |

**Table 7-54 SCP Worker - Mediation Tx Requests Rate**

| Field       | Details                                                                        |
|-------------|--------------------------------------------------------------------------------|
| Description | The total number of messages that forwarded to the mediation service from SCP. |
| Expression  | sum(irate(ocscp_mediation_http_tx_total{namespace="ocscp"}[2m])) by (pod)      |

**Table 7-55 SCP Worker -Mediation Rx Response Rate**

| Field       | Details                                                                                  |
|-------------|------------------------------------------------------------------------------------------|
| Description | The total number of messages that the mediation service sends back as a response to SCP. |
| Expression  | sum(irate(ocscp_mediation_http_rx_total{namespace="ocscp"}[2m])) by (pod)                |

Table 7-56 SCP Worker - Mediation Upstream Service Time

| Field       | Details                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------|
| Description | This indicates the total time taken by the mediation to process the request.                                           |
| Expression  | sum(irate(ocscp_mediation_upstream_service_time_ms_total{namespace="ocscp"}[2m])) by (ocscp_med_upstream_service_time) |

# 8

## Traces

The following table provides information of traces for SCP.

**Table 8-1 SCP Traces**

| Field Name                | Description                                                                                                                                                                                              |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| component                 | The software package, framework, library, or module that generated the associated Span.<br><b>Request or Response Type</b><br>: common                                                                   |
| node_id                   | Local information.<br><b>Request or Response Type</b><br>: common                                                                                                                                        |
| method                    | HTTP method of the request for the associated Span. Example: "GET", "POST".<br><b>Request or Response Type</b><br>: request,common                                                                       |
| scheme                    | Url scheme is http.<br><b>Request or Response Type</b><br>: request                                                                                                                                      |
| authority                 | Authority give you details about registered name or server address, along with optional port and user information.<br><b>Request or Response Type</b><br>: request                                       |
| path                      | A path consists of a sequence of path segments separated by a slash ("/") character.<br><b>Request or Response Type</b><br>: request                                                                     |
| 3gpp-sbi-message-priority | This header shall be included in HTTP/2 messages when a priority for the message needs to be conveyed.<br><b>Request or Response Type</b><br>: request                                                   |
| x-forwarded-for           | To identify the originating IP address of a client.<br><b>Request or Response Type</b><br>: request                                                                                                      |
| x-forwarded-proto         | To determine the protocol used between the client and SCP.<br><b>Request or Response Type</b><br>: request                                                                                               |
| x-envoy-internal          | service wants to know whether a request is internal origin or not.<br><b>Request or Response Type</b><br>: request                                                                                       |
| via                       | It is used for tracking message forwards, avoiding request loops, and identifying the protocol capabilities of senders along the request/response chain.<br><b>Request or Response Type</b><br>: request |

Table 8-1 (Cont.) SCP Traces

| Field Name                    | Description                                                                                                                                                                |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| x-request-id                  | The x-request-idheader is used to uniquely identify a request as well as perform stable access logging and tracing.<br><b>Request or Response Type</b><br>: common         |
| payload                       | http request body.<br><b>Request or Response Type</b><br>: request, common                                                                                                 |
| status                        | To determine the http request has been succeeded or not.<br><b>Request or Response Type</b><br>: response                                                                  |
| content-type                  | The Content-Type entity header is used to indicate the media type of the resource.<br><b>Request or Response Type</b><br>: response                                        |
| content-length                | The Content-Length header indicates the size of the entity body in the message, in bytes.<br><b>Request or Response Type</b><br>: response                                 |
| server                        | The Server response-header field contains information about the software used by the origin server to handle the request.<br><b>Request or Response Type</b><br>: response |
| date                          | The time and date, when the request is processed.<br><b>Request or Response Type</b><br>: response                                                                         |
| x-envoy-upstream-service-time | Contains the time in milliseconds spent by the upstream host processing the request.<br><b>Request or Response Type</b><br>: response                                      |
| location                      | To provide information about the location of a newly created resource.<br><b>Request or Response Type</b><br>: response                                                    |
| payload                       | http response body.<br><b>Request or Response Type</b><br>: response                                                                                                       |
| http.url                      | Specifies the request's URL.<br><b>Request or Response Type</b><br>: request, common                                                                                       |
| downstream_cluster            | A downstream host connects to Envoy, sends requests, and receives responses.<br><b>Request or Response Type</b><br>: common                                                |
| user_agent                    | When your browser connects to a website, it includes a User-Agentfield in its HTTPheader.<br><b>Request or Response Type</b><br>: request, common                          |
| http.protocol                 | The communication between client and server over HTTP/2.<br><b>Request or Response Type</b><br>: common                                                                    |

Table 8-1 (Cont.) SCP Traces

| Field Name       | Description                                                                                                                                                                                                                         |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| request_size     | HTTP header size.<br><b>Request or Response Type</b><br>: common                                                                                                                                                                    |
| upstream_cluster | An upstream host receives connections and requests from Envoy and returns responses.<br><b>Request or Response Type</b><br>: common                                                                                                 |
| http.status_code | HTTP response status code for the associated Span. Example: 200, 503, 404<br><b>Request or Response Type</b><br>: common                                                                                                            |
| response_size    | HTTP header size.<br><b>Request or Response Type</b><br>: common                                                                                                                                                                    |
| response_flag    | Additional details about the response or connection, if any.<br><b>Request or Response Type</b><br>:common                                                                                                                          |
| span.kind        | Specifies the role of the span in a RPC communication. In case of HTTP communication it is searching client and server values for this tag.<br><b>Request or Response Type</b><br>: common                                          |
| error            | True, if and only if, the application considers the operation represented by the Span to have failed.<br><b>Request or Response Type</b><br>: common                                                                                |
| x-request-id     | The x-request-idheader is used by Envoy to uniquely identify a request as well as perform stable access logging and tracing<br><b>Request or Response Type</b><br>: request                                                         |
| x-b3-traceid     | The x-b3-traceidHTTP header is used by the Zipkin tracer in Envoy. The TraceId is 64-bit in length and indicates the overall ID of the trace. Every span in a trace shares this ID.<br><b>Request or Response Type</b><br>: request |
| x-b3-spanid      | The x-b3-spanidHTTP header is used by the Zipkin tracer in Envoy. The SpanId is 64-bit in length and indicates the position of the current operation in the trace tree.<br><b>Request or Response Type</b><br>: request             |
| x-b3-sampled     | The x-b3-sampledHTTP header is used by the Zipkin tracer in Envoy. When the sampled flag is either not specified or set to 1, the span will be reported to the tracing system.<br><b>Request or Response Type</b><br>: request      |
| ueidentitytype   | NF type.<br><b>Request or Response Type</b><br>: request                                                                                                                                                                            |
| ueidentityvalue  | SUPI range for NF type.<br><b>Request or Response Type</b><br>: request                                                                                                                                                             |

**Table 8-1 (Cont.) SCP Traces**

| Field Name                     | Description                                                                                                                      |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| x-envoy-expected-rq-timeout-ms | This is the time in milliseconds the router expects the request to be completed.<br><b>Request or Response Type</b><br>: request |

# 9

## SCP Interactions with NRF

SCP allows configuration of multiple NRF sets and determines the network topology with all the configured NRF sets.

SCP can register with an NRF instance as per priority and capacity in each configured NRF set. You can configure an SCP profile at the time of deployment. SCP sends NF details for heartbeat with NRF and updates the mate SCP information in the NF profile after the deployment.

SCP subscribes to any NF status change notification for all the 5G NF types with one of the available NRF instances as per priority and capacity in each configured NRF set using NFStatusSubscribe, NFStatusUnsubscribe, and NFStatusNotify service operations of the Nnrf\_NFManagement service. NF suspended and deregistered notification removes the detected NF information and updates the routing information as required.

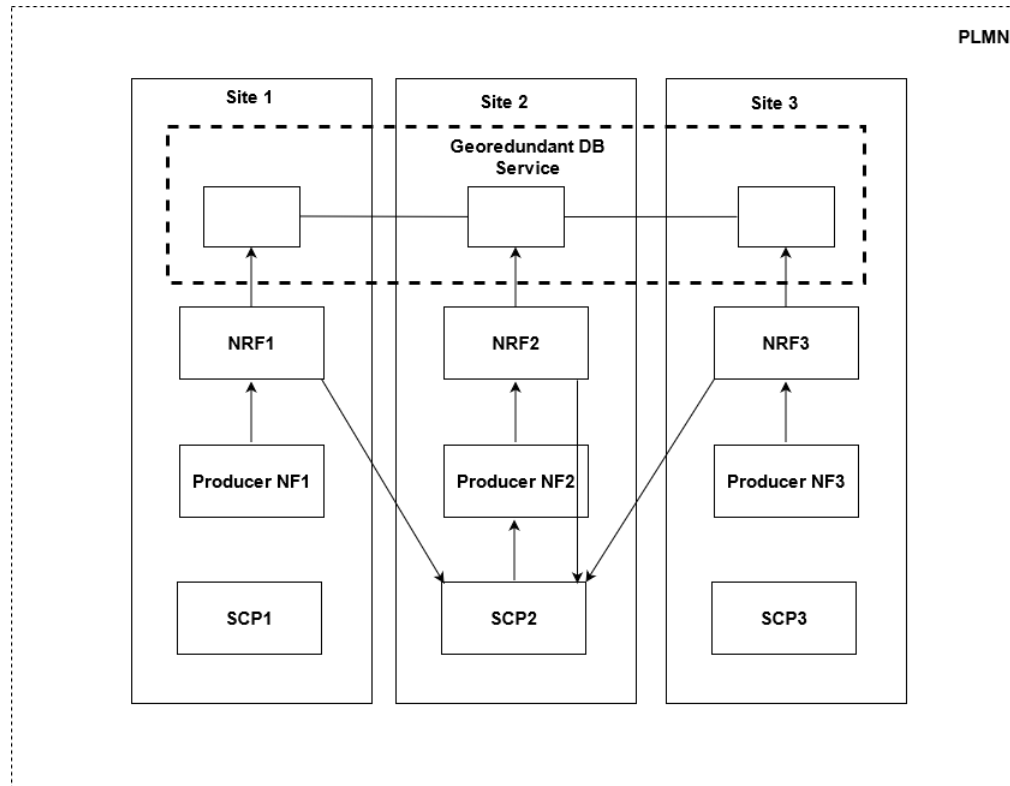
SCP performs periodic 5G NF topology audits with one of the available NRF instances as per priority and capacity in each configured NRF set using the NFListRetrieval and NFProfileRetrieval service operations of the Nnrf\_NFManagement service if nnrf-mgmt services is configured for audit, or SCP can learn profiles using the NRF discovery service if nnrf-disc is configured for audit.

SCP maintains servingScope (serving locality) to SCP instance mapping when it gets NF status change notification from NRF for any other SCP instance that can be used for routing or forwarding the service request between SCP instances wherever applicable.

SCP determines all the SCP instances from NF-SetId published in the SCP profile. SCP instances are identified and grouped based on their respective NFSetId published.

### **Producer NF Registration Notification from NRF to SCP**

The following image is an example of a scenario that describes how SCP receives producer NF registration notifications from NRF instances.

**Figure 9-1 Producer NF Registration Notification from NRF to SCP**

There are three NRF instances, NRF1, NRF2, and NRF3, which are deployed as georedundant NRFs across three sites, in an NRF set. SCP1 and SCP3 do not establish communication with the corresponding NRF instances such as NRF1 and NRF3. However, SCP2 subscribes with NRF2 for all changes for 5G NF types. When producer NF1, NF2, and NF3 register with NRF1, NRF2, and NRF3, respectively, SCP2 receives notification regarding producer NF1, NF2, and NF3 registration from NRF1, NRF2, and NRF3.

SCP uses the `nfStatusNotificationUri` callback URI to receive notifications from NRF. `nfStatusNotificationUri` notifies SCP about registrations, deregistrations, or profile changes of any NF profile. To subscribe to NRF notifications, SCP uses the POST method.

The following format of the callback URI is used by SCP in Subscription requests:

```
http://<scp-worker FQDN or IP>:<scp-worker
Port>/ocscp/scpc-notification/v1/notification/<nrfRegionSetID>/<nftype>/
<UUID>
```

Where,

- The FQDN or IP address is determined by the deployment configuration.
- scp-worker Port indicates the service port of SCP-Worker.



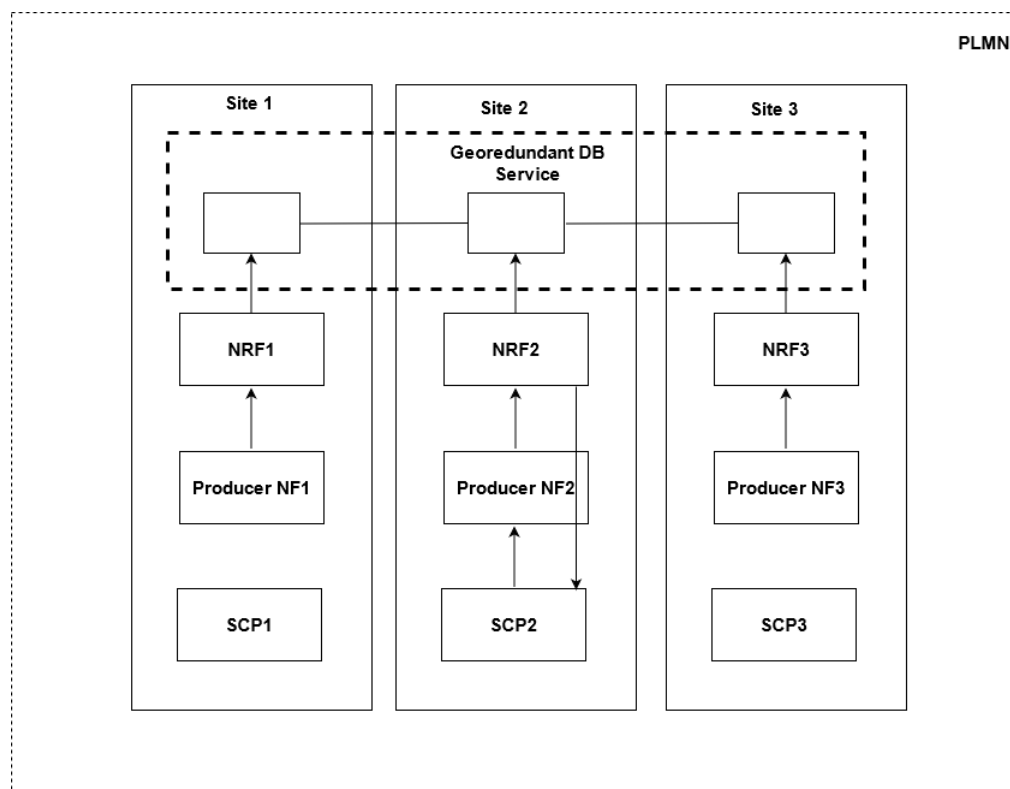
- `nrfRegionSetID` indicates the NRF's region or SetID based on the NRF configuration used during deployment.
- `nfType` indicates the NF type to which the Subscription is sent.
- `UUID` is the Universally Unique ID.

SCP can process notifications containing full NFProfiles that is `nfProfile` or partial profiles that is `profileChanges`. For more information about `nfStatusNotificationUri`, see 3GPP 29.510.

### 5G NF Topology Audit Response from NRF

The following image is an example of a scenario that describes how SCP receives 5G NF topology audit response from NRF.

**Figure 9-2 5G NF Topology Audit Response from NRF**



There are three NRF instances, NRF1, NRF2, and NRF3, which are deployed as georedundant NRFs across three sites, in an NRF set. Producer NF1, NF2, and NF3 register with NRF1, NRF2, and NRF3, respectively. SCP1 and SCP3 do not establish communication with the corresponding NRF instances such as NRF1 and NRF3. When SCP2 performs period audit for 5G NF types with NRF2, SCP2 receives audit response from NRF2 with all producer NF1, NF2, and NF3 irrespective of where they are registered.

# 10

## Supported NF Types

SCP supports the following NF types and service types.

**Table 10-1 Supported NF Types**

| Network Function | Service Types                                                                                                                                                                              |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5G_EIR           | n5g-eir-eic                                                                                                                                                                                |
| AMF              | namf-comm, namf-evts, namf-loc, namf-mt                                                                                                                                                    |
| AUSF             | nausf-auth, nausf-sorprotection, nausf-upuprotection                                                                                                                                       |
| BSF              | nbsf-management                                                                                                                                                                            |
| CHF              | nchf-convergedcharging, nchf-spendinglimitcontrol, nchf-spendinglimitcontrol                                                                                                               |
| LMF              | nlmf-loc                                                                                                                                                                                   |
| NEF              | nnef-pfdmanagement, nnef-eventexposure, nnef-afsessionwithqos                                                                                                                              |
| NRF              | nnrf-disc, nnrf-nfm                                                                                                                                                                        |
| NSSF             | nssf-nssaiavailability, nnssf-nsselection                                                                                                                                                  |
| NWDAF            | nnwdaf-analyticsinfo, nnwdaf-eventssubscription                                                                                                                                            |
| PCF              | npcf-am-policy-control, npcf-bdtpolicycontrol, npcf-eventexposure, npcf-policyauthorization, npcf-smpolicycontrol, npcf-ue-policy-control, ampolicy, bdtpolicycontrol, smpolicy, ue-policy |
| SEPP             | NA                                                                                                                                                                                         |
| SCP              | nscp-5g-sbi-proxy<br><b>Note:</b> This service is supported only in the Release 15 deployment model.                                                                                       |
| SMF              | nsmf-event-exposure, nsmf-pdusession                                                                                                                                                       |
| SMSF             | nsmsf-sms                                                                                                                                                                                  |
| UDM              | nudm-ee, nudm-pp, nudm-sdm, nudm-ueau, nudm-uecm                                                                                                                                           |
| UDR              | nudr-dr, nudr-group-id-map                                                                                                                                                                 |
| NA               | 5g-sbi-notification, nmediation-http, ocscp-sds, scpc-notification<br><b>Note:</b> Notifications from NRF to scpc-notification will be pegged with the service type as scpc-notification.  |

# Supported 3GPP Headers

The following table lists the headers supported by SCP:

**Table 11-1 Supported 3GPP Custom Headers**

| Custom Header Name          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3gpp-Sbi-Message-Priority   | This header is used to specify the HTTP/2 message priority for 3GPP service based interfaces.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 3gpp-Sbi-Callback           | The header is used to identify a particular type of callback, for example, notification.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 3gpp-Sbi-Target-apiRoot     | <p>The header contains the apiRoot of the target URI in a message request sent to an SCP instance when using indirect communication such as Model C and Model D. SCP uses this header to indicate the apiRoot of the target URI if a new HTTP server is selected or reselected and if there is no location header in the message response. SCP adds this header to message responses when:</p> <ul style="list-style-type: none"> <li>3gpp-Sbi-Discovery-target-nf-set-id is present in the message request.</li> <li>3gpp-Sbi-Target-apiRoot and 3GPP-Sbi-Disocvery-target-NfSetid are present in the message request.</li> <li>3gpp-Sbi-Target-apiRoot and 3gpp-sbi-routing-binding are present in the message request.</li> </ul> |
| 3gpp-Sbi-Routing-Binding    | This header is used in a service request to signal binding information to direct the service request to an HTTP server that has the targeted NF service resource context.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 3gpp-Sbi-Binding            | This header is used to signal binding information related to an NF service resource to a future consumer, such as an HTTP client, of that resource.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 3gpp-Sbi-Discovery-*        | This header, which begins with the prefix 3gpp-Sbi-Discovery, is used in indirect communication mode for discovery and selection of a suitable producer by the SCP. Such headers can be included in any SBI message and include information allowing an SCP to find a suitable producer based on the consumer's included delegated discovery parameters.                                                                                                                                                                                                                                                                                                                                                                             |
| 3gpp-Sbi-Producer-Id        | <p>This header contains Instance ID of the producer NF. In case of alternate routing in indirect communication modes such as Model C or Model D, this header is used in a message response from SCP to the consumer NF to identify the producer NF. SCP adds this header to message responses when:</p> <ul style="list-style-type: none"> <li>3gpp-Sbi-Discovery-target-nf-set-id is present in the message request.</li> <li>3gpp-Sbi-Target-apiRoot and 3GPP-Sbi-Disocvery-target-NfSetid are present in the message request.</li> <li>3gpp-Sbi-Target-apiRoot and 3gpp-sbi-routing-binding are present in the message request.</li> </ul>                                                                                        |
| 3gpp-Sbi-Lci                | This header is used by a producer NF to send Load Control Information (LCI) to the consumer NF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3gpp-Sbi-Client-Credentials | This header is used by a consumer NF to send a Client Credential Assertion (CCA) to the NRF or to the producer NF.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 3gpp-Sbi-Nrf-Uri            | This header is used to indicate the NRF API URIs to be used for a given service request, for example, in indirect communication with delegated discovery as a result of an NSSF query.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3gpp-Sbi-Target-Nf-Id       | This header is used in a 307 Temporary Redirect or 308 Permanent Redirect response to identify the target NF service instance towards which the request is redirected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

**Table 11-1 (Cont.) Supported 3GPP Custom Headers**

| Custom Header Name        | Description                                                                                                                                                                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3gpp-Sbi-Access-Scope     | This header is used in a service request for indirect communication to indicate the access scope of the service request for NF service access authorization.                                                                                                                                                                          |
| 3gpp-Sbi-Access-Token     | This header is used in a service response forwarded by the SCP to an NF service consumer to provide an access token for possible reuse in subsequent service requests.                                                                                                                                                                |
| 3gpp-Sbi-Correlation-Info | This header may be used to contain correlation information, for example, UE identity, that may be used by an operator in various offline network management, performance analysis and troubleshooting tools/applications to identify messages (requests, responses, subscriptions, notifications) related to a particular subscriber. |

SCP also supports the HTTP standard headers. For more information, see *3GPP TS 29.500 V16.10.0, Table 5.2.2.2-1*.