

# Oracle® Communications

## Cloud Native Core, Network Repository Function Troubleshooting Guide



Release 25.1.201  
G34590-03  
October 2025

ORACLE®

Copyright © 2021, 2025, Oracle and/or its affiliates.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, MySQL, and NetSuite are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

# Contents

|         |                                     |    |
|---------|-------------------------------------|----|
| 1       | Introduction                        |    |
| 1.1     | Overview                            | 1  |
| 1.2     | Reference                           | 1  |
| 2       | Logs                                |    |
| 2.1     | Log Levels                          | 1  |
| 2.2     | Collecting Logs                     | 3  |
| 2.3     | Understanding Logs                  | 4  |
| 3       | Debug Tool                          |    |
| 3.1     | Preconfiguration Steps              | 1  |
| 3.2     | Deploy Debug Tool                   | 8  |
| 3.3     | Tools Tested in Debug Container     | 9  |
| 3.4     | Debug Tool Configuration Parameters | 15 |
| 4       | Troubleshooting NRF                 |    |
| 4.1     | Generic Checklist                   | 1  |
| 4.2     | Deployment Related Issues           | 4  |
| 4.2.1   | Installation                        | 5  |
| 4.2.1.1 | Helm Install Failure                | 5  |
| 4.2.1.2 | Custom Value File Parse Failure     | 7  |
| 4.2.2   | Postinstallation                    | 8  |
| 4.2.2.1 | Helm Test Error Scenarios           | 8  |
| 4.3     | Upgrade or Rollback Failure         | 8  |
| 4.4     | Troubleshooting CDS                 | 9  |
| 4.5     | TLS Connection Failure              | 10 |
| 5       | NRF Alerts                          |    |
| 5.1     | System Level Alerts                 | 1  |
| 5.1.1   | OcnrfNfStatusUnavailable            | 2  |

|        |                                                       |    |
|--------|-------------------------------------------------------|----|
| 5.1.2  | OcnrfPodsRestart                                      | 3  |
| 5.1.3  | NnrfNFManagementServiceDown                           | 4  |
| 5.1.4  | NnrfAccessTokenServiceDown                            | 7  |
| 5.1.5  | NnrfNFDiscoveryServiceDown                            | 8  |
| 5.1.6  | OcnrfRegistrationServiceDown                          | 9  |
| 5.1.7  | OcnrfSubscriptionServiceDown                          | 10 |
| 5.1.8  | OcnrfDiscoveryServiceDown                             | 11 |
| 5.1.9  | OcnrfAccessTokenServiceDown                           | 12 |
| 5.1.10 | OcnrfAuditorServiceDown                               | 13 |
| 5.1.11 | OcnrfConfigurationServiceDown                         | 14 |
| 5.1.12 | OcnrfAppInfoServiceDown                               | 15 |
| 5.1.13 | OcnrfArtisanServiceDown                               | 16 |
| 5.1.14 | OcnrfAlternateRouteServiceDown                        | 17 |
| 5.1.15 | OcnrfPerfInfoServiceDown                              | 18 |
| 5.1.16 | OcnrfIngressGatewayServiceDown                        | 19 |
| 5.1.17 | OcnrfEgressGatewayServiceDown                         | 20 |
| 5.1.18 | OcnrfTotalIngressTrafficRateAboveMinorThreshold       | 21 |
| 5.1.19 | OcnrfTotalIngressTrafficRateAboveMajorThreshold       | 22 |
| 5.1.20 | OcnrfTotalIngressTrafficRateAboveCriticalThreshold    | 23 |
| 5.1.21 | OcnrfTransactionErrorRateAbove0Dot1Percent            | 24 |
| 5.1.22 | OcnrfTransactionErrorRateAbove1Percent                | 24 |
| 5.1.23 | OcnrfTransactionErrorRateAbove10Percent               | 25 |
| 5.1.24 | OcnrfTransactionErrorRateAbove25Percent               | 26 |
| 5.1.25 | OcnrfTransactionErrorRateAbove50Percent               | 27 |
| 5.1.26 | OcnrfTotalEgressTrafficRateAboveCriticalThreshold     | 28 |
| 5.1.27 | OcnrfTotalForwardingTrafficRateAboveCriticalThreshold | 29 |
| 5.1.28 | OcnrfHeapUsageCrossedMinorThreshold                   | 29 |
| 5.1.29 | OcnrfHeapUsageCrossedMajorThreshold                   | 30 |
| 5.1.30 | OcnrfHeapUsageCrossedCriticalThreshold                | 31 |
| 5.2    | Service Level Alerts                                  | 31 |
| 5.2.1  | OcnrfAccessTokenRequestsRejected                      | 31 |
| 5.2.2  | OcnrfAuditorMultiplePodUnavailable                    | 32 |
| 5.2.3  | OcnrfAppInfoMultiplePodUnavailable                    | 32 |
| 5.2.4  | OcnrfPerfInfoMultiplePodUnavailable                   | 33 |
| 5.2.5  | OcnrfTotalSLFRateAboveCriticalThreshold               | 33 |
| 5.2.6  | OcnrfTotalDiscoveryRateAboveCriticalThreshold         | 34 |
| 5.2.7  | OcnrfAccessTokenRequestsAboveThreshold                | 34 |
| 5.2.8  | OcnrfNfUpdateRequestsAboveThreshold                   | 35 |
| 5.2.9  | OcnrfNfHeartBeatRequestsAboveThreshold                | 35 |
| 5.2.10 | OcnrfRegisteredNfCountAboveThreshold                  | 36 |
| 5.2.11 | OcnrfNfProfileSizeAboveThreshold                      | 37 |
| 5.2.12 | OcnrfDiscoveryResponseSizeAboveThreshold              | 37 |

|         |                                                       |    |
|---------|-------------------------------------------------------|----|
| 5.2.13  | OcnrfTotalSubscriptionsAboveThreshold                 | 38 |
| 5.2.14  | OcnrfDiscoveryRequestsForUDRAboveThreshold            | 38 |
| 5.2.15  | OcnrfDiscoveryRequestsForUDMAboveThreshold            | 39 |
| 5.2.16  | OcnrfDiscoveryRequestsForAMFAboveThreshold            | 39 |
| 5.2.17  | OcnrfDiscoveryRequestsForSMFAboveThreshold            | 40 |
| 5.3     | NfProfile Status Change Alerts                        | 40 |
| 5.3.1   | OcnrfRegisteredPCFsBelowCriticalThreshold             | 40 |
| 5.3.2   | OcnrfRegisteredPCFsBelowMajorThreshold                | 41 |
| 5.3.3   | OcnrfRegisteredPCFsBelowMinorThreshold                | 43 |
| 5.3.4   | OcnrfRegisteredPCFsBelowThreshold                     | 44 |
| 5.3.5   | OcnrfTotalNFsRegisteredBelowCriticalThreshold         | 45 |
| 5.3.6   | OcnrfTotalNFsRegisteredBelowMajorThreshold            | 45 |
| 5.3.7   | OcnrfTotalNFsRegisteredBelowMinorThreshold            | 46 |
| 5.3.8   | OcnrfTotalNFsRegisteredApproachingMinorThreshold      | 47 |
| 5.3.9   | OcnrfNFStatusTransitionToRegistered                   | 48 |
| 5.3.10  | OcnrfNFServiceStatusTransitionToRegistered            | 48 |
| 5.3.11  | OcnrfNFStatusTransitionToSuspended                    | 49 |
| 5.3.12  | OcnrfNFServiceStatusTransitionToSuspended             | 50 |
| 5.3.13  | OcnrfNFStatusTransitionToUndiscoverable               | 51 |
| 5.3.14  | OcnrfNFServiceStatusTransitionToUndiscoverable        | 52 |
| 5.3.15  | OcnrfNFStatusTransitionToDeregistered                 | 53 |
| 5.3.16  | OcnrfNFServiceStatusTransitionToDeregistered          | 54 |
| 5.4     | Feature Specific Alerts                               | 55 |
| 5.4.1   | KeyID for AccessToken Feature                         | 55 |
| 5.4.1.1 | OcnrfAccessTokenCurrentKeyIdNotConfigured             | 55 |
| 5.4.1.2 | OcnrfAccessTokenCurrentKeyIdInvalidDetails            | 56 |
| 5.4.1.3 | OcnrfOAuthCurrentKeyNotConfigured                     | 56 |
| 5.4.1.4 | OcnrfOAuthCurrentKeyDataHealthStatus                  | 57 |
| 5.4.1.5 | OcnrfOAuthNonCurrentKeyDataHealthStatus               | 57 |
| 5.4.1.6 | OcnrfOAuthCurrentCertificateExpiringIn1Week           | 58 |
| 5.4.1.7 | OcnrfOAuthNonCurrentCertificateExpiringIn1Week        | 58 |
| 5.4.1.8 | OcnrfOAuthCurrentCertificateExpiringIn30days          | 59 |
| 5.4.1.9 | OcnrfOAuthNonCurrentCertificateExpiringIn30days       | 59 |
| 5.4.2   | Overload Control Based on Percentage Discards Feature | 60 |
| 5.4.2.1 | OcnrfMemoryUsageCrossedMinorThreshold                 | 60 |
| 5.4.2.2 | OcnrfMemoryUsageCrossedMajorThreshold                 | 61 |
| 5.4.2.3 | OcnrfMemoryUsageCrossedCriticalThreshold              | 62 |
| 5.4.2.4 | OcnrfOverloadThresholdBreachedL1                      | 62 |
| 5.4.2.5 | OcnrfOverloadThresholdBreachedL2                      | 63 |
| 5.4.2.6 | OcnrfOverloadThresholdBreachedL3                      | 64 |
| 5.4.2.7 | OcnrfOverloadThresholdBreachedL4                      | 64 |
| 5.4.3   | DNS NAPTR Update Feature                              | 65 |

|          |                                                                         |    |
|----------|-------------------------------------------------------------------------|----|
| 5.4.3.1  | OcnrfDnsNaptrFailureResponseStatus                                      | 65 |
| 5.4.3.2  | OcnrfAlternateRouteUpstreamDnsRetryExhausted                            | 66 |
| 5.4.4    | Notification Retry Feature                                              | 66 |
| 5.4.4.1  | OcnrfNotificationRetryExhausted                                         | 66 |
| 5.4.4.2  | OcnrfNotificationFailureOtherThanRetryExhausted                         | 67 |
| 5.4.5    | NRF Message Feed Feature                                                | 67 |
| 5.4.5.1  | OcnrfIngressGatewayDDUnreachable                                        | 67 |
| 5.4.5.2  | OcnrfEgressGatewayDDUnreachable                                         | 68 |
| 5.4.6    | Subscription Limit Feature                                              | 68 |
| 5.4.6.1  | OcnrfSubscriptionGlobalCountWarnThresholdBreached                       | 68 |
| 5.4.6.2  | OcnrfSubscriptionGlobalCountMinorThresholdBreached                      | 69 |
| 5.4.6.3  | OcnrfSubscriptionGlobalCountMajorThresholdBreached                      | 69 |
| 5.4.6.4  | OcnrfSubscriptionGlobalCountCriticalThresholdBreached                   | 70 |
| 5.4.6.5  | OcnrfSubscriptionMigrationInProgressWarn                                | 70 |
| 5.4.6.6  | OcnrfSubscriptionMigrationInProgressCritical                            | 71 |
| 5.4.7    | Pod Protection Support for NRF Subscription Microservice Feature        | 71 |
| 5.4.7.1  | OcnrfPodInDangerOfCongestionState                                       | 71 |
| 5.4.7.2  | OcnrfPodPendingMessageCountInDangerOfCongestionState                    | 72 |
| 5.4.7.3  | OcnrfPodInCongestedState                                                | 73 |
| 5.4.7.4  | OcnrfPodCpuUsageInCongestedState                                        | 74 |
| 5.4.7.5  | OcnrfPodCpuUsageInDangerOfCongestionState                               | 75 |
| 5.4.7.6  | OcnrfPodPendingMessageCountInCongestedState                             | 76 |
| 5.4.8    | Controlled Shutdown of NRF Feature                                      | 77 |
| 5.4.8.1  | OcnrfOperationalStateCompleteShutdown                                   | 77 |
| 5.4.8.2  | OcnrfAuditOperationsPaused                                              | 78 |
| 5.4.9    | Monitoring the Availability of SCP Using SCP Health APIs Feature        | 78 |
| 5.4.9.1  | OcnrfAllSCPsMarkedAsUnavailable                                         | 79 |
| 5.4.9.2  | OcnrfSCPMarkedAsUnavailable                                             | 79 |
| 5.4.10   | CCA Header Validation in NRF for Access Token Service Operation Feature | 79 |
| 5.4.10.1 | OcnrfCcaRootCertificateExpiringIn4Hours                                 | 79 |
| 5.4.10.2 | OcnrfCcaRootCertificateExpiringIn1Day                                   | 80 |
| 5.4.10.3 | OcnrfCcaRootCertificateExpiringIn5Days                                  | 80 |
| 5.4.11   | NRF Georedundancy Feature                                               | 81 |
| 5.4.11.1 | OcnrfDbReplicationStatusInactive                                        | 81 |
| 5.4.11.2 | OcnrfReplicationStatusMonitoringInactive                                | 82 |
| 5.4.12   | XFCC Header Validation Feature                                          | 82 |
| 5.4.12.1 | OcnrfNfAuthenticationFailureRequestsRejected                            | 82 |
| 5.4.13   | Enhanced NRF Set Based Deployment (NRF Growth) Feature                  | 83 |
| 5.4.13.1 | OcnrfRemoteSetNrfSyncFailed                                             | 83 |
| 5.4.13.2 | OcnrfSyncFailureFromAllNrfOfAnyRemoteSet                                | 83 |
| 5.4.13.3 | OcnrfSyncFailureFromAllNrfOfAllRemoteSets                               | 84 |
| 5.4.13.4 | OcnrfCacheDataServiceDown                                               | 85 |

|          |                                                               |     |
|----------|---------------------------------------------------------------|-----|
| 5.4.13.5 | OcnrfDatabaseFallbackUsed                                     | 85  |
| 5.4.13.6 | OcnrfTotalNFsRegisteredAtSegmentBelowMinorThreshold           | 86  |
| 5.4.13.7 | OcnrfTotalNFsRegisteredAtSegmentBelowMajorThreshold           | 87  |
| 5.4.13.8 | OcnrfTotalNFsRegisteredAtSegmentBelowCriticalThreshold        | 88  |
| 5.4.14   | Ingress Gateway Pod Protection Feature                        | 89  |
| 5.4.14.1 | OcnrfIngressGatewayPodInDangerOfCongestionState               | 89  |
| 5.4.14.2 | OcnrfIngressGatewayPodInCongestedState                        | 90  |
| 5.4.14.3 | OcnrfIngressGatewayPodCpuUsageInCongestedState                | 91  |
| 5.4.14.4 | OcnrfIngressGatewayPodCpuUsageInDangerOfCongestionState       | 91  |
| 5.4.14.5 | OcnrfIngressGatewayPodPendingMessageInCongestedState          | 92  |
| 5.4.14.6 | OcnrfIngressGatewayPodPendingMessageInDangerOfCongestionState | 93  |
| 5.4.15   | Subscriber Location Function Feature                          | 93  |
| 5.4.15.1 | OcnrfMaxSlfAttemptsExhausted                                  | 93  |
| 5.4.16   | EmptyList in Discovery Response Feature                       | 94  |
| 5.4.16.1 | OcnrfNFDDiscoveryEmptyListObservedNotification                | 94  |
| 5.4.17   | Support for TLS Feature                                       | 95  |
| 5.4.17.1 | OcnrfTLSCertificateExpireMinor                                | 95  |
| 5.4.17.2 | OcnrfTLSCertificateExpireMajor                                | 96  |
| 5.4.17.3 | OcnrfTLSCertificateExpireCritical                             | 96  |
| 5.4.18   | Egress Gateway Pod Throttling                                 | 97  |
| 5.4.18.1 | OcnrfEgressPerPodDiscardRateAboveMajorThreshold               | 97  |
| 5.4.18.2 | OcnrfEgressPerPodDiscardRateAboveCriticalThreshold            | 97  |
| 5.4.19   | Ingress Gateway Pod Protection Using Rate Limiting            | 98  |
| 5.4.19.1 | OcnrfIngressDiscardDueToRateLimitMajorThreshold               | 98  |
| 5.4.19.2 | OcnrfIngressDiscardDueToRateLimitCriticalThreshold            | 99  |
| 5.4.20   | Egress Gateway Pod Protection Using Rate Limiting             | 99  |
| 5.4.20.1 | OcnrfEgressDiscardDueToRateLimitMajorThreshold                | 99  |
| 5.4.20.2 | OcnrfEgressDiscardDueToRateLimitCriticalThreshold             | 100 |
| 5.5      | NRF Alert Configuration                                       | 101 |
| 5.5.1    | Disable Alerts                                                | 101 |
| 5.5.2    | Configuring SNMP Notifier                                     | 102 |

# Preface

- [Documentation Accessibility](#)
- [Diversity and Inclusion](#)
- [Conventions](#)

## Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

### Access to Oracle Support

Oracle customer access to and use of Oracle support services will be pursuant to the terms and conditions specified in their Oracle order for the applicable services.

## Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

## Conventions

The following text conventions are used in this document:

| Convention      | Meaning                                                                                                                                |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>boldface</b> | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.         |
| <i>italic</i>   | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.                          |
| monospace       | Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter. |

# My Oracle Support

My Oracle Support (<https://support.oracle.com>) is your initial point of contact for all product support and training needs. A representative at Customer Access Support can assist you with My Oracle Support registration.

Call the Customer Access Support main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at <http://www.oracle.com/us/support/contact/index.html>. When calling, make the selections in the sequence shown below on the Support telephone menu:

- For Technical issues such as creating a new Service Request (SR), select **1**.
- For Non-technical issues such as registration or assistance with My Oracle Support, select **2**.
- For Hardware, Networking and Solaris Operating System Support, select **3**.

You are connected to a live agent who can assist you with My Oracle Support registration and opening a support ticket.

My Oracle Support is available 24 hours a day, 7 days a week, 365 days a year.

# Acronyms

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

**Table    Acronyms**

| Term                       | Definition                                                                                                                                                                                                                                         |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3GPP                       | 3rd Generation Partnership Project                                                                                                                                                                                                                 |
| 5G-AN                      | 5G Access Network                                                                                                                                                                                                                                  |
| 5GC                        | 5G Core Network                                                                                                                                                                                                                                    |
| 5G System                  | 3GPP system consisting of 5G Access Network (AN), 5G Core Network and UE                                                                                                                                                                           |
| AMF                        | Access and Mobility Management Function                                                                                                                                                                                                            |
| API Gateway                | An API gateway is programming that sits in front of an API (Application Programming Interface) and is the single-entry point for a defined group of microservices                                                                                  |
| CNE                        | Cloud Native Environment                                                                                                                                                                                                                           |
| DD                         | Data Director                                                                                                                                                                                                                                      |
| Dimension                  | Dimension is a tag of Metric. For example, "ocnrf_nfRegister_rx_requests_total {{ OriginatorNfType }} {{NrfLevel }} {{NfInstanceId }}" where the dimensions are: OriginatorNfType, NrfLevel, and NfInstanceId.                                     |
| DNS                        | Domain Name System                                                                                                                                                                                                                                 |
| FQDN                       | Fully Qualified Domain Name                                                                                                                                                                                                                        |
| K8s                        | Kubernetes                                                                                                                                                                                                                                         |
| KPI                        | Key Performance Indicator                                                                                                                                                                                                                          |
| MMI                        | Machine Machine Interface                                                                                                                                                                                                                          |
| MPS                        | Messages Per Second                                                                                                                                                                                                                                |
| NDB                        | Network Database                                                                                                                                                                                                                                   |
| NF                         | Network Function<br>A functional building block within a network infrastructure, which has well defined external interfaces and defined functional behavior. In practical terms, a network function is often a network node or physical appliance. |
| Network Slice              | A logical network that provides specific network capabilities and network characteristics.                                                                                                                                                         |
| Network Slice instance     | A set of Network Function instances and the required resources.<br>For example, compute, storage, and networking resources that form a deployed Network Slice.                                                                                     |
| NF Consumer                | A generic way to refer to an NF which consumes services provided by another NF. For example, an AMF is referred to as a Consumer when it consumes AMPolicy services provided by the PCF.                                                           |
| NF Instance                | A specific instance of a network function type.                                                                                                                                                                                                    |
| NF Producer or NF Provider | A generic way to refer to an NF which provides services that can be consumed by another NF. For example, a PCF is a provider NF and provides AMPolicy Services                                                                                     |

**Table (Cont.) Acronyms**

| Term                         | Definition                                                                                                                                                                                               |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NRF                          | Network Repository Function                                                                                                                                                                              |
| PCF                          | Policy Control Function                                                                                                                                                                                  |
| PLMN                         | Public Land Mobile Network                                                                                                                                                                               |
| Resiliency                   | The ability of the NFV framework to limit disruption and return to normal or at a minimum acceptable service delivery level in the face of a fault, failure, or an event that disrupts normal operation. |
| SASL                         | Simple Authentication and Security Layer                                                                                                                                                                 |
| Scaling                      | Ability to dynamically extend or reduce resources granted to the Virtual Network Function (VNF) as needed. This includes scaling out/in or scaling up/down.                                              |
| Scaling Out/In/ Horizontally | The ability to scale by adding or removing resource instances, for example, VMs. It is also known as scaling Horizontally.                                                                               |
| Scaling Up/Down/ Vertically  | The ability to scale by changing allocated resources, for example, increase or decrease memory, CPU capacity, or storage size.                                                                           |
| SCP                          | Service Communication Proxy                                                                                                                                                                              |
| SEPP                         | Security Edge Protection Proxy                                                                                                                                                                           |
| SLF                          | Subscriber Location Function                                                                                                                                                                             |
| SMF                          | Session Management Function                                                                                                                                                                              |
| URI                          | Uniform Resource Identifier                                                                                                                                                                              |

# What's New in This Guide

This section lists the documentation updates for release 25.1.2xx.

## Release 25.1.201 - G34590-03, October 2025

Added the following alerts in the [Egress Gateway Pod Protection Using Rate Limiting](#) section:

- [OcnrfEgressDiscardDueToRateLimitMajorThreshold](#)
- [OcnrfEgressDiscardDueToRateLimitCriticalThreshold](#)

## Release 25.1.200 - G34590-02, July 2025

Updated the alert name in the document from `OcnrfHeapUsageCrossedMajorThreshold` to `OcnrfHeapUsageCrossedCriticalThreshold` in the [OcnrfHeapUsageCrossedCriticalThreshold](#) section.

## Release 25.1.200 - G34590-01, July 2025

- Removed the `nrfTxId` attribute from the [Understanding Logs](#) section as it is deprecated.
- Added the following alerts in the [Ingress Gateway Pod Protection Using Rate Limiting](#) section:
  - [OcnrfIngressDiscardDueToRateLimitMajorThreshold](#)
  - [OcnrfIngressDiscardDueToRateLimitCriticalThreshold](#)

# 1

## Introduction

This document provides information about troubleshooting Oracle Communications Cloud Native Core, Network Repository Function (NRF).

### 1.1 Overview

NRF is a key component of the 5G Service Based Architecture. NRF maintains an updated repository of all the Network Functions (NFs) available in the operator's network. It also maintains the services provided by each of the NFs in the 5G core that is expected to be instantiated, scaled, and terminated with minimal to no manual intervention. In addition to serving as a repository of the services, NRF also supports discovery mechanisms that allow NFs to discover each other and get the updated status of the desired NFs.

This guide provides extensive information about resolving problems you might experience while installing and configuring NRF. It also contains information about tools available to help you collect and analyze diagnostic data.

#### Note

The performance and capacity of the NRF system may vary based on the call model, Feature or Interface configuration, and underlying CNE and hardware environment.

### 1.2 Reference

Following are the reference documents:

- *Oracle Communications Cloud Native Core, Cloud Native Environment Installation and Upgrade Guide*
- *Oracle Communications Cloud Native Core, cnDBTier Disaster Recovery Guide*
- *Oracle Communications Cloud Native Core, Network Repository Function User Guide*
- *Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide*
- *Oracle Communications Cloud Native Core, Data Collector Guide*

# 2

## Logs

This chapter explains the process to retrieve the logs and status that can be used for effective troubleshooting. The Oracle Communications Cloud Native Core, Network Repository Function (NRF) provides various sources of information that may be helpful in the troubleshooting process.

### 2.1 Log Levels

Logs register system events along with their date and time of occurrence. They also provide important details about a chain of events that could have led to an error or problem.

#### Supported Log Levels

For NRF, the log level for a microservice can be set to any of the following valid values:

- **TRACE:** A log level describing events showing step by step execution of your code that can be ignored during the standard operation, but may be useful during extended debugging sessions.
- **DEBUG:** A log level used for events considered to be useful during software debugging when more granular information is needed.
- **INFO:** The standard log level indicating that something happened, the application entered a certain state, etc.
- **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 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 hits an issue preventing one or more functionalities from properly functioning.

#### Configuring Log Levels

To view logging configurations and update logging levels, use the Logging Level page under Logging Level Options on the Cloud Native Core (CNC) Console. For more information, see the section "Logging Level Options" in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

#### Configuring the Stack Trace Depth

NRF collects the stack trace when an exception occurs. These stack trace runs through multiple classes. NRF includes all the error stack traces in the log messages resulting in occupying the log storage space. Currently, NRF does not allow the users to configure the stack trace depth when a Java exception occurs.

From 25.1.100, NRF allows the users to configure the depth of the stack trace to be included when a Java exception occurs. The user can decide the depth of stack traces that should be included in the error log messages. Configure the `global.maxJavaStackTraceDepth` parameter in the global parameters section of `ocnrf_custom_values_25.1.200.yaml` to define the depth of the stack trace depth that should be included in the log messages. This is a reference

variable. This value can also be configured at each NRF microservice. For more information about the above-mentioned parameter, see the "Global Parameters" section in *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*.

#### Sample Stack Trace

- When the value of is set as 0, all the stack traces are included:

```
{
  "instant":
  {
    "epochSecond":1733138161,"nanoOfSecond":529210823},
  "thread":"NfRegistration-DbSchemaVersionInfo-TablePolling2-
  thread-1",
  "level":"ERROR",
  "loggerName":"com.oracle.cgbu.cne.nrf.nfregistration.service.helper.DbSchemaVersionInfo",
  "message":"{logMsg=An exception thrown by Table Polling Thread, Exception message=null, stackTrace=[com.oracle.cgbu.cne.nrf.nfregistration.service.helper.DbSchemaVersionInfo.reloadSiteAndNetworkVersionInfo(DbSchemaVersionInfo.java:148), com.oracle.cgbu.cne.nrf.nfregistration.service.helper.DbSchemaVersionInfo.lambda$startTablePollingThread$0(DbSchemaVersionInfo.java:120), org.springframework.scheduling.support.DelegatingErrorHandlingRunnable.run(DelegatingErrorHandlingRunnable.java:54), java.base/java.util.concurrent.Executors$RunnableAdapter.call(Executors.java:539), java.base/java.util.concurrent.FutureTask.runAndReset(FutureTask.java:305), java.base/java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.run(ScheduledThreadPoolExecutor.java:305), java.base/java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1136), java.base/java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:635), java.base/java.lang.Thread.run(Thread.java:833)]}",
  "endOfBatch":false,
  "loggerFqn":"org.apache.logging.log4j.spi.AbstractLogger",
  "threadId":62,
  "threadPriority":5,
  "messageTimestamp":"2024-12-02T11:16:01.529+0000",
  "configuredLevel":"WARN",
  "processId":"1",
  "nrfTxId":"",
  "ocLogId":"",
  "xRequestId":"",
  "nfInstanceId":"",
  "requesterNfType":"",
  "nfFqdn":"",
  "httpMethod":"",
  "serviceOperation":"",
  "featureStatus":"",
  "requestUrl":"",
  "hostname":"",
  "subsystem":""
}
```

- When the value of maxJavaStackTraceDepth is set to 10, stack trace is included in the log messages as per the configuration defined for maxJavaStackTraceDepth.

```
{
  "instant":
  {
    "epochSecond":1730956275,"nanoOfSecond":188744679},
  "thread":"XNIO-2 task-3",
  "level":"ERROR",
  "loggerName":"com.oracle.cgbu.cne.nrf.actuator.CommonUtils",
  "message":"DB connection health check failed with problemDetails {\\
    \"title\\\":\\\"Internal Server Error\\\",\\\"status\\\":500,\\\"detail\\\":\\\"Failed to obtain JDBC Connection\\\",\\\"cause\\\":\\\"TIMED_OUT_REQUEST\\\"}. Exception occurred is Failed to obtain JDBC Connection and stackTrace is [
  ]
}
```

```

org.springframework.jdbc.datasource.DataSourceUtils.getConnection(DataSource
Utils.java:84),
org.springframework.jdbc.core.JdbcTemplate.execute(JdbcTemplate.java:378),
org.springframework.jdbc.core.JdbcTemplate.query(JdbcTemplate.java:466),
org.springframework.jdbc.core.JdbcTemplate.query(JdbcTemplate.java:476),

com.oracle.cgbu.cne.nrf.actuator.CommonUtils.dbConnectionCheck(CommonUtils.
java:33),

com.oracle.cgbu.cne.nrf.actuator.CustomReadinessActuator.health(CustomReadi
nessActuator.java:25),

org.springframework.boot.actuate.health.HealthIndicator.getHealth(HealthInd
icator.java:37),

org.springframework.boot.actuate.health.HealthEndpointWebExtension.getHealt
h(HealthEndpointWebExtension.java:94),
org.springframew
ork.boot.actuate.health.HealthEndpointWebExtension.getHealth(HealthEndpoint
WebExtension.java:47),

org.springframework.boot.actuate.health.HealthEndpointSupport.getLoggedHeal
th(HealthEndpointSupport.java:172)
]",

"endOfBatch":false,"loggerFqcn":"org.apache.logging.log4j.spi.AbstractLogge
r","threadId":70,"threadPriority":5,"messageTimestamp":"2024-11-07T05:11:15
.188+0000","configuredLevel":"WARN","processId":"1","nrfTxId":"nrf-
tx-155440036","ocLogId":"","xReques
tId":"","nfInstanceId":"","requesterNfType":"","nfFqdn":"","httpMethod":"","
"serviceOperation":"","featureStatus":"","requestUrl":"","hostname":"ocnrf-
nfregistration-69995d6c68-cml74","subsystem":"reloadNrfSystemOptions"}

```

## 2.2 Collecting Logs

This section describes steps to collect the logs from PODs or containers.

1. Run the following command to get the POD details:

```
$ kubectl -n <namespace_name> get pods
```

2. Collect the logs from the specific pods or containers:

```
$ kubectl logs <podname> -n <namespace>
```

Example:

```
$ kubectl logs ocnrf-nfaccessstoken-xxxxxxxx-xxxxx -n ocnrf
```

3. Store the log in a file using the following command:

```
$ kubectl logs <podname> -n <namespace> > <filename>
```

Example:

```
$ kubectl logs ocnrf-nfaccessstoken-xxxxxxxxxx-xxxxx -n ocnrf > logs.txt
```

4. (Optional) You can also use the following commands for the log stream with file redirection starting with last 100 lines of log:

```
$ kubectl logs <podname> -n <namespace> -f --tail <number of lines> >
<filename>
```

Example:

```
$ kubectl logs ocnrf-nfaccessstoken-xxxxxxxxxx-xxxxx -n ocnrf -f --tail 100
> logs.txt
```

For more information on how to collect the logs, see *Oracle Communications Cloud Native Core Data Collector Guide*.

## 2.3 Understanding Logs

This chapter explains the logs you need to look into, to handle different NRF debugging issues.

This section provides log level attribute details for following services:

- nfregistration
- nfdiscovery

### Sample Logs

Sample log statement nfregistration:

```
{"instant":
{"epochSecond":1604654859,"nanoOfSecond":278610000},"thread":"XNIO-1
task-1","level":"WARN","loggerName":"com.oracle.cgbu.cne.nrf.service.NfMgmtSer
viceImpl","message":"NF status changed for nfInstanceId 8faf1bbc-5324-4454-
a507-a14ef8e1bc2c, whose previous status was SUSPENDED and current status is
REGISTERED.","endOfBatch":false,"loggerFqcn":"org.apache.logging.log4j.spi.Abs
tractLogger","nfInstanceId": "8faf1bbc-5324-4454-a507-
a14ef8e1bc2c","threadId":49,"threadPriority":5,"messageTimestamp":"2020-11-06T
09:27:39.278+0000","configuredLevel":"INFO","serviceOperation":"nfRegister","r
equesterNfType": "UDM","nfFqdn":
"UNKNOWN","processId":"1","ocLogId":"1604654852868_56_ocrnf-
ingressgateway-59548646fc-g7qtk:1604654859244_49_ocrnf-
nfregistration-65b999468b-gchg8"}
```

Sample ERROR log statement for nfregistration when Error Log Messages Enhancement feature is enabled:

```
{"instant":
{"epochSecond":1717082050,"nanoOfSecond":263756204},"thread":"XNIO-1

task-2","level":"ERROR","loggerName":"com.oracle.cgbu.cne.nrf.rest.NFManagemen
tController","message":"Response
sent: 400 Bad Request for uri :
```

```

http://ocnrf-ingressgateway.nrf1-ns/nnrf-nfm/v1/nf-instances/
fcff26ea-6c8d-4502-968b-982532f48dcf
with the problem cause : MANDATORY_IE_INCORRECT and problem
details :
NRF-d5g.oracle.com: Nnrf_NFManagement: Bad Request:
ONRF-REG-REGN-
E0007", "endOfBatch": false, "loggerFqcn": "org.apache.logging.log4j.spi.AbstractL
ogger", "threadId": 76, "threadPriority": 5, "messageTimestamp": "2024-05-30T15:14:1
0.263+0000", "configuredLevel": "WARN", "processId": "1", "ocLogId": "1717082050214_
77_ocnrf-ingressgateway-854464d548-426bz:1717082050236_76_ocnrf-
nfregistration-d5d7bb9ff-
gd1ct", "xRequestId": "", "nfInstanceId": "fcff26ea-6c8d-4502-968b-982532f48dcf", "
requesterNfType": "AMF", "nfFqdn": "UNKNOWN", "httpMethod": "PUT", "serviceOperation
": "nfRegister", "featureStatus": "", "requestUrl": "", "hostname": "ocnrf-
nfregistration-d5d7bb9ff-
gd1ct", "subsystem": "", "errorStatus": "400", "errorTitle": "Bad
Request", "errorDetails": "NRF-d5g.oracle.com:
Nnrf_NFManagement: Bad Request:
ONRF-REG-REGN-
E0007", "errorCause": "MANDATORY_IE_INCORRECT", "sender": "NRF-6faf1bbc-6e4a-4454-
a507-a14ef8e1bc5c", "subscriberId": "imsi-345012123123125"}

```

Sample log statement nfdiscovery:

```

{"instant":
{"epochSecond": 1604655402, "nanoOfSecond": 946649000}, "thread": "XNIO-1
task-1", "level": "INFO", "loggerName": "com.oracle.cgbu.cne.nrf.rest.NFDiscoveryC
ontroller", "message": "Request received with uri http://10.75.226.148:30547/
nnrf-disc/v1/nf-instances and http-method
GET"}, "endOfBatch": false, "loggerFqcn": "org.apache.logging.log4j.spi.AbstractL
ogger", "threadId": 47, "threadPriority": 5, "messageTimestamp": "2020-11-06T09:36:4
2.946+0000", "configuredLevel": "INFO", "serviceOperation": "NFDiscover", "processI
d": "1", "ocLogId": "1604655396595_56_ocnrf-ingressgateway-59548646fc-
g7qtk:1604655402932_47_ocnrf-nfdiscovery-6df9dbb6bb-kzbg1"}

```

Sample ERROR log statement for nfdiscovery when Error Log Messages Enhancement feature is enabled:

```

{"instant":
{"epochSecond": 1717082579, "nanoOfSecond": 276265496}, "thread": "discovery-h2c-
epoll-2", "level": "ERROR", "loggerName": "com.oracle.cgbu.cne.nrf.rest.NFDiscover
yController", "message": "Response
sent: 400 Bad Request for uri : /nnrf-disc/v1/nf-instances?{target-nf-
type=[AMF],
requester-nf-type=[ABC]} with the problem cause :
MANDATORY_QUERY_PARAM_INCORRECT and problem
details : NRF-d5g.oracle.com: Nnrf_NFDiscovery: requesterNfType should
be a valid value:
ONRF-DIS-DISC-
E0004", "endOfBatch": false, "loggerFqcn": "org.apache.logging.log4j.spi.AbstractL
ogger", "threadId": 5286, "threadPriority": 5, "messageTimestamp": "2024-05-30T15:22
:59.276+0000", "configuredLevel": "WARN", "processId": "1", "ocLogId": "171708257924
4_250_ocnrf-ingressgateway-854464d548-426bz:1717082579263_5286_ocnrf-
nfdiscovery-76f946759c-
gg7lg", "serviceOperation": "NFDiscover", "xRequestId": "", "requesterNfType": "ABC"

```

```
, "targetNfType": "AMF", "discoveryQuery": "/nnrf-disc/v1/nf-instances?{target-nf-
type=[AMF],
  requester-nf-type=[ABC]}", "hostname": "ocnrf-nfdiscovery-76f946759c-
gg7lg", "subsystem": "", "errorStatus": "400", "errorTitle": "Bad
Request", "errorDetails": "NRF-d5g.oracle.com: Nnrf_NFDiscovery:
requesterNfType should be a
valid value:
ONRF-DIS-DISC-
E0004", "errorCause": "MANDATORY_QUERY_PARAM_INCORRECT", "sender": "NRF-6faf1bbc-6
e4a-4454-a507-a14ef8e1bc5c", "subscriberId": "imsi-345012123123126"}
```

**Table 2-1 Log Attribute Details**

| Log Attribute    | Details                                                                                                                                        | Sample Value                                                                                                          | Data Type |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------|
| instant          | Epoch time<br><b>Note:</b> It is group of two values epochSecond and nanoOfSecond                                                              | {"epochSecond":1604655402,"nanoOfSecond":946649000}                                                                   | Object    |
| thread           | Logging Thread Name                                                                                                                            | "XNIO-1 task-1"                                                                                                       | String    |
| level            | Log Level of the log printed                                                                                                                   | "WARN"                                                                                                                | String    |
| loggerName       | Class or Module which printed the log                                                                                                          | "com.oracle.cgbu.cne.nrf.rest.NFDiscoveryController"                                                                  | String    |
| message          | Message related to the log providing brief details<br><b>Note:</b> Indicates that no NFProfiles found for mentioned search query               | "{Discovery Query=target-nf-type=AMF&requester-nf-type=UDM, logMsg=No NFProfiles found for query}"                    | String    |
| endOfBatch       | Log4j2 Internal<br>Default from log4j2: false                                                                                                  | false                                                                                                                 | boolean   |
| loggerFqn        | Log4j2 Internal<br>Fully Qualified class name of logger module                                                                                 | org.apache.logging.log4j.spi.AbstractLogger                                                                           | String    |
| threadId         | Thread Id generated internally by Log4j2                                                                                                       | 47                                                                                                                    | Integer   |
| threadPriority   | Thread Priority set internally by Log4j2                                                                                                       | 5                                                                                                                     | Integer   |
| messageTimestamp | Timestamp of log from application container. Format: yyyy-MM-dd'T'HH:mm:ss.SSSZ                                                                | "2020-11-06T09:36:42.946+0000"                                                                                        | String    |
| configuredLevel  | Log Level configured                                                                                                                           | "INFO"                                                                                                                | String    |
| serviceOperation | Indicates the service operation                                                                                                                | "NFDiscover"                                                                                                          | String    |
| processId        | Process ID internally assigned                                                                                                                 | "1"                                                                                                                   | String    |
| ocLogId          | End to End Log Identifier across the NRF microservices<br><b>Note:</b> Helps to correlate the logs across the microservices in NRF application | "ocLogId":"1604655396595_56_ocnrf-ingressgateway-59548646fc-g7qtk:1604655402932_47_ocnrf-nfdiscovery-6df9dbb6bb-kzbg" | String    |
| nfInstanceId     | Provide the NF Instance Id details                                                                                                             |                                                                                                                       | String    |

Table 2-1 (Cont.) Log Attribute Details

| Log Attribute   | Details                                                                                                                                                                                                 | Sample Value                                                                                             | Data Type |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------|
| requesterNfType | For Registration request, this indicates the message originator fetched from NF Type in the User Agent HeaderFor Discovery query, this indicates the Requester NF Type                                  |                                                                                                          | String    |
| targetNfType    | Indicates the Discovery Query Target NF Type                                                                                                                                                            |                                                                                                          | String    |
| nfFqdn          | Value of NF FQDN. This is extracted from XFCC header.                                                                                                                                                   |                                                                                                          | String    |
| httpMethod      | Indicates the httpMethod. For example: PUT, GET, PATCH                                                                                                                                                  |                                                                                                          | String    |
| requestUrl      | Indicates the URL of the message                                                                                                                                                                        |                                                                                                          | String    |
| discoveryQuery  | This is populated in the log for response message in case of response for NFDdiscover service operation.                                                                                                |                                                                                                          | String    |
| errorStatus     | Indicates the status sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled. | 400                                                                                                      | String    |
| errorTitle      | Indicates the title sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.  | Bad Request                                                                                              | String    |
| errorDetails    | Indicates the detail sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled. | NRF-d5g.oracle.com:<br>Nnrf_NFDdiscover:<br>requesterNfType should be a valid value: ONRF-DIS-DISC-E0004 | String    |

Table 2-1 (Cont.) Log Attribute Details

| Log Attribute | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Sample Value                             | Data Type |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------|
| errorCause    | Indicates the cause sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.                                                                                                                                                                                                                                                                       | MANDATORY_QUERY_PARAMETER_INCORRECT      | String    |
| sender        | Indicates the NRF-NRF Instance Id or Server header value as received in the error response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.                                                                                                                                                                                                                                                           | NRF-6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c | String    |
| receiver      | Indicates the NRF-NRF Instance Id<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.                                                                                                                                                                                                                                                                                                                    |                                          | String    |
| subscriberId  | Indicates the <ul style="list-style-type: none"> <li>3GPP-Sbi-Correlation-Info header present in the request header received at NRF</li> <li>3GPP-Sbi-Correlation-Info header present in the response header received from the peer in the case of NRF acting as a client.</li> <li>Either SUPI or GPSI values or both SUPI and GPSI values.</li> </ul> <b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled. | imsi-345012123123126                     | String    |

This section provides log level attribute details for following services:

- nfsubscription
- nfaccess token

## Sample Logs

Sample log statement nfsubscription:

```
{
  "instant":
  {
    "epochSecond":1604654864,"nanoOfSecond":237018000},
    "thread":"XNIO-1
task-1",
    "level":"ERROR",
    "loggerName":"com.oracle.cgbu.cne.nrf.service.NfSubSe
rviceImpl",
    "message":"{logMsg=No subscriptions found matching the
notification for Profile, nfProfile={\"nfInstanceId\": \"dd94d4b5-0ce6-4571-
a661-3ff7c21a79a7\", \"nfType\": \"CUSTOM_SPF\", \"nfStatus\": \"REGISTERED\", \"he
artBeatTimer\":30, \"fqdn\": \"UPF.d5g.oracle.com\", \"interPlmnFqdn\": \"UPF-
d5g.oracle.com\", \"ipv4Addresses\":
[\"192.168.2.100\", \"192.168.3.100\", \"192.168.2.110\", \"192.168.3.110\"], \"ip
v6Addresses\":
[\"2001:0db8:85a3:0000:0000:8a2e:0370:7334\"], \"additionalAttributes\":
{\"recordCreator\": \"6faf1bbc-6e4a-4454-a507-
a14ef8e1bc5c\", \"creationTimestamp\":1604654861984000, \"requesterNfFqdn\":null
, \"lastUpdateTimestamp\":1604654861984000}, \"customInfo\":
{\"key1\": \"value1\", \"key2\": \"value2\"}},
    eventType=NF_DEREGISTERED}",
    "endOfBatch":false,
    "loggerFqcn":"org.apache.logging.log4j.spi.AbstractLogger",
    "threadId":49,
    "threadPriority":5,
    "messageTimestamp":
    "2020-11-06T09:27:44.237+0000",
    "configuredLevel":"INFO",
    "subsystem":"notifyP
rofileDeregistration",
    "processId":"1",
    "ocLogId":"1604654857899_56_ocnrf-
ingressgateway-59548646fc-g7qtk:1604654864210_49_ocnrf-
nrfregistration-65b999468b-gchg8"}
}
```

Sample ERROR log statement for nfsubscription when Error Log Messages Enhancement feature is enabled:

```
{
  "instant":
  {
    "epochSecond":1717077558,"nanoOfSecond":256932930},
    "thread":"boundedElastic-8
",
    "level":"ERROR",
    "loggerName":"com.oracle.cgbu.cne.nrf.routes.SubscriptionHan
dler",
    "message":
    "Response
      sent: 500 Subscription global limit breached for uri :
      http://ocnrf-ingressgateway.madhu-ns/nnrf-nfm/v1/
subscriptions with the problem
      cause : INSUFFICIENT_RESOURCES and problem details : NRF-
d5g.oracle.com:
      Nnrf_NFManagement: Subscription global limit breached:
      ONRF-SUB-SUBSCR-
E2003",
    "endOfBatch":false,
    "loggerFqcn":"org.apache.logging.log4j.spi.AbstractL
ogger",
    "threadId":39547,
    "threadPriority":5,
    "messageTimestamp":
    "2024-05-30T13:5
9:18.256+0000",
    "configuredLevel":"WARN",
    "subsystem":"NfSubscribe",
    "processId":
    "1",
    "ocLogId":
    "1717077558225_77_ocnrf-
ingressgateway-854464d548-426bz:1717077558237_110_ocnrf-
nfsubscription-766d45f5c7-
t4xp8",
    "xRequestId":
    "",
    "numberOfRetriesAttempted":
    "",
    "hostname":
    "ocnrf-
nfsubscription-766d45f5c7-
t4xp8",
    "errorStatus":
    "500",
    "errorTitle":
    "Subscription
global limit breached",
    "errorDetails":
    "NRF-d5g.oracle.com:
Nnrf_NFManagement:
Subscription global limit breached:
ONRF-SUB-SUBSCR-
"
```

```
E2003", "errorCause": "INSUFFICIENT_RESOURCES", "sender": "NRF-6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c", "subscriberId": "imsi-345012123123126"}]
```

Sample log statement nfaccessstoken:

```
{ "instant":
{ "epochSecond": 1604512030, "nanoOfSecond": 714594000}, "thread": "XNIO-1
task-1", "level": "INFO", "loggerName": "com.oracle.cgbu.cne.nrf.service.AccessTok
enServiceImpl", "message": "{logMsg=Successfully generated
token}", "endOfBatch": false, "loggerFqcn": "org.apache.logging.log4j.spi.Abstract
Logger", "threadId": 53, "threadPriority": 5, "messageTimeStamp": "20-11-0417:47:10.
714+0000", "configuredLevel": "INFO", "subsystem": "accessToken", "processId": "1", "
ocLogId": "1604512030507_73_ocnrf-
ingressgateway-7cbcff6b47-9qw9b:1604512030525_53_ocnrf-
nfaccessstoken-6bddf44c66-861mf"}]
```

Sample ERROR log statement for nfaccessstoken when Error Log Messages Enhancement feature is enabled:

```
{ "instant":
{ "epochSecond": 1717078943, "nanoOfSecond": 335260003}, "thread": "XNIO-1
task-2", "level": "ERROR", "loggerName": "com.oracle.cgbu.cne.nrf.rest.NFAccessTok
enController", "message": "Response
sent: 400 Bad Request for uri : http://ocnrf-
ingressgateway.madhu-ns/oauth2/token
with the problem cause : Bad Request and problem details :
Bad
Request", "endOfBatch": false, "loggerFqcn": "org.apache.logging.log4j.spi.Abstrac
tLogger", "threadId": 71, "threadPriority": 5, "messageTimeStamp": "2024-05-30T14:22
:23.335+0000", "configuredLevel": "WARN", "subsystem": "accessToken", "processId": "
1", "ocLogId": "1717078942906_77_ocnrf-
ingressgateway-854464d548-426bz:1717078942947_71_ocnrf-
nfaccessstoken-79b55d9b45-qm4gn", "xRequestId": "", "hostname": "ocnrf-
nfaccessstoken-79b55d9b45-qm4gn", "errorStatus": "400", "errorTitle": "Bad
Request", "errorDetails": "NRF-d5g.oracle.com:
Nnrf_AccessToken: NfType in oAuth request is different from the registered
profile:
ONRF-ACC-ACTOK-
E4004", "errorCause": "unauthorized_client", "sender": "NRF-6faf1bbc-6e4a-4454-
a507-a14ef8e1bc5c", "subscriberId": "imsi-345012123123129"}]
```

**Table 2-2 Log Attribute Details**

| Log Attribute | Details                                                                           | Sample Value                                        | Data Type |
|---------------|-----------------------------------------------------------------------------------|-----------------------------------------------------|-----------|
| instant       | Epoch time<br><b>Note:</b> It is group of two values epochSecond and nanoOfSecond | {"epochSecond":1604655402,"nanoOfSecond":946649000} | Object    |
| thread        | Logging Thread Name                                                               | "XNIO-1 task-1"                                     | String    |
| level         | Log Level of the log printed                                                      | "WARN"                                              | String    |

Table 2-2 (Cont.) Log Attribute Details

| Log Attribute    | Details                                                                                                                                                                                                 | Sample Value                                                                                                          | Data Type |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------|
| loggerName       | Class or Module which printed the log                                                                                                                                                                   | "com.oracle.cgbu.cne.nrf.rest.NFDiscoveryController"                                                                  | String    |
| message          | Message related to the log providing brief details<br><b>Note:</b> Indicates that no NFProfiles found for mentioned search query                                                                        | "{Discovery Query=target-nf-type=AMF&requester-nf-type=UDM, logMsg=No NFProfiles found for query}"                    | String    |
| endOfBatch       | Log4j2 Internal<br>Default from log4j2: false                                                                                                                                                           | false                                                                                                                 | boolean   |
| loggerFqcn       | Log4j2 Internal<br>Fully Qualified class name of logger module                                                                                                                                          | org.apache.logging.log4j.spi.AbstractLogger                                                                           | String    |
| threadId         | Thread Id generated internally by Log4j2                                                                                                                                                                | 47                                                                                                                    | Integer   |
| threadPriority   | Thread Priority set internally by Log4j2                                                                                                                                                                | 5                                                                                                                     | Integer   |
| messageTimestamp | Timestamp of log from application container. Format: yyyy-MM-dd'T'HH:mm:ss.SSSZ                                                                                                                         | "2020-11-06T09:36:42.946+0000"                                                                                        | String    |
| configuredLevel  | Log Level configured                                                                                                                                                                                    | "INFO"                                                                                                                | String    |
| subsystem        | Subsystem inside microservice internal to microservice                                                                                                                                                  | discoveryNfInstances                                                                                                  | String    |
| processId        | Process ID internally assigned                                                                                                                                                                          | "1"                                                                                                                   | String    |
| ocLogId          | End to End Log Identifier across the NRF microservices<br><b>Note:</b> Helps to correlate the logs across the microservices in NRF application                                                          | "ocLogId":"1604655396595_56_ocnrf-ingressgateway-59548646fc-g7qtk:1604655402932_47_ocnrf-nfdiscovery-6df9dbb6bb-kzbg" | String    |
| errorStatus      | Indicates the status sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled. | 400                                                                                                                   | String    |
| errorTitle       | Indicates the title sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.  | Bad Request                                                                                                           | String    |

Table 2-2 (Cont.) Log Attribute Details

| Log Attribute | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Sample Value                                                                                                                    | Data Type |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------|
| errorDetails  | Indicates the detail sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.                                                                                                                                                                                                                                                                      | NRF-d5g.oracle.com:<br>Nnrf_AccessToken: NfType in oAuth request is different from the registered profile: ONRF-ACC-ACTOK-E4004 | String    |
| errorCause    | Indicates the cause sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.                                                                                                                                                                                                                                                                       | unauthorized_client                                                                                                             | String    |
| sender        | Indicates the NRF-NRF Instance Id or Server header value as received in the error response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.                                                                                                                                                                                                                                                           | NRF-6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c                                                                                        | String    |
| receiver      | Indicates the NRF-NRF Instance Id<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.                                                                                                                                                                                                                                                                                                                    |                                                                                                                                 | String    |
| subscriberId  | Indicates the <ul style="list-style-type: none"> <li>3GPP-Sbi-Correlation-Info header present in the request header received at NRF</li> <li>3GPP-Sbi-Correlation-Info header present in the response header received from the peer in the case of NRF acting as a client.</li> <li>Either SUPI or GPSI values or both SUPI and GPSI values.</li> </ul> <b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled. | imsi-345012123123129                                                                                                            | String    |

This section provides log level attribute details for following services:

- nrfauditor
- nrfconfiguration

Sample log statement nrfauditor:

```
{
  "instant":
  {
    "epochSecond":1604654345,"nanoOfSecond":125124000,"thread":"main","level":"INFO",
    "loggerName":"com.oracle.cgbu.cne.nrf.audit.AuditManager","message":{"logMsg=Started NF Profile Auditor Thread, Id=25, Name=NF Profile Auditor}",
    "endOfBatch":false,"loggerFqcn":"org.apache.logging.log4j.spi.AbstractLogger",
    "threadId":1,"threadPriority":5,"messageTimestamp":"2020-11-06T09:19:05.125+0000",
    "configuredLevel":"INFO","subsystem":"AuditManager","processId":"1"}
}
```

Sample log statement nrfconfiguration:

```
{
  "instant":
  {
    "epochSecond":1604654450,"nanoOfSecond":117406000,"thread":"XNIO-1 task-1",
    "level":"INFO","loggerName":"com.oracle.cgbu.cne.nrf.rest.NrfConfigurationController",
    "message":{"logMsg=Update GeneralOptions request received with generalOptions,
    generalOptions={\"additionalAttributes\":null,\"nrfPlmnList\":[{\\"mcc\\":\"310\\",\"mnc\\":\"14\\\"}],\"enableF3\":null,\"enableF5\":null,\"maximumHopCount\":null,\"defaultLoad\":null,\"defaultPriorityAssignment\":null,\"defaultLoadAssignment\":null,\"ocnrfHost\":null,\"ocnrfPort\":null}}\",
    \"endOfBatch\":false,\"loggerFqcn\":\"org.apache.logging.log4j.spi.AbstractLogger\",
    \"threadId\":34,\"threadPriority\":5,\"messageTimestamp\":\"2020-11-06T09:20:50.117+0000\",
    \"configuredLevel\":\"INFO\",
    \"subsystem\":\"updateNrfGeneralOptions\",
    \"processId\":\"1\""}
}
```

Sample ERROR log statement for nrfconfiguration when Error Log Messages Enhancement feature is enabled:

```
{
  "instant":
  {
    "epochSecond":1717082305,"nanoOfSecond":790424465,"thread":"XNIO-1 task-3",
    "level":"ERROR","loggerName":"com.oracle.cgbu.cne.nrf.rest.NrfConfigurationController",
    "message":"Response sent: 400 Bad Request for uri : http://ocnrf-nrfconfiguration:8080/nrf-configuration/v1/generalOptions with the problem cause : MANDATORY_IE_INCORRECT and problem details : NRF-d5g.oracle.com: Nnrf_Internal_Config: Multiple attributes are missing or incorrect: ONRF-CFG-GENOPT-E0021",
    "endOfBatch":false,"loggerFqcn":"org.apache.logging.log4j.spi.AbstractLogger",
    "threadId":68,"threadPriority":5,"messageTimestamp":"2024-05-30T15:18:25.790+0000",
    "configuredLevel":"WARN","subsystem":"updateNrfGeneralOptions","processId":"1",
    "xRequestId":"","hostname":"ocnrf-nrfconfiguration-6956dd5454-27vh2",
    "errorStatus":"400","errorTitle":"Bad Request","errorDetails":"NRF-d5g.oracle.com: Nnrf_Internal_Config: Multiple attributes are missing or incorrect: ONRF-CFG-GENOPT-"}
}
```

```
E0021", "errorCause": "MANDATORY_IE_INCORRECT", "sender": "NRF-6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c"}}
```

**Table 2-3 Log Attribute Details for nrfauditor and nrfconfiguration**

| Log Attribute    | Details                                                                         | Sample Value                                                                                                                                                                                                                                                                                                                                                                                              | Data Type | Notes                                                                                                                      |
|------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------|
| instant          | Epoch time                                                                      | {"epochSecond":1604654450,"nanoOfSecond":117406000}                                                                                                                                                                                                                                                                                                                                                       | Object    | It is group of two values epochSecond and nanoOfSecond.                                                                    |
| thread           | Logging Thread Name                                                             | "XNIO-1 task-1"                                                                                                                                                                                                                                                                                                                                                                                           | String    |                                                                                                                            |
| level            | Log Level of the log printed                                                    | "INFO"                                                                                                                                                                                                                                                                                                                                                                                                    | String    |                                                                                                                            |
| loggerName       | Class or Module which printed the log                                           | "com.oracle.cgbu.cne.nrf.rest.NrfConfigurationController"                                                                                                                                                                                                                                                                                                                                                 | String    |                                                                                                                            |
| message          | Message related to the log providing brief details                              | "{logMsg=Update GeneralOptions request received with generalOptions, generalOptions={\"additionalAttributes\":null, \"nrfPlmnList\": [{\"mcc\": \"310\", \"mnc\": \"14\"}], \"enableF3\":null, \"enableF5\":null, \"maximumHopCount\":null, \"defaultLoad\":null, \"defaultPriority\":null, \"defaultPriorityAssignment\":null, \"defaultLoadAssignment\":null, \"ocnrfHost\":null, \"ocnrfPort\":null}}" | String    | It states that a request is received to update the generaloptions. generaloptions received is also printed in the message. |
| endOfBatch       | Log4j2 Internal Default from log4j2: false                                      | false                                                                                                                                                                                                                                                                                                                                                                                                     | Boolean   |                                                                                                                            |
| loggerFqn        | Log4j2 Internal Fully Qualified class name of logger module                     | org.apache.logging.log4j.spi.AbstractLogger                                                                                                                                                                                                                                                                                                                                                               | String    |                                                                                                                            |
| threadId         | Thread Id generated internally by Log4j2                                        | 34                                                                                                                                                                                                                                                                                                                                                                                                        | Integer   |                                                                                                                            |
| threadPriority   | Thread Priority set internally by Log4j2                                        | 5                                                                                                                                                                                                                                                                                                                                                                                                         | Integer   |                                                                                                                            |
| messageTimeStamp | Timestamp of log from application container. Format: yyyy-MM-dd'T'HH:mm:ss.SSSZ | "2020-11-06T09:20:50.117+0000"                                                                                                                                                                                                                                                                                                                                                                            | String    |                                                                                                                            |
| configuredLevel  | Log Level configured                                                            | "INFO"                                                                                                                                                                                                                                                                                                                                                                                                    | String    |                                                                                                                            |
| subsystem        | Subsystem inside microservice internal to microservice                          | "updateNrfGeneralOptions"                                                                                                                                                                                                                                                                                                                                                                                 | String    |                                                                                                                            |

Table 2-3 (Cont.) Log Attribute Details for nrfauditor and nrfconfiguration

| Log Attribute | Details                                                                                                                                                                                                            | Sample Value                                                                                                           | Data Type | Notes |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------|-------|
| processId     | Process ID internally assigned                                                                                                                                                                                     | "1"                                                                                                                    | String    |       |
| errorStatus   | Indicates the status sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.            | 400                                                                                                                    | String    |       |
| errorTitle    | Indicates the title sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.             | Bad Request                                                                                                            | String    |       |
| errorDetails  | Indicates the detail sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.            | NRF-d5g.oracle.com:<br>Nnrf_Internal_Config:<br>Multiple attributes are missing or incorrect:<br>ONRF-CFG-GENOPT-E0021 | String    |       |
| errorCause    | Indicates the cause sent or received by NRF in ProblemDetails of HTTP response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.             | MANDATORY_IE_INCO<br>RRECT                                                                                             | String    |       |
| sender        | Indicates the NRF-NRF Instance Id or Server header value as received in the error response<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled. | NRF-6faf1bbc-6e4a-445<br>4-a507-a14ef8e1bc5c                                                                           | String    |       |

Table 2-3 (Cont.) Log Attribute Details for nrfauditor and nrfconfiguration

| Log Attribute | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Sample Value | Data Type | Notes |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------|-------|
| receiver      | Indicates the NRF-NRF Instance Id<br><b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled.                                                                                                                                                                                                                                                                                                                          |              | String    |       |
| subscriberId  | Indicates the <ul style="list-style-type: none"> <li>• 3GPP-Sbi-Correlation-Info header present in the request header received at NRF</li> <li>• 3GPP-Sbi-Correlation-Info header present in the response header received from the peer in the case of NRF acting as a client.</li> <li>• Either SUPI or GPSI values or both SUPI and GPSI values.</li> </ul> <b>Note:</b> This attribute will be added only for the ERROR logs when the Error Log Enhancement feature is enabled. |              | String    |       |

This section provides log level attribute details for the ingressgateway service:  
Sample log statement ingressgateway:

```
{
  "thread": "ingress-h2c-epoll-3",
  "level": "DEBUG",
  "loggerName": "ocpm.cne.gateway.filters.PreGatewayFilter",
  "message": "Exiting PreGatewayFilter",
  "endOfBatch": false,
  "loggerFqcn": "org.apache.logging.log4j.spi.AbstractLogger",
  "instant": {
    "epochSecond": 1604650229,
    "nanoOfSecond": 49930000
  },
  "contextMap": {
    "hostname": "ocnrf-ingressgateway-69f6544b8d-cdbgx",
    "ingressTxId": "ingress-tx-1087436877",
    "ocLogId": "1604650229002_72_ocnrf-ingressgateway-69f6544b8d-cdbgx",
    "threadId": 72,
    "threadPriority": 5,
    "messageTimestamp": "2020-11-06 08:10:29.004",
    "ocLogId": "1604650229002_72_ocnrf-ingressgateway-69f6544b8d-cdbgx",
    "pod": "ocnrf-ingressgateway-69f6544b8d-cdbgx",
    "processId": "1",
    "instanceType": "prod",
    "ingressTxId": "ingress-tx-1087436877"
  }
}
```

**Table 2-4 Log Attribute Details for ingressgateway**

| Log Attribute    | Details                                                                                    | Sample Value                                                                                                                                                          | Data Type | Notes                                                                     |
|------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------|
| thread           | Logging Thread Name                                                                        | "ingress-h2c-epoll-3"                                                                                                                                                 | String    |                                                                           |
| level            | Log Level of the log printed                                                               | "DEBUG"                                                                                                                                                               | String    |                                                                           |
| loggerName       | Class or Module which printed the log                                                      | "ocpm.cne.gateway.filters.PreGatewayFilter"                                                                                                                           | String    |                                                                           |
| message          | Message related to the log providing brief details                                         | "Exiting PreGatewayFilter"                                                                                                                                            | String    | Indicates that the method PreGatewayFilter is being exited.               |
| endOfBatch       | Log4j2 Internal<br>Default from log4j2: false                                              | false                                                                                                                                                                 | boolean   |                                                                           |
| loggerFqcn       | Log4j2 Internal<br>Fully Qualified class name of logger module                             | org.apache.logging.log4j.spi.AbstractLogger                                                                                                                           | String    |                                                                           |
| instant          | Epoch timestamp                                                                            | {"epochSecond":1604650229,"nanoOfSecond":4993000}                                                                                                                     | Object    | It is group of two values epochSecond and nanoOfSecond                    |
| contextMap       | contents of log4j ThreadContext map                                                        | {"hostname":"ocnrf-ingressgateway-69f6544b8d-cdbgx",<br>"ingressTxId":"ingress-tx-1087436877",<br>"ocLogId":"1604650229002_72_ocnrf-ingressgateway-69f6544b8d-cdbgx"} | Object    |                                                                           |
| threadId         | Thread Id generated internally by Log4j2                                                   | 72                                                                                                                                                                    | Integer   |                                                                           |
| threadPriority   | Thread Priority set internally by Log4j2                                                   | 5                                                                                                                                                                     | Integer   |                                                                           |
| messageTimeStamp | Timestamp of log from application container.<br>Format: yyyy-MM-dd'T'HH:mm:ss.SSSZ         | "2020-11-06 08:10:29.004"                                                                                                                                             | String    |                                                                           |
| ocLogId          | End to End Log Identifier across the NRF microservices.                                    | "1604650229002_72_ocnrf-ingressgateway-69f6544b8d-cdbgx"                                                                                                              | String    | Helps to correlate the logs across the microservices in OCNRF application |
| pod              | Pod Name                                                                                   | "ocnrf-ingressgateway-69f6544b8d-cdbgx"                                                                                                                               | String    |                                                                           |
| processId        | Process ID internally assigned                                                             | "1"                                                                                                                                                                   | String    |                                                                           |
| instanceType     | Instance type                                                                              | "prod"                                                                                                                                                                | String    |                                                                           |
| ingressTxId      | Transaction id that is added to log4j ThreadContext map and is unique to every transaction | "ingress-tx-1087436877"                                                                                                                                               | String    |                                                                           |

This section provides log level attribute details for the egressgateway service:  
Sample log statement egressgateway:

```
{ "thread": "main", "level": "DEBUG", "loggerName": "ocpm.cne.gateway.config.ScpDynamicBeanConfiguration", "message": "Property name: server.port and value: 8080", "endOfBatch": false, "loggerFqn": "org.apache.logging.log4j.spi.AbstractLogger", "instant": {"epochSecond": 1604564777, "nanoOfSecond": 135977000}, "contextMap": {}, "threadId": 1, "threadPriority": 5, "messageTimestamp": "2020-11-05 08:26:17.135", "ocLogId": "1604650229002_72_ocnrf-ingressgateway-69f6544b8d-cdbgx", "pod": "ocnrf-egressgateway-69f6544b8d-cdbgx", "processId": "1", "instanceType": "prod", "egressTxId": "egress-tx-1087436877" }
```

**Table 2-5 Log Attribute Details for egressgateway**

| Log Attribute    | Details                                                                            | Sample Value                                             | Data Type | Notes                                                                     |
|------------------|------------------------------------------------------------------------------------|----------------------------------------------------------|-----------|---------------------------------------------------------------------------|
| thread           | Logging Thread Name                                                                | "main"                                                   | String    |                                                                           |
| level            | Log Level of the log printed                                                       | "DEBUG"                                                  | String    |                                                                           |
| loggerName       | Class or Module which printed the log                                              | "ocpm.cne.gateway.config.ScpDynamicBeanConfiguration"    | String    |                                                                           |
| message          | Message related to the log providing brief details                                 | "Property name: server.port and value: 8080"             | String    |                                                                           |
| endOfBatch       | Log4j2 Internal<br>Default from log4j2: false                                      | false                                                    | boolean   |                                                                           |
| loggerFqn        | Log4j2 Internal<br>Fully Qualified class name of logger module                     | org.apache.logging.log4j.spi.AbstractLogger              | String    |                                                                           |
| instant          | Epoch timestamp                                                                    | {"epochSecond": 1604564777, "nanoOfSecond": 135977000}   | Object    | It is group of two values epochSecond and nanoOfSecond                    |
| contextMap       | Elements in log4j ThreadContext map                                                | {}                                                       | Object    |                                                                           |
| threadId         | Thread Id generated internally by Log4j2                                           | 1                                                        | Integer   |                                                                           |
| threadPriority   | Thread Priority set internally by Log4j2                                           | 5                                                        | Integer   |                                                                           |
| messageTimestamp | Timestamp of log from application container.<br>Format: yyyy-MM-dd'T'HH:mm:ss.SSSZ | "2020-11-05 08:26:17.135"                                | String    |                                                                           |
| ocLogId          | End to End Log Identifier across the NRF microservices                             | "1604650229002_72_ocnrf-ingressgateway-69f6544b8d-cdbgx" | String    | Helps to correlate the logs across the microservices in OCNRF application |
| pod              | Name of the egress pod                                                             | "ocnrf-egressgateway-69f6544b8d-cdbgx"                   | String    |                                                                           |

**Table 2-5 (Cont.) Log Attribute Details for egressgateway**

| Log Attribute | Details                                                                                    | Sample Value           | Data Type | Notes |
|---------------|--------------------------------------------------------------------------------------------|------------------------|-----------|-------|
| processId     | Process ID internally assigned                                                             | "1"                    | String    |       |
| instanceType  | Instance type                                                                              | "prod"                 | String    |       |
| egressTxId    | Transaction id that is added to log4j ThreadContext map and is unique to every transaction | "egress-tx-1087436877" | String    |       |

This section provides log level attribute details for the appinfo service:  
Sample log statement appinfo:

```
{"name": "gunicorn.access", "message": "127.0.0.1 - - [29/Oct/2020:18:39:35
+0000] \"GET /v1/liveness HTTP/1.1\" 200 16 \"-\" \"kube-probe/1.17+\"\",
\"level\": \"INFO\", \"filename\": \"glogging.py\", \"lineno\": 344, \"module\":
\"glogging\", \"func\": \"access\", \"thread\": \"MainThread\", \"created\":
\"2020-10-29T18:39:35.799448\"}
```

**Table 2-6 Log Attribute Details for appinfo**

| Log Attribute    | Details                                                                         | Sample Value                                                                                                            | Data Type |
|------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------|
| name             | Logger name                                                                     | "gunicorn.access"                                                                                                       | String    |
| message          | Message related to the log providing brief details                              | "message": "127.0.0.1 - - [29/Oct/2020:18:39:35 +0000] \"GET /v1/liveness HTTP/1.1\" 200 16 \"-\" \"kube-probe/1.17+\"" | String    |
| level            | Log Level of the log printed                                                    | "INFO"                                                                                                                  | String    |
| filename         | File name which generates the log                                               | "glogging.py"                                                                                                           | String    |
| lineno           | Line number                                                                     | 344                                                                                                                     | Integer   |
| module           | Python module name                                                              | "glogging"                                                                                                              | String    |
| func             | Function Name                                                                   | "func"                                                                                                                  | String    |
| thread           | Thread Name                                                                     | "MainThread"                                                                                                            | String    |
| messageTimestamp | Timestamp of log from application container. Format: yyyy-MM-dd'T'HH:mm:ss.SSSZ | "2020-10-29T18:39:35.799448"                                                                                            | String    |

### Common Useful log attributes

The below log attributes will be available only through Kibana. These attribute names are part of Kubernetes labels which are added in each NRF POD.

Table 2-7 Common useful log attributes

| Log Attribute | Details                                                                    | Sample Value                                                                                                                                                                                                                                                                                            | Data Type | Notes                                                                         |
|---------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------|
| application   | NF Type                                                                    | "ocnrf"                                                                                                                                                                                                                                                                                                 | String    | complete attribute name in Kibana: <code>kubernetes.labels.application</code> |
| microservice  | Kubernetes service name<br>Format: <Helm-Release-Name>-<Microservice-Name> | (assuming the <Helm-Release-Name> is "nrfnorth"<br>"nrfnorth-nfregistration"<br>"nrfnorth-nfdiscovery"<br>"nrfnorth-nfsubscription"<br>"nrfnorth-nfaccess token"<br>"nrfnorth-appinfo"<br>"nrfnorth-nrfauditor"<br>"nrfnorth-nrfconfiguration"<br>"nrfnorth-ingressgateway"<br>"nrfnorth-egressgateway" | String    |                                                                               |
| engVersion    | Engineering version                                                        | "1.8.0"                                                                                                                                                                                                                                                                                                 | String    |                                                                               |
| mktgVersion   | Marketing version                                                          | "1.8.0.0.0"                                                                                                                                                                                                                                                                                             | String    |                                                                               |
| vendor        | Vendor Name                                                                | "Oracle"                                                                                                                                                                                                                                                                                                | Integer   |                                                                               |

# 3

## Debug Tool

### Overview

The Debug Tool provides third-party troubleshooting tools for debugging the runtime issues for the lab environment. Following are the available tools:

- tcpdump
- ip
- netstat
- curl
- ping
- nmap
- dig

## 3.1 Preconfiguration Steps

This section explains the preconfiguration steps for using the debug tool:

### Note

- For CNE 23.2.0 and later versions, follow [Step a](#) of [Configuration in CNE](#).
- For CNE versions prior to 23.2.0, follow [Step b](#) of [Configuration in CNE](#).

### 1. **Configuration in CNE**

The following configurations must be performed in the Bastion Host.

- a. When NRF is installed on CNE version 23.2.0 or above:

### Note

- In CNE version 23.2.0 or above, the default CNE 23.2.0 Kyverno policy, disallow-capabilities, do not allow NET\_ADMIN and NET\_RAW capabilities that are required for debug tool.
- To run Debug tool on CNE 23.2.0 and above, the user must modify the existing Kyverno policy, disallow-capabilities, as below.

### Adding a Namespace to an Empty Resource

- i. Run the following command to verify if the current disallow-capabilities cluster policy has namespace in it.

Example:

```
$ kubectl get clusterpolicies disallow-capabilities -oyaml
```

Sample output:

```
apiVersion: kyverno.io/v1
kind: ClusterPolicy
...
spec:
  rules:
    -exclude:
      any:
        -resources: {}
```

- ii. If there are no namespaces, then patch the policy using the following command to add <namespace> under resources:

```
$ kubectl patch clusterpolicy disallow-capabilities --type=json \
  -p='[{"op": "add", "path": "/spec/rules/0/exclude/any/0/
resources", "value": {"namespaces":["<namespace>"]} }]'
```

Example:

```
$ kubectl patch clusterpolicy disallow-capabilities --type=json \
  -p='[{"op": "add", "path": "/spec/rules/0/exclude/any/0/
resources", "value": {"namespaces":["ocnrf"]} }]'
```

Sample output:

```
apiVersion: kyverno.io/v1
kind: ClusterPolicy
...
spec:
  rules:
    -exclude:
      resources:
        namespaces:
          -ocnrf
```

- iii. If in case it is needed to remove the namespace added in the above step, use the following command:

```
$ kubectl patch clusterpolicy disallow-capabilities --type=json \
  -p='[{"op": "replace", "path": "/spec/rules/0/exclude/any/0/
resources", "value": { } }]'
```

Sample output:

```
apiVersion: kyverno.io/v1
kind: ClusterPolicy
```

```
...
...
spec:
  rules:
    -exclude:
      any:
        -resources:[]
```

### Adding a Namespace to an Existing Namespace List

- i. Run the following command to verify if the current disallow-capabilities cluster policy has namespaces in it.

*Example:*

```
$ kubectl get clusterpolicies disallow-capabilities -oyaml
```

Sample output:

```
apiVersion: kyverno.io/v1
kind: ClusterPolicy
...
...
spec:
  rules:
    -exclude:
      any:
        -resources:
          namespaces:
            -namespace1
            -namespace2
            -namespace3
```

- ii. If there are namespaces already added, then patch the policy using the following command to add <namespace> to the existing list:

```
$ kubectl patch clusterpolicy disallow-capabilities --type=json \
  -p='[{"op": "add", "path": "/spec/rules/0/exclude/any/0/resources/
namespaces/-", "value": "<namespace>" }]'
```

*Example:*

```
$ kubectl patch clusterpolicy disallow-capabilities --type=json \
  -p='[{"op": "add", "path": "/spec/rules/0/exclude/any/0/resources/
namespaces/-", "value": "ocnrf" }]'
```

Sample output:

```
apiVersion: kyverno.io/v1
kind: ClusterPolicy
...
...
spec:
  rules:
    -exclude:
```

```
resources:
  namespaces:
  - namespace1
  - namespace2
  - namespace3
  - ocnrf
```

- iii. If in case it is needed to remove the namespace added in the above step, use the following command:

```
$ kubectl patch clusterpolicy disallow-capabilities --type=json \
-p='[{"op": "remove", "path": "/spec/rules/0/exclude/any/0/
resources/namespaces/<index>"}]'
```

Example:

```
$ kubectl patch clusterpolicy disallow-capabilities --type=json \
-p='[{"op": "remove", "path": "/spec/rules/0/exclude/any/0/
resources/namespaces/3"}]'
```

Sample output:

```
apiVersion: kyverno.io/v1
kind: ClusterPolicy
...
...
spec:
  rules:
  - exclude:
    resources:
      namespaces:
      - namespace1
      - namespace2
      - namespace3
```

#### Note

While removing the namespace, provide the index value for namespace within the array. The index starts from '0'.

- b. When NRF is installed on CNE version prior to 23.2.0  
**PodSecurityPolicy (PSP) Creation**

Create a PSP by running the following command from the bastion host. The parameters **readOnlyRootFilesystem**, **allowPrivilegeEscalation**, and **allowedCapabilities** are required by debug container.

**Note**

Other parameters are mandatory for PSP creation and can be customized as per the CNE environment. The default values are recommended.

```
$ kubectl apply -f - <<EOF

apiVersion: policy/v1beta1
kind: PodSecurityPolicy
metadata:
  name: debug-tool-psp
spec:
  readOnlyRootFilesystem: false
  allowPrivilegeEscalation: true
  allowedCapabilities:
  - NET_ADMIN
  - NET_RAW
  fsGroup:
    ranges:
    - max: 65535
      min: 1
    rule: MustRunAs
  runAsUser:
    rule: MustRunAsNonRoot
  seLinux:
    rule: RunAsAny
  supplementalGroups:
    rule: RunAsAny
  volumes:
  - configMap
  - downwardAPI
  - emptyDir
  - persistentVolumeClaim
  - projected
  - secret
EOF
```

**Role Creation**

Run the following command to create a role for the PSP:

```
kubectl apply -f - <<EOF
apiVersion: rbac.authorization.k8s.io/v1
kind: Role
metadata:
  name: debug-tool-role
  namespace: cncc
rules:
- apiGroups:
  - policy
  resources:
  - podsecuritypolicies
  verbs:
  - use
EOF
```

```
resourceNames:
- debug-tool-psp
EOF
```

### RoleBinding Creation

Run the following command to associate the service account for the NRF namespace with the role created for the PSP:

```
$ kubectl apply -f - <<EOF
apiVersion: rbac.authorization.k8s.io/v1
kind: RoleBinding
metadata:
  name: debug-tool-rolebinding
  namespace: ocnrf
roleRef:
  apiGroup: rbac.authorization.k8s.io
  kind: Role
  name: debug-tool-role
subjects:
- kind: Group
  apiGroup: rbac.authorization.k8s.io
  name: system:serviceaccounts
EOF
```

## 2. Configuration in NF specific Helm

Following updates must be performed in custom\_values.yaml file.

- a. Log in to the NF server.
- b. Open the custom\_values file:

```
$ vim <custom_values file>
```

- c. Under global configuration, add the following:

```
# Allowed Values: DISABLED, ENABLED
# Preference is to set "resources" request and limit to same values to
avoid HPA issues.
extraContainers: DISABLED
debugToolContainerMemoryLimit: 4Gi
extraContainersVolumesTpl: |
  - name: debug-tools-dir
    emptyDir:
      medium: Memory
      sizeLimit: {{ .Values.global.debugToolContainerMemoryLimit |
quote }}
extraContainersTpl: |
  - command:
    - /bin/sleep
    - infinity
    image: <image-name>:<image-tag>
    imagePullPolicy: Always
    name: tools
    resources:
      requests:
        ephemeral-storage: "512Mi"
```

```

        cpu: "0.5"
        memory: {{ .Values.global.debugToolContainerMemoryLimit |
quote }}
    limits:
        ephemeral-storage: "512Mi"
        cpu: "0.5"
        memory: {{ .Values.global.debugToolContainerMemoryLimit |
quote }}
    securityContext:
        allowPrivilegeEscalation: true
        capabilities:
            drop:
            - ALL
            add:
            - NET_RAW
            - NET_ADMIN
        runAsUser: <user-id>
    volumeMounts:
    - mountPath: /tmp/tools
      name: debug-tools-dir

```

#### **Note**

- Debug Tool Container comes up with the default user ID - 7000. If you want to override this default value, use the `runAsUser` field, or else, you can skip the field.

Default value: uid=7000(debugtool) gid=7000(debugtool)  
groups=7000(debugtool)

- In case you want to customize the container name, replace the `name` field in the above values.yaml with the following:

```

name: {{ printf "%s-tools-%s" (include "getprefix" .)
(include "getsuffix" .) | trunc 63 | trimPrefix "-" |
trimSuffix "-" }}

```

This will ensure that the container name is prefixed and suffixed with the necessary values.

- d. Under service specific configurations for which debugging is required, add the following:

```

# Allowed Values: DISABLED, ENABLED, USE_GLOBAL_VALUE
extraContainers: USE_GLOBAL_VALUE

```

**Note**

- At the global level, extraContainers flag can be used to enable or disable injecting extra containers globally. This ensures that all the services that use this global value have extra containers enabled or disabled using a single flag.
- At the service level, extraContainers flag determines whether to use the extra container configuration from the global level or enable or disable injecting extra containers for the specific service.

## 3.2 Deploy Debug Tool

Following is the procedure to run Debug Tool.

1. Run the following command to retrieve the POD details:

```
$ kubectl get pods -n <k8s namespace>
```

Example:

```
$ kubectl get pods -n ocnrf
```

Sample output:

| NAME                                    | READY | STATUS  | RESTARTS | AGE |
|-----------------------------------------|-------|---------|----------|-----|
| ocnrf-egressgateway-d6567bbdb-9jrsx     | 3/3   | Running | 0        | 30h |
| ocnrf-egressgateway-d6567bbdb-ntn2v     | 3/3   | Running | 0        | 30h |
| ocnrf-ingressgateway-754d645984-h9vzq   | 3/3   | Running | 0        | 30h |
| ocnrf-ingressgateway-754d645984-njz4w   | 3/3   | Running | 0        | 30h |
| ocnrf-nfaccess-token-59fb96494c-k8w9p   | 3/3   | Running | 0        | 30h |
| ocnrf-nfaccess-token-49fb96494c-k8w9q   | 3/3   | Running | 0        | 30h |
| ocnrf-nfdiscovery-84965d4fb9-rjxg2      | 2/2   | Running | 0        | 30h |
| ocnrf-nfdiscovery-94965d4fb9-rjxg3      | 2/2   | Running | 0        | 30h |
| ocnrf-nfregistration-64f4d8f5d5-6q92j   | 2/2   | Running | 0        | 30h |
| ocnrf-nfregistration-44f4d8f5d5-6q92i   | 2/2   | Running | 0        | 30h |
| ocnrf-nfsubscription-5b6db965b9-gcvpf   | 2/2   | Running | 0        | 30h |
| ocnrf-nfsubscription-4b6db965b9-gcvpe   | 2/2   | Running | 0        | 30h |
| ocnrf-nrfauditor-67b676dd87-xktbm       | 2/2   | Running | 0        | 30h |
| ocnrf-nrfconfiguration-678fddc5f5-c5htj | 2/2   | Running | 0        | 30h |
| ocnrf-appinfo-8b7879cdb-jds4r           | 2/2   | Running | 0        | 30h |

2. Run the following command to enter Debug Tool Container:

```
$ kubectl exec -it <pod name> -c <debug_container name> -n <namespace> bash
```

Example:

```
$ kubectl exec -it ocnrf-nfaccess-token-49fb96494c-k8w9q -c tools -n ocnrf
bash
```

- Run the debug tools:

```
bash -4.2$ <debug_tools>
```

Example:

```
bash -4.2$ tcpdump
```

- Copy the output files from container to host:

```
$ kubectl cp -c <debug_container name> <pod name>:<file location in container> -n <namespace> <destination location>
```

Example:

```
$ kubectl cp -c tools ocnrf-nfaccessstoken-49fb96494c-k8w9q:/tmp/capture.pcap -n ocnrf /tmp/
```

## 3.3 Tools Tested in Debug Container

Following is the list of debugging tools that are tested.

### tcpdump

The following table describes the options that are testing using tcpdump tool.

**Table 3-1 tcpdump**

| Options Tested | Description                                                                                                       | Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Capabilities          |
|----------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| -D             | Print the list of the network interfaces available on the system and on which <i>tcpdump</i> can capture packets. | <pre>tcpdump -D</pre> <ol style="list-style-type: none"> <li>eth0.</li> <li>nflog (Linux netfilter log (NFLOG) interface)</li> <li>nfqueue (Linux netfilter queue (NFQUEUE) interface)</li> <li>any (Pseudo-device that captures on all interfaces)</li> <li>lo [Loopback]</li> </ol>                                                                                                                                                                                                                                                                                                                                                            | NET_ADMIN,<br>NET_RAW |
| -i             | Listen on <i>interface</i>                                                                                        | <pre>tcpdump -i eth0</pre> <pre>tcpdump: verbose output suppressed, use -v or -vv for full protocol decoding</pre> <pre>listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes</pre> <pre>12:10:37.381199 IP cncc-core-ingress-gateway-7ffc49bb7f-2kkhc.46519 &gt; kubernetes.default.svc.cluster.local.https: Flags [P], seq 1986927241:1986927276, ack 1334332290, win 626, options [nop,nop,TS val 849591834 ecr 849561833], length 3512</pre> <pre>12:10:37.381952 IP cncc-core-ingress-gateway-7ffc49bb7f-2kkhc.45868 &gt; kube-dns.kube-system.svc.cluster.local.domain: 62870+ PTR? 1.0.96.10.in-addr.arpa. (40)</pre> | NET_ADMIN,<br>NET_RAW |

Table 3-1 (Cont.) tcpdump

| Options Tested | Description                                                                  | Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Capabilities          |
|----------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| -w             | Write the raw packets to file rather than parsing and printing them out.     | tcpdump -w capture.pcap -i eth0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NET_ADMIN,<br>NET_RAW |
| -r             | Read packets from <i>file</i> (which was created with the <b>-w</b> option). | tcpdump -r capture.pcap<br>reading from file /tmp/capture.pcap, link-type EN10MB (Ethernet)12:13:07.381019 IP cncc-core-ingress-gateway-7ffc49bb7f-2kkhc.46519 > kubernetes.default.svc.cluster.local.https: Flags [P.], seq 1986927416:1986927451, ack 1334332445, win 626, options [nop,nop,TS val 849741834 ecr 849711834], length 3512:13:07.381194 IP kubernetes.default.svc.cluster.local.https > cncc-core-ingress-gateway-7ffc49bb7f-2kkhc.46519: Flags [P.], seq 1:32, ack 35, win 247, options [nop,nop,TS val 849741834 ecr 849741834], length 3112:13:07.381207 IP cncc-core-ingress-gateway-7ffc49bb7f-2kkhc.46519 > kubernetes.default.svc.cluster.local.https: Flags [.], ack 32, win 626, options [nop,nop,TS val 849741834 ecr 849741834], length 0 | NET_ADMIN,<br>NET_RAW |

**ip**

The following table describes the options that are testing using ip tool.

Table 3-2 ip

| Options Tested | Description                 | Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Capabilities |
|----------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| addr show      | Look at protocol addresses. | ip addr show<br>1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defaultlink/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00inet 127.0.0.1/8 scope host lovalid_lft forever preferred_lft forever2: tunl0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group defaultlink/ipp 0.0.0.0 brd 0.0.0.04: eth0@if190: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1440 qdisc noqueue state UP group defaultlink/ether aa:5a:27:8d:74:6f brd ff:ff:ff:ff:ff:ff link-netnsid 0inet 192.168.219.112/32 scope global eth0valid_lft forever preferred_lft forever | --           |
| route show     | List routes                 | ip route show<br>default via 169.254.1.1 dev eth0<br>169.254.1.1 dev eth0 scope link                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | --           |

Table 3-2 (Cont.) ip

| Options Tested | Description         | Output                                                                                                                                                                                                                                                                                                     | Capabilities |
|----------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| addrlabel list | List address labels | ip addrlabel list<br>prefix ::1/128 label 0<br>prefix ::/96 label 3<br>prefix ::ffff:0.0.0.0/96 label 4<br>prefix 2001::/32 label 6<br>prefix 2001:10::/28 label 7<br>prefix 3ffe::/16 label 12<br>prefix 2002::/16 label 2<br>prefix fec0::/10 label 11<br>prefix fc00::/7 label 5<br>prefix ::/0 label 1 | --           |

**netstat**

The following table describes the options that are testing using netstat tool.

Table 3-3 netstat

| Options Tested | Description                                                                                  | Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Capabilities |
|----------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| -a             | Show both listening and non-listening (for TCP, this means established connections) sockets. | netstat -a<br>Active Internet connections (servers and established)Proto Recv-Q Send-Q Local Address Foreign Address Statetcp 0 0 0.0.0.0:tpoxy 0.0.0.0:* LISTENTcp 0 0 0.0.0.0:websm 0.0.0.0:* LISTENTcp 0 0 cncc-core-ingress:websm 10-178-254-194.ku:47292 TIME_WAITtcp 0 0 cncc-core-ingress:46519 kubernetes.default:https ESTABLISHEDtcp 0 0 cncc-core-ingress:websm 10-178-254-194.ku:47240 TIME_WAITtcp 0 0 cncc-core-ingress:websm 10-178-254-194.ku:47347 TIME_WAITudp 0 0 localhost:59351 localhost:ambit-lm ESTABLISHEDActive UNIX domain sockets (servers and established)Proto RefCnt Flags Type State I-Node Pathunix 2 [ ] STREAM CONNECTED 576064861 | --           |
| -l             | Show only listening sockets.                                                                 | netstat -l<br>Active Internet connections (only servers)Proto Recv-Q Send-Q Local Address Foreign Address Statetcp 0 0 0.0.0.0:tpoxy 0.0.0.0:* LISTENTcp 0 0 0.0.0.0:websm 0.0.0.0:* LISTENActive UNIX domain sockets (only servers)Proto RefCnt Flags Type State I-Node Path                                                                                                                                                                                                                                                                                                                                                                                         | --           |
| -s             | Display summary statistics for each protocol.                                                | netstat -s<br>Ip:4070 total packets received0 forwarded0 incoming packets discarded4070 incoming packets delivered4315 requests sent outIcmp:0 ICMP messages received0 input ICMP message failed.ICMP input histogram:2 ICMP messages sent0 ICMP messages failedICMP output histogram:destination unreachable: 2                                                                                                                                                                                                                                                                                                                                                      | --           |

**Table 3-3 (Cont.) netstat**

| Options Tested | Description                                | Output                                                                                                                                                                          | Capabilities |
|----------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| -i             | Display a table of all network interfaces. | netstat -i<br>Kernel Interface table<br>face MTU RX-OK RX-ERR RX-DRP<br>RX-OVR TX-OK TX-ERR TX-DRP TX-OVR Flg<br>eth0 1440 4131 0 0 0 4355 0 0 0 BMRUlo 65536 0 0 0 0 0 0 0 LRU | --           |

**curl**

The following table describes the options that are testing using curl tool.

**Table 3-4 curl**

| Options Tested | Description                               | Output                                            | Capabilities |
|----------------|-------------------------------------------|---------------------------------------------------|--------------|
| -o             | Write output to <file> instead of stdout. | curl -o file.txt http://abc.com/file.txt          | --           |
| -x             | Use the specified HTTP proxy.             | curl -x proxy.com:8080 -o http://abc.com/file.txt | --           |

**ping**

The following table describes the options that are testing using ping tool.

**Table 3-5 ping**

| Options Tested              | Description                                                                                                                   | Output                      | Capabilities          |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------|
| <ip>                        | Run a ping test to see whether the target host is reachable or not.                                                           | ping 10.178.254.194         | NET_ADMIN,<br>NET_RAW |
| -c                          | Stop after sending 'c' number of ECHO_REQUEST packets.                                                                        | ping -c 5 10.178.254.194    | NET_ADMIN,<br>NET_RAW |
| -f (with non zero interval) | Flood ping. For every ECHO_REQUEST sent, a period "." is printed, while for every ECHO_REPLY received a backspace is printed. | ping -f -i 2 10.178.254.194 | NET_ADMIN,<br>NET_RAW |

**nmap**

The following table describes the options that are testing using nmap tool.

Table 3-6 nmap

| Options Tested | Description                                                                                    | Output                                                                                                                                                                                                                                                                                                                                                                                                                                             | Capabilities |
|----------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <ip>           | Scan for Live hosts, Operating systems, packet filters and open ports running on remote hosts. | <pre> nmap 10.178.254.194  Starting Nmap 6.40 ( http://nmap.org ) at 2020-09-29 05:54 UTC Nmap scan report for 10-178-254-194.kubernetes.default.svc.cluster .local (10.178.254.194) Host is up (0.00046s latency). Not shown: 995 closed ports PORT      STATE SERVICE 22/tcp    open  ssh 179/tcp   open  bgp 6666/tcp  open  irc 6667/tcp  open  irc 30000/tcp open  unknown Nmap done: 1 IP address (1 host up) scanned in 0.04 seconds </pre> | --           |

Table 3-6 (Cont.) nmap

| Options Tested | Description              | Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Capabilities |
|----------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| -v             | Increase verbosity level | <pre> nmap -v 10.178.254.194  Starting Nmap 6.40 ( http://nmap.org ) at 2020-09-29 05:55 UTC Initiating Ping Scan at 05:55 Scanning 10.178.254.194 [2 ports] Completed Ping Scan at 05:55, 0.00s elapsed (1 total hosts) Initiating Parallel DNS resolution of 1 host. at 05:55 Completed Parallel DNS resolution of 1 host. at 05:55, 0.00s elapsed Initiating Connect Scan at 05:55 Scanning 10-178-254-194.kubernetes.default.svc.cluster .local (10.178.254.194) [1000 ports] Discovered open port 22/tcp on 10.178.254.194 Discovered open port 30000/tcp on 10.178.254.194 Discovered open port 6667/tcp on 10.178.254.194 Discovered open port 6666/tcp on 10.178.254.194 Discovered open port 179/tcp on 10.178.254.194 Completed Connect Scan at 05:55, 0.02s elapsed (1000 total ports) Nmap scan report for 10-178-254-194.kubernetes.default.svc.cluster .local (10.178.254.194) Host is up (0.00039s latency). Not shown: 995 closed ports PORT STATE SERVICE 22/tcp open  ssh 179/tcp open  bgp 6666/tcp open  irc 6667/tcp open  irc 30000/tcp open unknown  Read data files from: /usr/bin/./share/nmap Nmap done: 1 IP address (1 host up) scanned in 0.04 seconds </pre> | --           |

Table 3-6 (Cont.) nmap

| Options Tested | Description                                             | Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Capabilities |
|----------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| -iL            | Scan all the listed IP addresses in a file. Sample file | <pre>nmap -iL sample.txt  Starting Nmap 6.40 ( http://nmap.org ) at 2020-09-29 05:57 UTC Nmap scan report for localhost (127.0.0.1) Host is up (0.00036s latency). Other addresses for localhost (not scanned): 127.0.0.1 Not shown: 998 closed ports PORT STATE SERVICE 8081/tcp open blackice-icecap 9090/tcp open zeus-admin  Nmap scan report for 10-178-254-194.kubernetes.default.svc.cluster .local (10.178.254.194) Host is up (0.00040s latency). Not shown: 995 closed ports PORT STATE SERVICE 22/tcp open ssh 179/tcp open bgp 6666/tcp open irc 6667/tcp open irc 30000/tcp open unknown  Nmap done: 2 IP addresses (2 hosts up) scanned in 0.06 seconds</pre> | --           |

**dig**

The following table describes the options that are testing using dig tool.

Table 3-7 dig

| Options Tested | Description                                                                                                   | Output                                                                                                  | Capabilities |
|----------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------|
| <ip>           | It performs DNS lookups and displays the answers that are returned from the name server(s) that were queried. | <pre>dig 10.178.254.194</pre> <p><b>Note:</b> The IP should be reachable from inside the container.</p> | --           |
| -x             | Query DNS Reverse lookup.                                                                                     | <pre>dig -x 10.178.254.194</pre>                                                                        | --           |

## 3.4 Debug Tool Configuration Parameters

Following are the parameters used to configure debug tool.

**CNE Parameters****Table 3-8 CNE Parameters**

| Parameter                     | Description                                                                                                                             |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| apiVersion                    | APIVersion defines the version schema of this representation of an object.                                                              |
| kind                          | Kind is a string value representing the REST resource this object represents.                                                           |
| metadata                      | Standard object's metadata.                                                                                                             |
| metadata.name                 | Name must be unique within a namespace.                                                                                                 |
| spec                          | This defines the policy enforced.                                                                                                       |
| spec.allowPrivilegeEscalation | Gates whether or not a user is allowed to set the security context of a container to allowPrivilegeEscalation=true.                     |
| spec.allowedCapabilities      | Provides a list of capabilities that are allowed to be added to a container.                                                            |
| spec.fsGroup                  | Controls the supplemental group applied to some volumes. RunAsAny allows any fsGroup ID to be specified.                                |
| spec.runAsUser                | Controls which user ID the containers are run with. RunAsAny allows any runAsUser to be specified.                                      |
| spec.seLinux                  | RunAsAny allows any seLinuxOptions to be specified.                                                                                     |
| spec.supplementalGroups       | Controls which group IDs containers add. RunAsAny allows any supplementalGroups to be specified.                                        |
| spec.volumes                  | Provides a list of allowed volume types. The allowable values correspond to the volume sources that are defined when creating a volume. |

**Role Creation Parameters****Table 3-9 Role Creation**

| Parameter           | Description                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------|
| apiVersion          | APIVersion defines the schema version of this representation of an object.                                     |
| kind                | Kind is a string value representing the REST resource this object represents.                                  |
| metadata            | Standard object's metadata.                                                                                    |
| metadata.name       | Name must be unique within a namespace.                                                                        |
| metadata.namespace  | Namespace defines the space within which each name must be unique.                                             |
| rules               | Rules holds all the PolicyRules for this Role                                                                  |
| apiGroups           | APIGroups is the name of the APIGroup that contains the resources.                                             |
| rules.resources     | Resources is a list of resources this rule applies to.                                                         |
| rules.verbs         | Verbs is a list of Verbs that apply to ALL the ResourceKinds and AttributeRestrictions contained in this rule. |
| rules.resourceNames | ResourceNames is an optional allowed list of names that the rule applies to.                                   |

**Table 3-10 Role Binding Creation**

| Parameter          | Description                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------|
| apiVersion         | APIVersion defines the version of schema of this representation of an object.                                |
| kind               | Kind is a string value representing the REST resource this object represents.                                |
| metadata           | Standard object's metadata.                                                                                  |
| metadata.name      | Name must be unique within a namespace.                                                                      |
| metadata.namespace | Namespace defines the space within which each name must be unique.                                           |
| roleRef            | RoleRef can reference a Role in the current namespace or a ClusterRole in the global namespace.              |
| roleRef.apiGroup   | APIGroup is the group for the resource being referenced                                                      |
| roleRef.kind       | Kind is the type of resource being referenced                                                                |
| roleRef.name       | Name is the name of resource being referenced                                                                |
| subjects           | Subjects holds references to the objects the role applies to.                                                |
| subjects.kind      | Kind of object being referenced. Values defined by this API group are "User", "Group", and "ServiceAccount". |
| subjects.apiGroup  | APIGroup holds the API group of the referenced subject.                                                      |
| subjects.name      | Name of the object being referenced.                                                                         |

**Debug Tool Configuration Parameters****Table 3-11 Debug Tool Configuration Parameters**

| Parameter                                    | Description                                                                       |
|----------------------------------------------|-----------------------------------------------------------------------------------|
| extraContainers                              | Specifies the spawns debug container along with application container in the pod. |
| debugToolContainerMemoryLimit                | Indicates the memory assigned for the debug tool container.                       |
| extraContainersVolumesTpl                    | Specifies the extra container template for the debug tool volume.                 |
| extraContainersVolumesTpl.name               | Indicates the name of the volume for debug tool logs storage.                     |
| extraContainersVolumesTpl.emptyDir.medium    | Indicates the location where emptyDir volume is stored.                           |
| extraContainersVolumesTpl.emptyDir.sizeLimit | Indicates the emptyDir volume size.                                               |
| command                                      | String array used for container command.                                          |
| image                                        | Docker image name                                                                 |
| imagePullPolicy                              | Image Pull Policy                                                                 |
| name                                         | Name of the container                                                             |
| resources                                    | Compute Resources required by this container                                      |
| resources.limits                             | Limits describes the maximum amount of compute resources allowed                  |
| resources.requests                           | Requests describes the minimum amount of compute resources required               |
| resources.limits.cpu                         | CPU limits                                                                        |
| resources.limits.memory                      | Memory limits                                                                     |
| resources.limits.ephemeral-storage           | Ephemeral Storage limits                                                          |

**Table 3-11 (Cont.) Debug Tool Configuration Parameters**

| Parameter                                | Description                                                                                                                                                                                |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| resources.requests.cpu                   | CPU requests                                                                                                                                                                               |
| resources.requests.memory                | Memory requests                                                                                                                                                                            |
| resources.requests.ephemeral-storage     | Ephemeral Storage requests                                                                                                                                                                 |
| securityContext                          | Security options the container should run with.                                                                                                                                            |
| securityContext.allowPrivilegeEscalation | AllowPrivilegeEscalation controls whether a process can gain more privileges than its parent process. This directly controls if the no_new_privs flag will be set on the container process |
| securityContext.readOnlyRootFilesystem   | Whether this container has a read-only root filesystem. Default is false.                                                                                                                  |
| securityContext.capabilities             | The capabilities to add or drop when running containers. Defaults to the default set of capabilities granted by the container runtime.                                                     |
| securityContext.capabilities.drop        | Removed capabilities                                                                                                                                                                       |
| securityContext.capabilities.add         | Added capabilities                                                                                                                                                                         |
| securityContext.runAsUser                | The UID to run the entry point of the container process.                                                                                                                                   |
| volumeMounts.mountPath                   | Indicates the path for volume mount.                                                                                                                                                       |
| volumeMounts.name                        | Indicates the name of the directory for debug tool logs storage.                                                                                                                           |

# 4

## Troubleshooting NRF

This chapter provides information to troubleshoot the common errors that can be encountered during the preinstall, installation, upgrade, and rollback procedures of Oracle Communications Cloud Native Core, Network Repository Function (NRF).

Following are the troubleshooting procedures:

- [Helm Install Failure](#)
- [Custom Value File Parse Failure](#)
- [Helm Test Error Scenarios](#)
- [Upgrade or Rollback Failure](#)

### Note

kubect1 commands might vary based on the platform deployment. Replace kubect1 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 Core, Cloud Native Environment (CNE) version of kube-api server.

### Caution

User, computer and applications, and character encoding settings may cause an issue when copy-pasting commands or any content from PDF. PDF reader version also affects the copy-pasting functionality. It is recommended to verify the copy-pasted content, especially when hyphens or any special characters are part of the copied content.

### Note

The performance and capacity of the NRF system may vary based on the call model, Feature or Interface configuration, and underlying CNE and hardware environment.

## 4.1 Generic Checklist

The following sections provide a generic checklist for troubleshooting tips.

### Deployment related tips

Perform the following checks after the deployment:

- Are NRF deployment, pods, and services created?  
Are NRF deployment, pods, and services running and available?

Run the following command:

```
# kubectl -n <namespace> get deployments,pods,svc
```

Inspect the output, check the following columns:

- AVAILABLE of deployment
- READY, STATUS, and RESTARTS of a pod
- PORT(S) of service
- Is the correct image used?
- Is the correct environment variables set in the deployment?

Run the following command:

```
# kubectl -n <namespace> get deployment <deployment-name> -o yaml
```

Inspect the output, check the environment and image.

```
# kubectl -n nrf-svc get deployment ocnrf-nfregistration -o yaml
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  annotations:
    deployment.kubernetes.io/revision: "1"
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"apps/v1","kind":"Deployment","metadata":
{"annotations":{},"name":"ocnrf-nfregistration","namespace":"nrf-
svc"},"spec":{"replicas":1,"selector":{"matchLabels":{"app":"ocnrf-
nfregistration"}},"template":{"metadata":{"labels":{"app":"ocnrf-
nfregistration"}},"spec":{"containers":[{"env":
[{"name":"MYSQL_HOST","value":"mysql"},
{"name":"MYSQL_PORT","value":"3306"},
{"name":"MYSQL_DATABASE","value":"nrfdb"},
{"name":"NRF_REGISTRATION_ENDPOINT","value":"ocnrf-nfregistration"},
{"name":"NRF_SUBSCRIPTION_ENDPOINT","value":"ocnrf-nfsubscription"},
{"name":"NF_HEARTBEAT","value":"120"},
{"name":"DISC_VALIDITY_PERIOD","value":"3600"}],"image":"dsr-master0:5000/
ocnrf-nfregistration:latest","imagePullPolicy":"Always","name":"ocnrf-
nfregistration","ports":[{"containerPort":8080,"name":"server"}]}]}]}
creationTimestamp: 2018-08-27T15:45:59Z
generation: 1
name: ocnrf-nfregistration
namespace: nrf-svc
resourceVersion: "2336498"
selfLink: /apis/extensions/v1beta1/namespaces/nrf-svc/deployments/ocnrf-
nfregistration
uid: 4b82fe89-aa10-11e8-95fd-fa163f20f9e2
spec:
  progressDeadlineSeconds: 600
  replicas: 1
  revisionHistoryLimit: 10
  selector:
    matchLabels:
      app: ocnrf-nfregistration
```

```

strategy:
  rollingUpdate:
    maxSurge: 25%
    maxUnavailable: 25%
    type: RollingUpdate
template:
  metadata:
    creationTimestamp: null
    labels:
      app: ocnrf-nfregistration
  spec:
    containers:
      - env:
        - name: MYSQL_HOST
          value: mysql
        - name: MYSQL_PORT
          value: "3306"
        - name: MYSQL_DATABASE
          value: nrfdb
        - name: NRF_REGISTRATION_ENDPOINT
          value: ocnrf-nfregistration
        - name: NRF_SUBSCRIPTION_ENDPOINT
          value: ocnrf-nfsubscription
        - name: NF_HEARTBEAT
          value: "120"
        - name: DISC_VALIDITY_PERIOD
          value: "3600"
      image: dsr-master0:5000/ocnrf-nfregistration:latest
      imagePullPolicy: Always
      name: ocnrf-nfregistration
      ports:
        - containerPort: 8080
          name: server
          protocol: TCP
      resources: {}
      terminationMessagePath: /dev/termination-log
      terminationMessagePolicy: File
    dnsPolicy: ClusterFirst
    restartPolicy: Always
    schedulerName: default-scheduler
    securityContext: {}
    terminationGracePeriodSeconds: 30
status:
  availableReplicas: 1
  conditions:
    - lastTransitionTime: 2018-08-27T15:46:01Z
      lastUpdateTime: 2018-08-27T15:46:01Z
      message: Deployment has minimum availability.
      reason: MinimumReplicasAvailable
      status: "True"
      type: Available
    - lastTransitionTime: 2018-08-27T15:45:59Z
      lastUpdateTime: 2018-08-27T15:46:01Z
      message: ReplicaSet "ocnrf-nfregistration-7898d657d9" has successfully
progressed.
      reason: NewReplicaSetAvailable

```

```
status: "True"
type: Progressing
observedGeneration: 1
readyReplicas: 1
replicas: 1
updatedReplicas: 1
```

- Check if the microservices can access each other using REST interface.  
Run the following command:

```
# kubectl -n <namespace> exec <pod name> -- curl <uri>
```

Example:

```
# kubectl -n nrf-svc exec ocnrf-nfregistration-44f4d8f5d5-6q92i -- curl
http://ocnrf-nfregistration:8080/nnrf-nfm/v1/nf-instances
```

#### Note

These commands are in their simple form and display the logs only if there is a single nrf<registration> and nf<subscription> pod deployed.

### Application related tips

Run the following command to check the application logs and look for exceptions:

```
# kubectl -n <namespace> logs -f <pod name>
```

You can use '-f' to follow the logs or 'grep' for a specific pattern in the log output.

Example:

```
# kubectl -n nrf-svc logs -f $(kubectl -n nrf-svc get pods -o name|cut -d '/' -
f2|grep nrf)
# kubectl -n nrf-svc logs -f $(kubectl -n nrf-svc get pods -o name|cut -d '/' -
f2|grep nrf)
```

#### Note

These commands are in their simple form and display the logs only if there is 1 nrf<registration> and nf<subscription> pod deployed.

## 4.2 Deployment Related Issues

This section describes the most common deployment related issues and their resolution steps. It is recommended to perform the resolution steps provided in this guide. If the issue still persists, then contact [My Oracle Support](#) (MOS).

## 4.2.1 Installation

This section describes the common installation related issues and their resolution steps.

### 4.2.1.1 Helm Install Failure

This section describes the various scenarios in which `helm install` might fail. Following are some of the scenarios:

- [Incorrect image name in ocnrf-custom-values files](#)
- [Docker registry is configured incorrectly](#)
- [Continuous Restart of Pods](#)

#### 4.2.1.1.1 Incorrect image name in ocnrf-custom-values files

##### Problem

`helm install` might fail if an incorrect image name is provided in the `ocnrf-custom-values.yaml` file.

##### Error Code/Error Message

When `kubectl get pods -n <ocnrf_namespace>` is run, the status of the pods might be `ImagePullBackOff` or `ErrImagePull`.

For example:

```
$ kubectl get pods -n ocnrf
```

| NAME                                    | READY | STATUS           | RESTARTS | AGE |
|-----------------------------------------|-------|------------------|----------|-----|
| ocnrf-egressgateway-d6567bbdb-9jrsx     | 2/2   | ImagePullBackOff | 0        | 30h |
| ocnrf-egressgateway-d6567bbdb-ntn2v     | 2/2   | Running          | 0        | 30h |
| ocnrf-ingressgateway-754d645984-h9vzq   | 2/2   | Running          | 0        | 30h |
| ocnrf-ingressgateway-754d645984-njz4w   | 2/2   | Running          | 0        | 30h |
| ocnrf-nfaccess-token-59fb96494c-k8w9p   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfaccess-token-49fb96494c-k8w9q   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfdiscovery-84965d4fb9-rjxg2      | 1/1   | Running          | 0        | 30h |
| ocnrf-nfdiscovery-94965d4fb9-rjxg3      | 1/1   | Running          | 0        | 30h |
| ocnrf-nfregistration-64f4d8f5d5-6q92j   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfregistration-44f4d8f5d5-6q92i   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfsubscription-5b6db965b9-gcvpf   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfsubscription-4b6db965b9-gcvpe   | 1/1   | Running          | 0        | 30h |
| ocnrf-nrfauditor-67b676dd87-xktbm       | 1/1   | Running          | 0        | 30h |
| ocnrf-nrfconfiguration-678fddc5f5-c5htj | 1/1   | Running          | 0        | 30h |
| ocnrf-appinfo-8b7879cdb-jds4r           | 1/1   | Running          | 0        | 30h |

##### Solution

Perform the following steps to verify and correct the image name:

1. Check `ocnrf-custom-values.yaml` file has the release specific image name and tags.

```
vi ocnrf-custom-values-<release-number>
```

For NRF images details, see "**Customizing NRF**" in *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*.

2. Edit `ocnrf-custom-values` file in case the release specific image name and tags must be modified.
3. Save the file.

- Run `helm install` command. For `helm install` command, see the "**Customizing NRF**" section in *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*.
- Run `kubectl get pods -n <ocnrf_namespace>` to verify if the status of all the pods is **Running**.  
For example:

```
$ kubectl get pods -n ocnrf
```

| NAME                                    | READY | STATUS  | RESTARTS | AGE |
|-----------------------------------------|-------|---------|----------|-----|
| ocnrf-egressgateway-d6567bbdb-9jrsx     | 2/2   | Running | 0        | 30h |
| ocnrf-egressgateway-d6567bbdb-ntn2v     | 2/2   | Running | 0        | 30h |
| ocnrf-ingressgateway-754d645984-h9vzq   | 2/2   | Running | 0        | 30h |
| ocnrf-ingressgateway-754d645984-njz4w   | 2/2   | Running | 0        | 30h |
| ocnrf-nfaccess-token-59fb96494c-k8w9p   | 1/1   | Running | 0        | 30h |
| ocnrf-nfaccess-token-49fb96494c-k8w9q   | 1/1   | Running | 0        | 30h |
| ocnrf-nfdiscovery-84965d4fb9-rjxg2      | 1/1   | Running | 0        | 30h |
| ocnrf-nfdiscovery-94965d4fb9-rjxg3      | 1/1   | Running | 0        | 30h |
| ocnrf-nfregistration-64f4d8f5d5-6q92j   | 1/1   | Running | 0        | 30h |
| ocnrf-nfregistration-44f4d8f5d5-6q92i   | 1/1   | Running | 0        | 30h |
| ocnrf-nfsubscription-5b6db965b9-gcvpf   | 1/1   | Running | 0        | 30h |
| ocnrf-nfsubscription-4b6db965b9-gcvpe   | 1/1   | Running | 0        | 30h |
| ocnrf-nrfauditor-67b676dd87-xktbm       | 1/1   | Running | 0        | 30h |
| ocnrf-nrfconfiguration-678fddc5f5-c5htj | 1/1   | Running | 0        | 30h |
| ocnrf-appinfo-8b7879cdb-jds4r           | 1/1   | Running | 0        | 30h |

#### 4.2.1.1.2 Docker registry is configured incorrectly

##### Problem

`helm install` might fail if the docker registry is not configured in all primary and secondary nodes.

##### Error Code or Error Message

When `kubectl get pods -n <ocnrf_namespace>` is performed, the status of the pods might be `ImagePullBackOff` or `ErrImagePull`.

For example:

```
$ kubectl get pods -n ocnrf
```

| NAME                                    | READY | STATUS           | RESTARTS | AGE |
|-----------------------------------------|-------|------------------|----------|-----|
| ocnrf-egressgateway-d6567bbdb-9jrsx     | 2/2   | ImagePullBackOff | 0        | 30h |
| ocnrf-egressgateway-d6567bbdb-ntn2v     | 2/2   | Running          | 0        | 30h |
| ocnrf-ingressgateway-754d645984-h9vzq   | 2/2   | Running          | 0        | 30h |
| ocnrf-ingressgateway-754d645984-njz4w   | 2/2   | Running          | 0        | 30h |
| ocnrf-nfaccess-token-59fb96494c-k8w9p   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfaccess-token-49fb96494c-k8w9q   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfdiscovery-84965d4fb9-rjxg2      | 1/1   | Running          | 0        | 30h |
| ocnrf-nfdiscovery-94965d4fb9-rjxg3      | 1/1   | Running          | 0        | 30h |
| ocnrf-nfregistration-64f4d8f5d5-6q92j   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfregistration-44f4d8f5d5-6q92i   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfsubscription-5b6db965b9-gcvpf   | 1/1   | Running          | 0        | 30h |
| ocnrf-nfsubscription-4b6db965b9-gcvpe   | 1/1   | Running          | 0        | 30h |
| ocnrf-nrfauditor-67b676dd87-xktbm       | 1/1   | Running          | 0        | 30h |
| ocnrf-nrfconfiguration-678fddc5f5-c5htj | 1/1   | Running          | 0        | 30h |
| ocnrf-appinfo-8b7879cdb-jds4r           | 1/1   | Running          | 0        | 30h |

##### Solution

Configure docker registry on all primary and secondary nodes. For more information on configuring the docker registry, see *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*.

### 4.2.1.1.3 Continuous Restart of Pods

#### Problem

`helm install` might fail if the MySQL primary and secondary hosts are not configured properly in `ocnrf-custom-values.yaml`.

#### Error Code/Error Message

When `kubectl get pods -n <ocnrf_namespace>` is performed, the pods restart count increases continuously.

For example:

```
$ kubectl get pods -n ocnrf
```

| NAME                                    | READY | STATUS  | RESTARTS | AGE |
|-----------------------------------------|-------|---------|----------|-----|
| ocnrf-egressgateway-d6567bbdb-9jrsx     | 2/2   | Running | 0        | 30h |
| ocnrf-egressgateway-d6567bbdb-ntn2v     | 2/2   | Running | 0        | 30h |
| ocnrf-ingressgateway-754d645984-h9vzq   | 2/2   | Running | 0        | 30h |
| ocnrf-ingressgateway-754d645984-njz4w   | 2/2   | Running | 2        | 30h |
| ocnrf-nfaccessstoken-59fb96494c-k8w9p   | 1/1   | Running | 0        | 30h |
| ocnrf-nfaccessstoken-49fb96494c-k8w9q   | 1/1   | Running | 0        | 30h |
| ocnrf-nfdiscovery-84965d4fb9-rjxg2      | 1/1   | Running | 0        | 30h |
| ocnrf-nfdiscovery-94965d4fb9-rjxg3      | 1/1   | Running | 0        | 30h |
| ocnrf-nfregistration-64f4d8f5d5-6q92j   | 1/1   | Running | 0        | 30h |
| ocnrf-nfregistration-44f4d8f5d5-6q92i   | 1/1   | Running | 0        | 30h |
| ocnrf-nfsubscription-5b6db965b9-gcvpf   | 1/1   | Running | 0        | 30h |
| ocnrf-nfsubscription-4b6db965b9-gcvpe   | 1/1   | Running | 0        | 30h |
| ocnrf-nrfauditor-67b676dd87-xktbm       | 1/1   | Running | 0        | 30h |
| ocnrf-nrfconfiguration-678fddc5f5-c5htj | 1/1   | Running | 0        | 30h |
| ocnrf-appinfo-8b7879cdb-jds4r           | 1/1   | Running | 0        | 30h |

#### Solution

MySQL servers(s) may not be configured properly according to the preinstallation steps. For configuring MySQL servers, see the "Configuring Database, Creating Users, and Granting Permissions" section in *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*.

### 4.2.1.2 Custom Value File Parse Failure

This section explains troubleshooting procedure in case of failure while parsing `ocnrf-custom-values.yaml` file.

#### Problem

Unable to parse `ocnrf-custom-values-x.x.x.yaml`, while running `helm install`.

#### Error Code/Error Message

Error: failed to parse `ocnrf-custom-values-x.x.x.yaml`: error converting YAML to JSON: yaml

#### Symptom

While creating the `ocnrf-custom-values-x.x.x.yaml` file, if the aforementioned error is received, it means that the file is not created properly. The tree structure may not have been followed or there may also be tab spaces in the file.

#### Solution

Perform the following:

1. Download the latest NRF templates zip file from [My Oracle Support](#). For more information, see the "Downloading NRF package" section in *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*.
2. Follow the steps mentioned in the "Installation Tasks" section in *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*.

## 4.2.2 Postinstallation

This section describes the common postinstallation related issues and their resolution steps.

### 4.2.2.1 Helm Test Error Scenarios

Following are the error scenarios that may be identified using helm test.

1. Run the following command to get the Helm Test pod name:

```
kubectl get pods -n <deployment-namespace>
```

2. When a helm test is performed, a new helm test pod is created. Check for the Helm Test pod that is in an error state.
3. Get the logs using the following command:

```
kubectl logs <podname> -n <namespace>
```

Example:

```
kubectl get <helm_test_pod> -n ocnrf
```

For further assistance, collect the logs and contact [MOS](#).

## 4.3 Upgrade or Rollback Failure

When NRF upgrade or rollback fails, perform the following procedure.

1. Check the pre or post upgrade logs or rollback hook logs in Kibana as applicable. Users can filter upgrade or rollback logs using the following filters:

- For upgrade: lifeCycleEvent=9001
- For rollback: lifeCycleEvent=9002

```
{
  "time_stamp": "2021-08-23 06:45:57.698+0000",
  "thread": "main",
  "level": "INFO",

  "logger": "com.oracle.cgbu.cne.ocnrf.hooks.releases.ReleaseHelmHook_1_14_1",
  "message": "{logMsg=Starting Pre-Upgrade hook Execution,
lifeCycleEvent=9001 | Upgrade, sourceRelease=101400,
targetRelease=101401}",

  "loc": "com.oracle.cgbu.ocnrf.common.utils.EventSpecificLogger.submit(Events"
```

```
pecificLogger.java:94)"  
}
```

2. Check the pod logs in Kibana to analyze the cause of failure.
3. After detecting the cause of failure, do the following:
  - For upgrade failure:
    - If the cause of upgrade failure is database or network connectivity issue, contact your system administrator. When the issue is resolved, rerun the upgrade command.
    - If the cause of failure occurs during the preupgrade phase, do not perform the roll back.
    - If the upgrade failure occurs during the postupgrade phase, for example, post upgrade hook failure due to target release pod not moving to ready state, then perform a rollback.
  - For rollback failure: If the cause of rollback failure is database or network connectivity issue, contact your system administrator. When the issue is resolved, rerun the rollback command.
4. If the issue persists, contact [My Oracle Support](#).

## 4.4 Troubleshooting CDS

### Service Operations responses doesn't contain Remote NRF Set Data

Following are scenarios where response doesn't contain remote NRF set data:

- [CDS is down](#)
- [CDS unable to sync with the remote NRF set](#)
- [Incorrect Feature Configuration](#)

#### CDS is down

1. When the CDS is down, the [OcnrfCacheDataServiceDown](#) alert is raised. All the NRF core microservices fall back to cnDBTier for serving the requests. In this case, the NRF instance has the local set georeplicated view and not the segment-level view.
2. Check the resolution steps to resolve the [OcnrfCacheDataServiceDown](#) alert.
3. Once the alert is cleared and CDS is in the Running state, the NRF core microservices connect to CDS to serve the requests.
4. In case the issue persists, capture all the outputs for the above steps and contact [My Oracle Support](#).

#### CDS unable to synchronize with the remote NRF set

1. If the CDS from a set is unable to synchronize the in-memory cache from the remote NRF's CDS, then the CDS attempts to reach healthy remote NRFs to synchronize the in-memory cache.
2. The retry attempt to the same remote NRF is performed based on the configuration in Egress Gateway.

3. The reroute from local NRF is based on the NRF Growth feature configuration. For more information about the feature configuration, see *Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide*.
4. If all the remote NRFs are not reachable, then the CDS from NRF uses the last known data from the remote set to serve the service requests.

#### Incorrect Feature Configuration

1. If the CDS from a set is unable to synchronize the in-memory cache from the remote NRF's CDS, then the CDS attempts to reach healthy remote NRFs to synchronize the in-memory cache.
2. Check the NRF Growth feature configuration as mentioned in the REST configuration. For more information about the feature configuration, see *Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide*.
3. In case the issue persists, capture all the outputs for the above steps and contact [My Oracle Support](#).

#### CDS Unreachable

1. Check for the [OcnrfDatabaseFallbackUsed](#) alert.  
If present, wait for 30 seconds to 1 minute and retry till the alerts are cleared. If the alerts are not cleared, see alerts for resolution steps.
2. In case the issue persists, capture all the outputs for the above steps and contact [My Oracle Support](#).

#### CDS unable to synchronization with the local cnDBTier

1. If the CDS is unable to synchronize the data with the local cnDBTier, then the CDS marks itself as not in the ready state.
2. With CDS not being ready, the NRF core services mark itself as not ready forcing the NF consumers and producers to move to mated and healthy NRFs.
3. The CDS to CDS synchronization request also fails so that the NRFs in the peer set move to healthy NRFs for updated data synchronization.

#### NF Records present in NRF after Deregistration

1. Check for the following alerts:
  - a. [OcnrfRemoteSetNrfSyncFailed](#)
  - b. [OcnrfSyncFailureFromAllNrfOfAnyRemoteSet](#)
  - c. [OcnrfSyncFailureFromAllNrfOfAllRemoteSets](#)  
If present, wait for 30 seconds to 1 minute and retry till the alerts are cleared. If the alerts are not cleared, see alerts for resolution steps.
2. Check the `nrfHostConfigList` configuration in the local NRF set.
3. In case the issue persists, capture all the outputs for the above steps and contact [My Oracle Support](#).

## 4.5 TLS Connection Failure

This section describes the TLS related issues and their resolution steps. It is recommended to attempt the resolution steps provided in this guide before contacting Oracle Support.

**Problem:** Handshake is not established between NRFs.

**Scenario:** When the client version is TLS 1.2 and the server version is TLS 1.3

#### Server Error Message

The client supported protocol versions[TLSv1.2] are not accepted by server preferences [TLSv1.3]

#### Client Error Message

Received fatal alert: protocol\_version

**Scenario:** When the client version is TLS 1.3 and the server version is TLS1.2

#### Server Error Message

The client supported protocol versions[TLSv1.3]are not accepted by server preferences [TLSv1.2]

#### Client Error Message

Received fatal alert: protocol\_version

#### Solution:

If the error logs have the SSL exception, do the following:

Check the TLS version of both NRFs, if both support different and single TLS versions, (that is, NRF1 supports TLS 1.2 only and NRF2 supports TLS 1.3 only or vice versa), handshake fails. Ensure that the TLS version is same for both NRFs or revert to default configuration for both NRFs. The TLS version communication supported are:

**Table 4-1 TLS Version Used**

| Client TLS Version | Server TLS Version | TLS Version Used |
|--------------------|--------------------|------------------|
| TLS 1.2, TLS 1.3   | TLS 1.2, TLS 1.3   | TLS 1.3          |
| TLS 1.3            | TLS 1.3            | TLS 1.3          |
| TLS 1.3            | TLS 1.2, TLS 1.3   | TLS 1.3          |
| TLS 1.2, TLS 1.3   | TLS 1.3            | TLS 1.3          |
| TLS 1.2            | TLS 1.2, TLS 1.3   | TLS 1.2          |
| TLS 1.2, TLS 1.3   | TLS 1.2            | TLS 1.2          |

Check the cipher suites being supported by both NRFs, it should be either the same or should have common cipher suites present. If not, revert to default configuration.

**Problem:** Pods not coming up after populating the `clientDisabledExtension` or `serverDisabledExtension` parameter.

#### Solution:

- Check the values given in the Helm parameters. The values listed cannot be added in these parameters:
  - `supported_versions`
  - `key_share`

- supported\_groups
- signature\_algorithms
- pre\_shared\_key

If any of the above values is present, remove them or revert to default configuration for the pod to come up.

**Problem:** Pods not coming up after populating `clientSignatureSchemes` parameter.

**Solution:**

- Check the values given in the Helm parameters.
- Value listed below should not be removed from these parameters:
  - rsa\_pkcs1\_sha512
  - rsa\_pkcs1\_sha384
  - rsa\_pkcs1\_sha256

If any of the above values is not present, add them or revert to default configuration for the pod to come up.

**Problem:** Connection Failure Due to Cipher Mismatch: NRF -Client and Producer Server for TLS 1.3

**Scenario:** The NRF client is configured to request a connection using TLS 1.3 with specific ciphers that are not supported by the producer server. As a result, the connection fails due to the cipher mismatch, preventing secure communication between the client and server.

**Client Error Message**

No appropriate protocol(protocol is disabled or cipher suites are inappropriate)

**Server Error Message**

Received fatal alert: handshake failure

**Solution:**

- Ensure that the following cipher suites are configured for the NRF client to use with TLS 1.3:
  - TLS\_AES\_128\_GCM\_SHA256
  - TLS\_AES\_256\_GCM\_SHA384
  - TLS\_CHACHA20\_POLY1305\_SHA256
- Ensure that both the client and server have at least one common TLS 1.3 cipher configured.
- Verify TLS 1.3 for secure communication between the NRF- Client and the producer server to ensure that the issue has been resolved.

**Problem:** Connection Failure for TLS 1.3 Due to Expired Certificates.

**Scenario:** The NRF -Client is attempting to establish a connection using TLS 1.3, but the connection fails due to expired certificates. Specifically, the NRF -Client is presenting TLS 1.3 certificates that have passed their validity period, which causes the Producer server to reject the connection.

**Client Error Message**

Service Unavailable for producer due to Certificate Expired

**Server Error Message**

Received fatal alert: handshake failure

**Solution:**

- Verify the validity of the current certificate.
- If the certificate has expired, renew it or extend its validity.
- Attempt to establish a connection between the NRF client and the Producer server to confirm that the issue has been resolved.
- Verify the TLS 1.3 for secure communication.

# 5

## NRF Alerts

This chapter includes information about the NRF alerts.

The following table describes the various alert levels generated by NRF:

**Table 5-1 Alerts Levels or Severity Types**

| Alerts Levels/Severity Types | Definition                                                                                                                                                                                                                                           |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Critical                     | Indicates a severe issue that poses a significant risk to safety, security, or operational integrity. It requires immediate response to address the situation and prevent serious consequences. Raised for conditions may affect the service of NRF. |
| Major                        | Indicates a more significant issue that has an impact on operations or poses a moderate risk. It requires prompt attention and action to mitigate potential escalation. Raised for conditions may affect the service of NRF.                         |
| Minor                        | Indicates a situation that is low in severity and does not pose an immediate risk to safety, security, or operations. It requires attention but does not demand urgent action. Raised for conditions may affect the service of NRF.                  |
| Info or Warn (Informational) | Provides general information or updates that are not related to immediate risks or actions. These alerts are for awareness and do not typically require any specific response. WARN and INFO alerts may not impact the service of NRF.               |

### Note

- Summary or dimensions may vary based on deployment.
- The alert triggering time varies as per the environment in which it is deployed.
- The performance and capacity of the NRF system may vary based on the call model, Feature or Interface configuration, and underlying CNE and hardware environment.

## 5.1 System Level Alerts

This section lists the system level alerts.

## 5.1.1 OcnrfNfStatusUnavailable

**Table 5-2 OcnrfNfStatusUnavailable**

| Field       | Details                                                                                                                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF services unavailable'                                                                                                                                                                                                                                             |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : All OCNRF services are unavailable.'                                                                                |
| Severity    | Critical                                                                                                                                                                                                                                                                 |
| Condition   | When all the NRF services are unavailable, either because the NRF is getting deployed or purged. The NRF services considered are nfregistration, nfsubscription, nrfauditor, nrfconfiguration, nfaccess token, nrfdiscovery, appinfo, ingressgateway, and egressgateway. |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7016                                                                                                                                                                                                                                          |
| Metric Used | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring.<br>If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                |

Table 5-2 (Cont.) OcnrfNfStatusUnavailable

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared automatically when the NRF services restart.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check for service-specific alerts which may be causing the issues with service exposure.</li> <li>2. Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> <ol style="list-style-type: none"> <li>a. Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>3. Refer to the application logs on Kibana and check for database related failures such as connectivity and invalid secrets. The logs can be filtered based on the services.</li> <li>4. Check for helm status to make sure there are no errors: <pre>\$ helm status &lt;helm release name of the desired NF&gt; -n &lt;namespace&gt;</pre> <p>If it is not in "STATUS : DEPLOYED", then capture logs and event again.</p> </li> <li>5. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/> <b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on the Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## 5.1.2 OcnrfPodsRestart

Table 5-3 OcnrfPodsRestart

| Field       | Details                                                                                                                                                                                                              |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Pod <Pod Name> has restarted.                                                                                                                                                                                       |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : A Pod has restarted' |
| Severity    | Major                                                                                                                                                                                                                |
| Condition   | A pod belonging to any of the NRF services have restarted.                                                                                                                                                           |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7017                                                                                                                                                                                      |

Table 5-3 (Cont.) OcnrfPodsRestart

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Metric Used</b>         | 'kube_pod_container_status_restarts_total'<br><b>Note:</b> This is a Kubernetes metric. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Recommended Actions</b> | <p>The alert is cleared automatically if the specific pod is up.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer to the application logs on Kibana and filter based on pod name, check for database related failures such as connectivity and Kubernetes secrets.</li> <li>2. To check the orchestration logs for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>a. Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>b. Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>3. Check the database status. For more information, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>4. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on the Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

### 5.1.3 NnrfNFManagementServiceDown

Table 5-4 NnrfNFManagementServiceDown

| Field              | Details                                                                                                                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'OCNRF Nnrf_Management service <nfregration nfsubscription nrfauditor> is down'                                                                                                    |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : NFManagement service is down' |
| <b>Severity</b>    | Critical                                                                                                                                                                           |
| <b>Condition</b>   | This alert is raised when either NFRegistration, NFSubscription, or NrfAuditor services are unavailable.                                                                           |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7018                                                                                                                                                    |

Table 5-4 (Cont.) NnrfNFManagementServiceDown

| Field       | Details                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used | "up"<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system. |

Table 5-4 (Cont.) NnrfNFManagementServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when all the Nnrf_NFManagement services nfregistration, nfsubscription, and nrfauditor are available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check if NfService specific alerts are generated to understand which service is down.<br/>Either some or all of the following alerts are generated based on which services are down <ul style="list-style-type: none"> <li>• OcnrfRegistrationServiceDown</li> <li>• OcnrfSubscriptionServiceDown</li> <li>• OcnrfAuditorServiceDown</li> </ul> </li> <li>2. To check the orchestration logs for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>a. Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>b. Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>3. Check for the POD's status if they are in "Running" state using the following command: <pre>\$ kubectl get pod -n &lt;namespace&gt;</pre> <p>If it is not in "Running" state, capture the pod logs and events by running the following command:</p> <pre>\$ kubectl get events --sort-by=.metadata.creationTimestamp -n &lt;namespace&gt;</pre> </li> <li>4. Refer to the application logs on Kibana and filter based on aforementioned service names. Check for ERROR WARNING logs for each of these services.</li> <li>5. Check the database status. For more information on how to check the database status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>6. Refer to the application logs on Kibana and filter the service appinfo, check for the service status of the nfregistration, nfsubscription, and nrfauditor services.</li> <li>7. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see</p> |

**Table 5-4 (Cont.) NnrfNFManagementServiceDown**

| Field            | Details                                                                                     |
|------------------|---------------------------------------------------------------------------------------------|
|                  | <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide.</i> |
| Available in OCI | No                                                                                          |

## 5.1.4 NnrfAccessTokenServiceDown

**Table 5-5 NnrfAccessTokenServiceDown**

| Field              | Details                                                                                                                                                                               |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'OCNRF Nnrf_NFAccessToken service nfaccesssoken is down'                                                                                                                              |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : NFAccessToken service down'      |
| <b>Severity</b>    | Critical                                                                                                                                                                              |
| <b>Condition</b>   | This alert is raised when NFAccessToken service is unavailable.                                                                                                                       |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7020                                                                                                                                                       |
| <b>Metric Used</b> | "up"<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available use a similar metric as exposed by the monitoring system. |

Table 5-5 (Cont.) NnrfAccessTokenServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the Nnrf_AccessToken service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of nfaccess token service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on nfaccess token service names. Check for ERROR WARNING logs.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5.1.5 NnrfNFDiscoveryServiceDown

Table 5-6 NnrfNFDiscoveryServiceDown

| Field             | Details                                                                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description       | 'OCNRF Nnrf_NFDiscovery service <i>nfdiscovery</i> is down'                                                                                                                  |
| Applicable in OCI | No                                                                                                                                                                           |
| Summary           | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : NFDiscovery service down' |
| Severity          | Critical                                                                                                                                                                     |
| Condition         | NFDiscovery is unavailable.                                                                                                                                                  |
| OID               | 1.3.6.1.4.1.323.5.3.36.1.2.7019                                                                                                                                              |

Table 5-6 (Cont.) NnrfNFDISCOVERYServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Actions | <p>The alert is cleared when the Nnrf_NFDISCOVERY service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of nfdiscovery service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on nfdiscovery service names. Check for ERROR WARNING logs.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## 5.1.6 OcnrfRegistrationServiceDown

Table 5-7 OcnrfRegistrationServiceDown

| Field       | Details                                                                                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF NFRegistration service <i>nfdiscovery</i> is down'                                                                                                                            |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : NFRegistration service is down' |
| Severity    | Critical                                                                                                                                                                             |
| Condition   | None of the pods of the NFRegistration microservice is available.                                                                                                                    |

Table 5-7 (Cont.) OcnrfRegistrationServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Recommended Actions | <p>The alert is cleared when the nregistration service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of nregistration service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on nregistration service names. Check for ERROR WARNING logs.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>. Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.1.7 OcnrfSubscriptionServiceDown

Table 5-8 OcnrfSubscriptionServiceDown

| Field       | Details                                                                                                                                                                              |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF NFSubscription service <i>nfsubscription</i> is down.'                                                                                                                        |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : NFSubscription service is down' |
| Severity    | Critical                                                                                                                                                                             |
| Condition   | None of the pods of the NFSubscription microservice is available.                                                                                                                    |

Table 5-8 (Cont.) OcnrfSubscriptionServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Actions | <p>The alert is cleared when the nfsubscription service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of nfsubscription service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on nfsubscription service names. Check for ERROR WARNING logs.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 5.1.8 OcnrfDiscoveryServiceDown

Table 5-9 OcnrfDiscoveryServiceDown

| Field       | Details                                                                                                                                                                        |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF NFDISCOVERY service <i>nfdiscovery</i> is down'                                                                                                                         |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : NFDISCOVERY service down' |
| Severity    | Critical                                                                                                                                                                       |
| Condition   | None of the pods of the NFDISCOVERY microservice is available.                                                                                                                 |

Table 5-9 (Cont.) OcnrfDiscoveryServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Recommended Actions | <p>The alert is cleared when the nfdiscovery service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of nfregistration service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on nfdiscovery service names. Check for ERROR WARNING logs.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5.1.9 OcnrfAccessTokenServiceDown

Table 5-10 OcnrfAccessTokenServiceDown

| Field       | Details                                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF NFAccessToken service <i>nfaccess token</i> is down                                                                                                                        |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : NFAccess token service down' |
| Severity    | Critical                                                                                                                                                                          |
| Condition   | None of the pods of the NFAccessToken microservice is available.                                                                                                                  |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7024                                                                                                                                                   |

Table 5-10 (Cont.) OcnrfAccessTokenServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Actions | <p>The alert is cleared when the nfaccess token service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of nfaccess token service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on nfaccess token service names. Check for ERROR WARNING logs.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 5.1.10 OcnrfAuditorServiceDown

Table 5-11 OcnrfAuditorServiceDown

| Field       | Details                                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF NrfAuditor service <i>nrfauditor</i> is down'                                                                                                                        |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : NrfAuditor service down' |
| Severity    | Critical                                                                                                                                                                    |
| Condition   | None of the pods of the NrfAuditor microservice is available.                                                                                                               |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7026                                                                                                                                             |

Table 5-11 (Cont.) OcnrfAuditorServiceDown

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Metric Used</b>         | 'up' <b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Recommended Actions</b> | <p>The alert is cleared when the nrfauditor service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of nrfauditor service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on nrfauditor service names. Check for ERROR WARNING logs related to thread exceptions.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### 5.1.11 OcnrfConfigurationServiceDown

Table 5-12 OcnrfConfigurationServiceDown

| Field              | Details                                                                                                                                                                             |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'OCNRF NrfConfiguration service <i>nrfconfiguration</i> is down'                                                                                                                    |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : NrfConfiguration service down' |
| <b>Severity</b>    | Critical                                                                                                                                                                            |
| <b>Condition</b>   | None of the pods of the NrfConfiguration microservice is available.                                                                                                                 |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7025                                                                                                                                                     |

Table 5-12 (Cont.) OcnrfConfigurationServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Recommended Actions | <p>The alert is cleared when the nrfconfiguration service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of nrfconfiguration service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on nrfconfiguration service names. Check for ERROR WARNING logs.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 5.1.12 OcnrfAppInfoServiceDown

Table 5-13 OcnrfAppInfoServiceDown

| Field       | Details                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF Appinfo service <i>appinfo</i> is down'                                                                                                                             |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Appinfo service down' |
| Severity    | Critical                                                                                                                                                                   |
| Condition   | None of the pods of the appinfo microservice is available.                                                                                                                 |

Table 5-13 (Cont.) OcnrfAppInfoServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Recommended Actions | <p>The alert is cleared when the appinfo service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of appinfo service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on appinfo service names. Check for ERROR WARNING logs related to thread exceptions.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### 5.1.13 OcnrfArtisanServiceDown

Table 5-14 OcnrfArtisanServiceDown

| Field       | Details                                                                                                                                                                        |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF NrfArtisan service {{\$labels.app_kubernetes_io_name}} is down'                                                                                                         |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : NrfArtisan service is down' |
| Severity    | Critical                                                                                                                                                                       |
| Condition   | NrfArtisan is unavailable.                                                                                                                                                     |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7056                                                                                                                                                |

Table 5-14 (Cont.) OcnrfArtisanServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use the similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Recommended Actions | <p>The alert is cleared when the NrfArtisan service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of NrfArtisan service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get pod -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter the logs based on NrfArtisan service names. Check for ERROR and WARNING logs related to thread exceptions.</li> <li>Check the database status. For more information, see the <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 5.1.14 OcnrfAlternateRouteServiceDown

Table 5-15 OcnrfAlternateRouteServiceDown

| Field             | Details                                                                                                                                                                           |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description       | 'OCNRF AlternateRoute service {{\$labels.app_kubernetes_io_name}} is down'                                                                                                        |
| Applicable in OCI | No                                                                                                                                                                                |
| Summary           | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end } : AlternateRoute service is down' |
| Severity          | Critical                                                                                                                                                                          |
| Condition         | AlternateRoute is unavailable.                                                                                                                                                    |
| OID               | 1.3.6.1.4.1.323.5.3.36.1.2.7057                                                                                                                                                   |

Table 5-15 (Cont.) OcnrfAlternateRouteServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used         | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use the similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Recommended Actions | <p>The alert is cleared when the alternate-route service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of alternate-route service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get pod -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter the logs based on Alternate-Route service names. Check for ERROR and WARNING logs related to thread exceptions.</li> <li>Check the database status. For more information, see the <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |

## 5.1.15 OcnrfPerfInfoServiceDown

Table 5-16 OcnrfPerfInfoServiceDown

| Field       | Details                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF Perfinfo service {{\$labels.app_kubernetes_io_name}} is down'                                                                                                                     |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Perfinfo service down'                |
| Severity    | Critical                                                                                                                                                                                 |
| Condition   | Perfinfo is unavailable.                                                                                                                                                                 |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7058                                                                                                                                                          |
| Metric Used | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use the similar metric as exposed by the monitoring system. |

Table 5-16 (Cont.) OcnrfPerfInfoServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the Perfinfo service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of Perfinfo service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get pod -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter the logs based on Perf-Info service names. Check for ERROR and WARNING logs related to thread exceptions.</li> <li>Check the database status. For more information, see the <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>. <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> </li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5.1.16 OcnrfIngressGatewayServiceDown

Table 5-17 OcnrfIngressGatewayServiceDown

| Field       | Details                                                                                                                                                                                           |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF Ingress-Gateway service <i>ingressgateway</i> is down'                                                                                                                                     |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end } : Ingress-gateway service down'                   |
| Severity    | Critical                                                                                                                                                                                          |
| Condition   | None of the pods of the Ingress Gateway microservice is available.                                                                                                                                |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7028                                                                                                                                                                   |
| Metric Used | <p>'up'</p> <p><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.</p> |

Table 5-17 (Cont.) OcnrflngressGatewayServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the Ingress Gateway service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of Ingress Gateway service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on Ingress Gateway service names. Check for ERROR WARNING logs related to thread exceptions.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/> <b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 5.1.17 OcnrfEgressGatewayServiceDown

Table 5-18 OcnrfEgressGatewayServiceDown

| Field       | Details                                                                                                                                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF Egress-Gateway service <i>egressgateway</i> is down'                                                                                                                                                                  |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Egress-Gateway service down' |
| Severity    | Critical                                                                                                                                                                                                                     |
| Condition   | None of the pods of the Egress Gateway microservice is available.                                                                                                                                                            |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7029                                                                                                                                                                                              |
| Metric Used | 'up'<br><b>Note:</b> This is a Prometheus metric used for instance availability monitoring. If this metric is not available, use a similar metric as exposed by the monitoring system.                                       |

Table 5-18 (Cont.) OcnrfEgressGatewayServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the Egress Gateway service is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of Egress Gateway service and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the <i>Running</i> state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the <i>Running</i> state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on Egress Gateway service names. Check for ERROR WARNING logs related to thread exceptions.</li> <li>Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/> <b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## 5.1.18 OcnrfTotalIngressTrafficRateAboveMinorThreshold

Table 5-19 OcnrfTotalIngressTrafficRateAboveMinorThreshold

| Field       | Details                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Total Ingress traffic Rate is above configured minor threshold. (current value is: {{ \$value }})'                                                                                                                                           |
| Summary     | 'timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 80 Percent of Max requests per second'                                                                                       |
| Severity    | Minor                                                                                                                                                                                                                                         |
| Condition   | <p>The total NRF Ingress Message rate has crossed the configured minor threshold of 800 TPS.</p> <p>Default value of this alert trigger point in alert file is when NRF Ingress Rate crosses 80 % of 1000 (Maximum ingress request rate).</p> |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7001                                                                                                                                                                                                               |
| Metric Used | 'oc_ingressgateway_http_requests_total'                                                                                                                                                                                                       |

Table 5-19 (Cont.) OcnrfTotalIngressTrafficRateAboveMinorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared either when the total Ingress Traffic rate falls below the minor threshold or when the total traffic rate crosses the major threshold, in which case the <a href="#">OcnrfTotalIngressTrafficRateAboveMajorThreshold</a> alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the alert file.</p> <p>Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine which service is receiving high traffic.</li> <li>2. Refer <b>Ingress gateway</b> section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check <b>Ingress gateway</b> logs on Kibana to determine the reason for the errors.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## 5.1.19 OcnrfTotalIngressTrafficRateAboveMajorThreshold

Table 5-20 OcnrfTotalIngressTrafficRateAboveMajorThreshold

| Field       | Details                                                                                                                                                                                                                                           |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Total Ingress traffic Rate is above major threshold. (current value is: {{ \$value }})'                                                                                                                                                          |
| Summary     | 'timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 90 Percent of Max requests per second'                                                                                           |
| Severity    | Major                                                                                                                                                                                                                                             |
| Condition   | <p>The total NRF Ingress Message rate has crossed the configured major threshold of 900 TPS.</p> <p>Default value of this alert trigger point in the alert file is when NRF Ingress Rate crosses 90 % of 1000 (Maximum ingress request rate).</p> |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7002                                                                                                                                                                                                                   |
| Metric Used | 'oc_ingressgateway_http_requests_total'                                                                                                                                                                                                           |

Table 5-20 (Cont.) OcnrfTotalIngressTrafficRateAboveMajorThreshold

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared when the total Ingress Traffic rate falls below the major threshold or when the total traffic rate crosses the critical threshold, in which case the <a href="#">OcnrfTotalIngressTrafficRateAboveCriticalThreshold</a> alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the alert file.</p> <p>Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine which service is receiving high traffic.</li> <li>2. Refer <b>Ingress gateway</b> section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check <b>Ingress gateway</b> logs on Kibana to determine the reason for the errors.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 5.1.20 OcnrfTotalIngressTrafficRateAboveCriticalThreshold

Table 5-21 OcnrfTotalIngressTrafficRateAboveCriticalThreshold

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Total Ingress traffic Rate is above critical threshold.(current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Summary</b>             | 'timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is more than 52000 requests per second'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Condition</b>           | <p>The total NRF Ingress Message rate has crossed the configured critical threshold of 52000 TPS.</p> <p>Default value of this alert trigger point in the alert file is when NRF Ingress Rate crosses 52000 TPS.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Metric Used</b>         | 'oc_ingressgateway_http_requests_total'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Recommended Actions</b> | <p>The alert is cleared when the Ingress traffic rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file.</p> <p>Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine which service is receiving high traffic.</li> <li>2. Refer <b>Ingress gateway</b> section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check <b>Ingress gateway</b> logs on Kibana to determine the reason for the errors.</li> </ol> |

Table 5-21 (Cont.) OcnrfTotalIngressTrafficRateAboveCriticalThreshold

| Field            | Details |
|------------------|---------|
| Available in OCI | No      |

## 5.1.21 OcnrfTransactionErrorRateAbove0Dot1Percent

Table 5-22 OcnrfTransactionErrorRateAbove0Dot1Percent

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Transaction Error rate is above 0.1 Percent of Total Transactions (current value is {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Summary</b>             | 'timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Transaction Error Rate detected above 0.1 Percent of Total Transactions'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Severity</b>            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Condition</b>           | The number of failed transactions is above 0.1 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Metric Used</b>         | 'oc_ingressgateway_http_responses_total'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Recommended Actions</b> | <p>The alert is cleared when the number of failure transactions is below 0.1 percent of the total transactions or when the number of failed transactions crosses the 1% threshold, in which case the <a href="#">OcnrfTransactionErrorRateAbove1Percent</a> is raised.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check the service specific metrics to understand the specific service request errors.<br/>For example: ocnrf_nfDiscover_tx_responses_total with statusCode ~= 2xx.</li> <li>2. Check metrics per service, per method:<br/>For example, discovery requests can be determined from the following metrics:<br/>Metrics="oc_ingressgateway_http_responses_total"<br/>Method="GET"<br/>NFServiceType="nnrf-disc"<br/>Route_path="/nnrf-disc/v1/nf-instances/**"<br/>Status="503 SERVICE_UNAVAILABLE"</li> <li>3. If guidance is required, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI           | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## 5.1.22 OcnrfTransactionErrorRateAbove1Percent

Table 5-23 OcnrfTransactionErrorRateAbove1Percent

| Field              | Details                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Transaction Error rate is above 1 Percent of Total Transactions (current value is {{ \$value }})' |

Table 5-23 (Cont.) OcnrfTransactionErrorRateAbove1Percent

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Transaction Error Rate detected above 1 Percent of Total Transactions'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Severity            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Condition           | When the number of failed transactions is above 1 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used         | 'oc_ingressgateway_http_responses_total'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Recommended Actions | <p>The alert is cleared when the number of failure transactions is below 1% of the total transactions or when the number of failed transactions crosses the 10% threshold, in which case the <a href="#">OcnrfTransactionErrorRateAbove10Percent</a> is raised.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check the service specific metrics to understand the specific service request errors.<br/>For example: ocnrf_nfDiscover_tx_responses_total with statusCode ~= 2xx.</li> <li>2. Check metrics per service, per method:<br/>For example, discovery requests can be determined from the following metrics:<br/>Metrics="oc_ingressgateway_http_responses_total"<br/>Method="GET"<br/>NFServiceType="nnrf-disc"<br/>Route_path="/nnrf-disc/v1/nf-instances/**"<br/>Status="503 SERVICE_UNAVAILABLE"</li> <li>3. If guidance is required, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5.1.23 OcnrfTransactionErrorRateAbove10Percent

Table 5-24 OcnrfTransactionErrorRateAbove10Percent

| Field       | Details                                                                                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Transaction Error rate is above 10 Percent of Total Transactions (current value is {{ \$value }})'                                                                |
| Summary     | 'timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Transaction Error Rate detected above 10 Percent of Total Transactions' |
| Severity    | Minor                                                                                                                                                              |
| Condition   | The number of failed transactions has crossed the minor threshold of 10 percent of the total transactions.                                                         |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7006                                                                                                                                    |
| Metric Used | 'oc_ingressgateway_http_responses_total'                                                                                                                           |

Table 5-24 (Cont.) OcnrfTransactionErrorRateAbove10Percent

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared when the number of failure transactions is below 10 percent of the total transactions or when the number of failed transactions crosses the 25 percent threshold, in which case the <a href="#">OcnrfTransactionErrorRateAbove25Percent</a> is raised.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check the service specific metrics to understand the specific service request errors.<br/>For example: ocnrf_nfDiscover_tx_responses_total with statusCode ~= 2xx.</li> <li>2. Check metrics per service, per method:<br/>For example, discovery requests can be determined from the following metrics:<br/>Metrics="oc_ingressgateway_http_responses_total"<br/>Method="GET"<br/>NFServiceType="nnrf-disc"<br/>Route_path="/nnrf-disc/v1/nf-instances/**"<br/>Status="503 SERVICE_UNAVAILABLE"</li> <li>3. If guidance is required, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.1.24 OcnrfTransactionErrorRateAbove25Percent

Table 5-25 OcnrfTransactionErrorRateAbove25Percent

| Field              | Details                                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Transaction Error rate is above 25 Percent of Total Transactions (current value is {{ \$value }})'                                                                |
| <b>Summary</b>     | 'timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Transaction Error Rate detected above 25 Percent of Total Transactions' |
| <b>Severity</b>    | Major                                                                                                                                                              |
| <b>Condition</b>   | The number of failed transactions has crossed the minor threshold of 25 percent of the total transactions.                                                         |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7007                                                                                                                                    |
| <b>Metric Used</b> | 'oc_ingressgateway_http_responses_total'                                                                                                                           |

Table 5-25 (Cont.) OcnrfTransactionErrorRateAbove25Percent

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared when the number of failure transactions is below 25 percent of the total transactions or when the number of failed transactions crosses the 50 percent threshold, in which case the <a href="#">OcnrfTransactionErrorRateAbove50Percent</a> is raised.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check the service specific metrics to understand the specific service request errors.<br/>For example: ocnrf_nfDiscover_tx_responses_total with statusCode ~= 2xx.</li> <li>2. Check metrics per service, per method:<br/>For example, discovery requests can be determined from the following metrics:<br/>Metrics="oc_ingressgateway_http_responses_total"<br/>Method="GET"<br/>NFServiceType="nnrf-disc"<br/>Route_path="/nnrf-disc/v1/nf-instances/**"<br/>Status="503 SERVICE_UNAVAILABLE"</li> <li>3. If guidance is required, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.1.25 OcnrfTransactionErrorRateAbove50Percent

Table 5-26 OcnrfTransactionErrorRateAbove50Percent

| Field              | Details                                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Transaction Error rate is above 50 Percent of Total Transactions (current value is {{ \$value }})'                                                                |
| <b>Summary</b>     | 'timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Transaction Error Rate detected above 50 Percent of Total Transactions' |
| <b>Severity</b>    | Critical                                                                                                                                                           |
| <b>Condition</b>   | The number of failed transactions has crossed the minor threshold of 50 percent of the total transactions.                                                         |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7008                                                                                                                                    |
| <b>Metric Used</b> | 'oc_ingressgateway_http_responses_total'                                                                                                                           |

Table 5-26 (Cont.) OcnrfTransactionErrorRateAbove50Percent

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared when the number of failure transactions is below 50 percent of the total transactions.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check the service specific metrics to understand the specific service request errors.<br/>For example: ocnrf_nfDiscover_tx_responses_total with statusCode ~= 2xx.</li> <li>2. Check metrics per service, per method:<br/>For example, discovery requests can be determined from the following metrics:<br/>Metrics="oc_ingressgateway_http_responses_total"<br/>Method="GET"<br/>NFServiceType="nnrf-disc"<br/>Route_path="/nnrf-disc/v1/nf-instances/**"<br/>Status="503 SERVICE_UNAVAILABLE"</li> <li>3. If guidance is required, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.1.26 OcnrfTotalEgressTrafficRateAboveCriticalThreshold

Table 5-27 OcnrfTotalEgressTrafficRateAboveCriticalThreshold

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Egress traffic rate is above the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Summary</b>             | "kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 51600 requests per second"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Condition</b>           | This alarm is raised when the Egress traffic rate is greater than the critical configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7109                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Metric Used</b>         | oc_egressgateway_http_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Recommended Actions</b> | <p>The alert is cleared either when the total discovery rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine which service is receiving high traffic.</li> <li>2. Refer Egress Gateway section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check Egress Gateway logs on Kibana to determine the reason for the errors.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 5.1.27 OcnrfTotalForwardingTrafficRateAboveCriticalThreshold

**Table 5-28 OcnrfTotalForwardingTrafficRateAboveCriticalThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'NRF-NRF Forwarding Rate is above the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Summary</b>             | 'kubernetes_namespace: \$labels.kubernetes_namespace, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }}: Traffic Rate is above 5200 requests per second.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Condition</b>           | This alarm is raised when the rate between NRF and NRF Forwarding is greater than the critical configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7110                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Metric Used</b>         | ocnrf_forward_nfDiscover_tx_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Recommended Actions</b> | <p>The alert is cleared either when the total NRF Forwarding rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine which service is receiving high traffic.</li> <li>2. Refer NRF Forwarding section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check NRF Forwarding logs on Kibana to determine the reason for the errors.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.1.28 OcnrfHeapUsageCrossedMinorThreshold

**Table 5-29 OcnrfHeapUsageCrossedMinorThreshold**

| Field              | Details                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'OCNRF Heap Usage for pod {{ \$labels.pod }} has crossed the configured minor threshold (50%) (value={{ \$value }}) of its limit.'                                                                                              |
| <b>Summary</b>     | 'kubernetes_namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Heap Usage of pod exceeded 50% of its limit.' |
| <b>Severity</b>    | Minor                                                                                                                                                                                                                           |
| <b>Condition</b>   | This alert is raised when the Java memory heap usage of pods exceeds the configured minor threshold.                                                                                                                            |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7126                                                                                                                                                                                                 |
| <b>Metric Used</b> | jvm_memory_used_bytes                                                                                                                                                                                                           |

Table 5-29 (Cont.) OcnrfHeapUsageCrossedMinorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the heap usage of pods falls below the minor threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Identify the pods which are raised in the alert.</li> <li>2. Refer Resource usage in Grafana dashboard to get the memory usage.</li> <li>3. Collect the pod logs and top output of the pods.</li> <li>4. Contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## 5.1.29 OcnrfHeapUsageCrossedMajorThreshold

Table 5-30 OcnrfHeapUsageCrossedMajorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'OCNRF Heap Usage for pod {{ \$labels.pod }} has crossed the configured major threshold (60%) (value={{ \$value }}) of its limit.'                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Summary             | 'kubernetes_namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end } : Heap Usage of pod is more than or equal to 60% and less than 70% of its limit.'                                                                                                                                                                                                                                                                                                    |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Condition           | This alert is raised when the Java memory heap usage of pods exceeds the configured major threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7127                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric Used         | jvm_memory_used_bytes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Actions | <p>The alert is cleared when the heap usage of pods falls below the major threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Identify the pods which are raised in the alert.</li> <li>2. Refer Resource usage in Grafana dashboard to get the memory usage.</li> <li>3. Collect the pod logs and top output of the pods.</li> <li>4. Contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## 5.1.30 OcnrfHeapUsageCrossedCriticalThreshold

**Table 5-31 OcnrfHeapUsageCrossedCriticalThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'OCNRF Heap Usage for pod {{ \$labels.pod }} has crossed the configured critical threshold (70%) (value={{ \$value }}) of its limit.'                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Summary</b>             | 'kubernetes_namespace: {{ \$labels.kubernetes_namespace}}, podname: {{ \$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Heap Usage of pod is more than 70% of its limit.'                                                                                                                                                                                                                                                                                                                                      |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Condition</b>           | This alert is raised when the Java memory heap usage of pods exceeds the configured critical threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7128                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Metric Used</b>         | jvm_memory_used_bytes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Recommended Actions</b> | <p>The alert is cleared when the heap usage of pods falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Identify the pods which are raised in the alert.</li> <li>2. Refer Resource usage in Grafana dashboard to get the memory usage.</li> <li>3. Collect the pod logs and top output of the pods.</li> <li>4. Contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## 5.2 Service Level Alerts

This section lists the service level alerts.

### 5.2.1 OcnrfAccessTokenRequestsRejected

**Table 5-32 OcnrfAccessTokenRequestsRejected**

| Field              | Details                                                                                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'AccessToken request(s) have been rejected by OCNRF (current value is: {{ \$value }})'                                                                                                                                                                                          |
| <b>Summary</b>     | 'kubernetes_namespace: {{ \$labels.kubernetes_namespace}},nrflevel: {{ \$labels.NrfLevel}}, podname: {{ \$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} AccessToken Request has been rejected by OCNRF.' |
| <b>Severity</b>    | Warning                                                                                                                                                                                                                                                                         |
| <b>Condition</b>   | NRF rejected an AccessToken Request                                                                                                                                                                                                                                             |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7014                                                                                                                                                                                                                                                 |
| <b>Metric Used</b> | 'ocnrf_accessToken_tx_responses_total'                                                                                                                                                                                                                                          |

Table 5-32 (Cont.) OcnrfAccessTokenRequestsRejected

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared automatically.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. The Rejection Reason is present in the alert.</li> <li>2. In case the RejectionReason is AuthScreeningFailed/ ClientNotAuthorized, either the configurations need to be reevaluated or check the consumer NF that has requested for unauthorized token. For more information about token information, see <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>3. For other reasons, follow the RejectionReason.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 5.2.2 OcnrfAuditorMultiplePodUnavailable

Table 5-33 OcnrfAuditorMultiplePodUnavailable

| Field                      | Details                                                                                                                                                                                          |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | Ocnrf Auditor Multiple Pods are Unavailable in deployment                                                                                                                                        |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} : Ocnrf Auditor Multiple Pods are Unavailable' |
| <b>Severity</b>            | Critical                                                                                                                                                                                         |
| <b>Condition</b>           | Ocnrf Auditor Multiple Pods are Unavailable.                                                                                                                                                     |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7075                                                                                                                                                                  |
| <b>Metric Used</b>         | NA                                                                                                                                                                                               |
| <b>Recommended Actions</b> | This alert is raised due to auditor multiple pods are unavailable. This alert is cleared automatically when the pods are available.                                                              |
| <b>Available in OCI</b>    | No                                                                                                                                                                                               |

## 5.2.3 OcnrfAppInfoMultiplePodUnavailable

Table 5-34 OcnrfAppInfoMultiplePodUnavailable

| Field                      | Details                                                                                                                                                                                          |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | Ocnrf AppInfo Multiple Pods are Unavailable in deployment                                                                                                                                        |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} : Ocnrf AppInfo Multiple Pods are Unavailable' |
| <b>Severity</b>            | Critical                                                                                                                                                                                         |
| <b>Condition</b>           | Ocnrf Auditor Multiple Pods are Unavailable.                                                                                                                                                     |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7076                                                                                                                                                                  |
| <b>Metric Used</b>         | NA                                                                                                                                                                                               |
| <b>Recommended Actions</b> | This alert is raised due to App-Info multiple pods are unavailable. This alert is cleared automatically when the pods are available.                                                             |

Table 5-34 (Cont.) OcnrfAppInfoMultiplePodUnavailable

| Field            | Details |
|------------------|---------|
| Available in OCI | No      |

## 5.2.4 OcnrfPerfInfoMultiplePodUnavailable

Table 5-35 OcnrfPerfInfoMultiplePodUnavailable

| Field               | Details                                                                                                                                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | Ocnrf PerfInfo Multiple Pods are Unavailable in deployment                                                                                                                                       |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Ocnrf PerfInfo Multiple Pods are Unavailable' |
| Severity            | Critical                                                                                                                                                                                         |
| Condition           | Ocnrf PerfInfo Multiple Pods are Unavailable.                                                                                                                                                    |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7077                                                                                                                                                                  |
| Metric Used         | NA                                                                                                                                                                                               |
| Recommended Actions | This alert is raised due to perf-Info multiple pods are unavailable. This alert is cleared automatically when the pods are available.                                                            |
| Available in OCI    | No                                                                                                                                                                                               |

## 5.2.5 OcnrfTotalSLFRateAboveCriticalThreshold

Table 5-36 OcnrfTotalSLFRateAboveCriticalThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'NRF-SLF Rate is above the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Summary             | 'kubernetes_namespace: \$labels.kubernetes_namespace, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }}: Traffic Rate is above 45600 requests per second.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Condition           | This alarm is raised when the rate between NRF and SLF reaches is greater than the critical configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7111                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Metric Used         | ocnrf_slf_tx_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Recommended Actions | <p>The alert is cleared either when the total SLF rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine which service is receiving high traffic.</li> <li>2. Refer SLF section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check SLF logs on Kibana to determine the reason for the errors.</li> </ol> |

Table 5-36 (Cont.) OcnrfTotalSLFRateAboveCriticalThreshold

| Field            | Details |
|------------------|---------|
| Available in OCI | No      |

## 5.2.6 OcnrfTotalDiscoveryRateAboveCriticalThreshold

Table 5-37 OcnrfTotalDiscoveryRateAboveCriticalThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'Total Discovery Rate is above the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Summary             | 'kubernetes_namespace: \$labels.kubernetes_namespace, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 51600 requests per second.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Condition           | This alarm is raised when the total discovery rate is greater than the critical configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7112                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Metric Used         | ocnrf_nfDiscover_rx_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Recommended Actions | <p>The alert is cleared when the total discovery rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine which service is receiving high traffic.</li> <li>2. Refer Discovery section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check Discovery logs on Kibana to determine the reason for the errors.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## 5.2.7 OcnrfAccessTokenRequestsAboveThreshold

Table 5-38 OcnrfAccessTokenRequestsAboveThreshold

| Field       | Details                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Total Access token request rate is above the configured critical threshold. (current value is: {{ \$value }})'                                                                     |
| Summary     | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}: Total Access token request rate is above 5' |
| Severity    | Critical                                                                                                                                                                            |
| Condition   | The alert is raised when the rate of Access Token requests is greater than the configured threshold.                                                                                |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7115                                                                                                                                                     |
| Metric Used | ocnrf_accessToken_rx_requests_total                                                                                                                                                 |

Table 5-38 (Cont.) OcnrfAccessTokenRequestsAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the total number of access token request rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer the NfAccessToken Section in Grafana to determine increase in TPS.</li> <li>2. Refer the Grafana to determine increase in failure responses.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## 5.2.8 OcnrfNfUpdateRequestsAboveThreshold

Table 5-39 OcnrfNfUpdateRequestsAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'Total NfUpdate request rate is above the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Summary             | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Total NfUpdate request rate is above 5'                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Condition           | This alert is raised when the total number of NfUpdate requests is greater than the configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7116                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used         | ocnrf_nfUpdate_rx_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Actions | <p>The alert is cleared when the total number of NfUpdate request falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer the NfRegister Section in Grafana to determine increase in TPS.</li> <li>2. Refer the Grafana to determine increase in failure responses.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5.2.9 OcnrfNfHeartBeatRequestsAboveThreshold

Table 5-40 OcnrfNfHeartBeatRequestsAboveThreshold

| Field       | Details                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------|
| Description | 'Total NfHeartBeat request rate is above the configured critical threshold. (current value is: {{ \$value }})' |

Table 5-40 (Cont.) OcnrfNfHeartBeatRequestsAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Total NfHeartBeat request rate is above 52'                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Condition           | This alert is raised when the total number of NfHeartBeat requests is greater than the configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7117                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used         | ocnrf_nfHeartBeat_rx_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Actions | <p>The alert is cleared when the total number of NfHeartBeat request falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer the NfRegister Section in Grafana to determine increase in TPS.</li> <li>2. Refer the Grafana to determine increase in failure responses.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 5.2.10 OcnrfRegisteredNfCountAboveThreshold

Table 5-41 OcnrfRegisteredNfCountAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'Total Number of active registrations in OCNRF is above critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                               |
| Summary             | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Total Number of active registrations in OCNRF is above 260'                                                                                                                                                                                                                                                        |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Condition           | The alert is raised when the total number of NFs registered in the set is greater than the configured threshold.                                                                                                                                                                                                                                                                                                                                             |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7118                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used         | ocnrf_nf_registered_count                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Recommended Actions | <p>The alert is cleared when the total number active registrations in NRF falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional registrations. If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Step:</b></p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine the number of NFs per nfType.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.2.11 OcnrfNfProfileSizeAboveThreshold

Table 5-42 OcnrfNfProfileSizeAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The size of the NF profile is above the critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                           |
| Summary             | "namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: The size of the NF profile is above 12kB threshold"                                                                                                                                                                                             |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                  |
| Condition           | This alert is raised when the size of the NF profile is greater than the configured threshold.                                                                                                                                                                                                                                                                                            |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7119                                                                                                                                                                                                                                                                                                                                                           |
| Metric Used         | ocnrf_nf_profile_size                                                                                                                                                                                                                                                                                                                                                                     |
| Recommended Actions | <p>The alert is cleared when the size of the NF profile is smaller than the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file.</p> <p><b>Step:</b></p> <ol style="list-style-type: none"> <li>1. Verify which NF has registered a nfProfile greater than the threshold size, using the nfInstanceId in the ocnrf_nf_profile_size metric.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                        |

## 5.2.12 OcnrfDiscoveryResponseSizeAboveThreshold

Table 5-43 OcnrfDiscoveryResponseSizeAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The size of nfDiscover response is above the critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                           |
| Summary             | "namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: The size of nfDiscover response is above 45kB threshold"                                                                                                                                                                                                                                                                                                             |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Condition           | This alert is raised when the size of the nfDiscover response is greater than the configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                        |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Metric Used         | ocnrf_nfDiscover_tx_response_size_bytes_max                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Recommended Actions | <p>The alert is cleared when the size of the nfDiscover response is less than the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file.</p> <p><b>Step:</b></p> <ol style="list-style-type: none"> <li>1. Refer Grafana to check for which targetNfType triggers discovery response with size greater than the threshold. Higher discovery response may impact NRF discovery performance. If the alert is unexpected, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 5.2.13 OcnrfTotalSubscriptionsAboveThreshold

**Table 5-44 OcnrfTotalSubscriptionsAboveThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Total Number of active subscriptions in OCNRF is above the critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Summary</b>             | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Total Number of active subscriptions in OCNRF is above 1000.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Condition</b>           | This alert is raised when the total number of active subscriptions in NRF is greater than the configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7121                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Metric Used</b>         | ocnrf_nfset_active_subscriptions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Recommended Actions</b> | <p>The alert is cleared when the total number active subscriptions in NRF is less than the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF has received additional subscriptions (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Grafana to determine the total number of subscriptions created.</li> <li>2. Verify if Subscription Limit feature has been enabled using <code>subscriptionLimit.featureStatus</code> parameter. For more information, see <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i>.</li> <li>3. Assess which NFs are creating the additional subscriptions.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.2.14 OcnrfDiscoveryRequestsForUDRAboveThreshold

**Table 5-45 OcnrfDiscoveryRequestsForUDRAboveThreshold**

| Field              | Details                                                                                                                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Total NfDiscover request rate for nfType UDR is above the configured critical threshold. (current value is: {{ \$value }})'                                                                         |
| <b>Summary</b>     | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Total NfDiscover request rate for nfType UDR is above 700' |
| <b>Severity</b>    | Critical                                                                                                                                                                                             |
| <b>Condition</b>   | This alert is raised when the rate of nfDiscover requests for nfType UDR is greater than the configured threshold.                                                                                   |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7122                                                                                                                                                                      |
| <b>Metric Used</b> | ocnrf_nfDiscover_rx_requests_total                                                                                                                                                                   |

Table 5-45 (Cont.) OcnrfDiscoveryRequestsForUDRAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | The alert is cleared when the rate of nfDiscover requests for nfType UDR is below than the critical threshold.<br><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic for UDR. If this alert is unexpected, contact <a href="#">My Oracle Support</a> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                     |

## 5.2.15 OcnrfDiscoveryRequestsForUDMAboveThreshold

Table 5-46 OcnrfDiscoveryRequestsForUDMAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'Total NfDiscover request rate for nfType UDM is above the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                           |
| Summary             | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Total NfDiscover request rate for nfType UDM is above 46000'                                                                                                                 |
| Severity            | Critical                                                                                                                                                                                                                                                                                                               |
| Condition           | This alert is raised when the rate of nfDiscover requests for nfType UDM is greater than the configured threshold.                                                                                                                                                                                                     |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7123                                                                                                                                                                                                                                                                                        |
| Metric Used         | ocnrf_nfDiscover_rx_requests_total                                                                                                                                                                                                                                                                                     |
| Recommended Actions | The alert is cleared when the rate of nfDiscover requests for nfType UDM is below than the critical threshold.<br><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic for UDM. If this alert is unexpected, contact <a href="#">My Oracle Support</a> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                     |

## 5.2.16 OcnrfDiscoveryRequestsForAMFAboveThreshold

Table 5-47 OcnrfDiscoveryRequestsForAMFAboveThreshold

| Field       | Details                                                                                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Total NfDiscover request rate for nfType AMF is above the configured critical threshold. (current value is: {{ \$value }})'                                                                          |
| Summary     | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Total NfDiscover request rate for nfType AMF is above 2500' |
| Severity    | Critical                                                                                                                                                                                              |
| Condition   | This alert is raised when the rate of nfDiscover requests for nfType AMF is greater than the configured threshold.                                                                                    |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7124                                                                                                                                                                       |
| Metric Used | ocnrf_nfDiscover_rx_requests_total                                                                                                                                                                    |

Table 5-47 (Cont.) OcnrfDiscoveryRequestsForAMFAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | The alert is cleared when the rate of nfDiscover requests for nfType AMF is below than the critical threshold.<br><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic for AMF. If this alert is unexpected, contact <a href="#">My Oracle Support</a> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                     |

## 5.2.17 OcnrfDiscoveryRequestsForSMFAboveThreshold

Table 5-48 OcnrfDiscoveryRequestsForSMFAboveThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'Total NfDiscover request rate for nfType SMF is above the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                           |
| Summary             | 'namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Total NfDiscover request rate for nfType SMF is above 4500'                                                                                                                  |
| Severity            | Critical                                                                                                                                                                                                                                                                                                               |
| Condition           | This alert is raised when the rate of nfDiscover requests for nfType SMF is greater than the configured threshold.                                                                                                                                                                                                     |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7125                                                                                                                                                                                                                                                                                        |
| Metric Used         | ocnrf_nfDiscover_rx_requests_total                                                                                                                                                                                                                                                                                     |
| Recommended Actions | The alert is cleared when the rate of nfDiscover requests for nfType SMF is below than the critical threshold.<br><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic for SMF. If this alert is unexpected, contact <a href="#">My Oracle Support</a> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                     |

## 5.3 NfProfile Status Change Alerts

This section lists the alerts raised when there is status change in NfProfile.

### 5.3.1 OcnrfRegisteredPCFsBelowCriticalThreshold

Table 5-49 OcnrfRegisteredPCFsBelowCriticalThreshold

| Field       | Details                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'The number of registered NFs detected below critical threshold (current value is: {{ \$value }})'                                                                                                                                                                                                                                     |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nftype: {{\$labels.RequesterNfType}}, nrflevel:{{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: The number of registered NFs detected below critical threshold.' |
| Severity    | Critical                                                                                                                                                                                                                                                                                                                               |

Table 5-49 (Cont.) OcnrfRegisteredPCFsBelowCriticalThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Condition           | <p>The number of NFs of the given NFType PCF currently registered with NRF is below the critical threshold.</p> <p><b>Note:</b> Operator can add similar alerts for each NfType and configure the corresponding thresholds as required.</p> <p>Default value of this alert trigger point in the alert file is when registered PCFs count with NRF is below 2.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7009                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Metric Used         | 'ocnrf_active_registrations_count'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Recommended Actions | <p>The alert is cleared when the number of registered PCFs is above the critical threshold.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running.</li> <li>2. Check if ingress gateway pod is up and running: <pre>kubectl get po -n &lt;namespace&gt;</pre> </li> <li>3. Check for registration pod logs on Kibana for ERROR WARN logs.</li> <li>4. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Notes               | <ol style="list-style-type: none"> <li>1. Operator can configure the threshold values to the number of NFs of type PCF expected within the network.</li> <li>2. PCFs with NFStatus as 'SUSPENDED' or 'UNDISCOVERABLE' are considered as unregistered.</li> <li>3. Operator can configure the RequesterNfType expected within the network.</li> <li>4. Operator can add similar alerts for each NfType and configure the corresponding thresholds as required.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 5.3.2 OcnrfRegisteredPCFsBelowMajorThreshold

Table 5-50 OcnrfRegisteredPCFsBelowMajorThreshold

| Field       | Details                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------|
| Description | 'The number of registered NFs detected below major threshold (current value is: {{ \$value }})' |

Table 5-50 (Cont.) OcnrfRegisteredPCFsBelowMajorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nftype: {{\$labels.Nftype}}, nrflevel:{{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: The number of registered NFs detected below major threshold.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Condition           | <p>The number of NFs of the given Nftype PCF currently registered with NRF is below the major threshold.</p> <p><b>Note:</b> Operator can add similar alerts for each Nftype and configure the corresponding thresholds as required.</p> <p>Default value of this alert trigger point in the alert file is when Registered PCFs count with NRF is greater than or equal to 2 and below 10.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Metric Used         | 'ocnrf_active_registrations_count'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Actions | <p>The alert is cleared when the number of registered PCFs is above the major threshold.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running.</li> <li>2. Check if Ingress Gateway pod is up and running: <pre>kubectl get po -n &lt;namespace&gt;</pre> </li> <li>3. Check for registration pod logs on Kibana for ERROR WARN logs.</li> <li>4. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>. <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> </li> </ol> |
| Notes               | <ol style="list-style-type: none"> <li>1. Operator can configure the threshold values with respect to the number of NFs of type PCF expected within the network.</li> <li>2. PCFs with NFStatus as 'SUSPENDED' or 'UNDISCOVERABLE' are considered as unregistered.</li> <li>3. Operator can configure the RequesterNftype expected within the network.</li> <li>4. Operator can add similar alerts for each Nftype and configure the corresponding thresholds as required.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### 5.3.3 OcnrfRegisteredPCFsBelowMinorThreshold

**Table 5-51 OcnrfRegisteredPCFsBelowMinorThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'The number of registered NFs detected below minor threshold (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nftype: {{\$labels.NfType}}, nrflevel:{{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: The number of registered NFs detected below minor threshold.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Severity</b>            | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Condition</b>           | <p>The number of NFs of the given NfType PCF currently registered with NRF is below the minor threshold.</p> <p><b>Note:</b> Operator can add similar alerts for each NfType and configure the corresponding thresholds as required.</p> <p>Default value of this alert trigger point in the alert file is when registered PCFs count with NRF is greater than or equal to 10 and below 20.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7011                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Metric Used</b>         | 'ocnrf_active_registrations_count'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Recommended Actions</b> | <p>The alert is cleared when the number of registered PCFs is above the minor threshold.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running.</li> <li>2. Check if ingress gateway pod is up and running: <pre>kubectl get po -n &lt;namespace&gt;</pre> </li> <li>3. Check for Registration pod logs on Kibana for ERROR WARN logs.</li> <li>4. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>. <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> </li> </ol> |
| <b>Notes</b>               | <ol style="list-style-type: none"> <li>1. Operator can configure the threshold values with respect to the number of NFs of type PCF expected within the network.</li> <li>2. PCFs with NFStatus as 'SUSPENDED' or 'UNDISCOVERABLE' are considered as unregistered.</li> <li>3. Operator can configure the RequesterNfType expected within the network.</li> <li>4. Operator can add similar alerts for each NfType and configure the corresponding thresholds as required.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 5.3.4 OcnrfRegisteredPCFsBelowThreshold

**Table 5-52 OcnrfRegisteredPCFsBelowThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'The number of registered NFs is approaching minor threshold (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nftype: {{\$labels.NfType}}, nrflevel:{{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: The number of registered NFs approaching minor threshold.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Severity</b>            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Condition</b>           | <p>The number of NFs of the given NfType PCF currently registered with NRF is approaching minor threshold.</p> <p><b>Note:</b> Operator can add similar alerts for each NfType and configure the corresponding thresholds as required.</p> <p>Default value of this alert trigger point in the alert file is when registered PCFs count with NRF is greater than or equal to 20 and below 30.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Metric Used</b>         | 'ocnrf_active_registrations_count'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Recommended Actions</b> | <p>The alert is cleared when the number of registered PCFs is approaching minor threshold.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running.</li> <li>2. Check if Ingress Gateway pod is up and running: <pre>kubectl get po -n &lt;namespace&gt;</pre> </li> <li>3. Check for Registration pod logs on Kibana for ERROR WARN logs.</li> <li>4. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| <b>Notes</b>               | <ol style="list-style-type: none"> <li>1. Operator can configure the threshold values with respect to the number of NFs of type PCF expected within the network.</li> <li>2. PCFs with NFStatus as 'SUSPENDED' or 'UNDISCOVERABLE' are considered as unregistered.</li> <li>3. Operator can configure the RequesterNfType expected within the network.</li> <li>4. Operator can add similar alerts for each NfType and configure the corresponding thresholds as required.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### 5.3.5 OcnrfTotalNFsRegisteredBelowCriticalThreshold

**Table 5-53 OcnrfTotalNFsRegisteredBelowCriticalThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Number of active registrations in OCNRF (current value is: {{ \$value }}) is below critical threshold'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Summary</b>             | kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Active registrations count.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Condition</b>           | The total number of NFs currently in "REGISTERED" state with the NRF is below the critical threshold.<br><b>Note:</b> The threshold values are provided as an example. User can configure the threshold value as per the requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7042                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Metric Used</b>         | 'ocnrf_active_registrations_count'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Recommended Actions</b> | The alert is cleared when the number of registered NFs is above the critical threshold.<br><b>Steps:</b> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running.</li> <li>2. Check if Ingress Gateway pod is up and running:<br/><br/>kubect1 get po -n &lt;namespace&gt;</li> <li>3. Check for registration pod logs on Kibana for ERROR WARN logs.</li> <li>4. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> </ol> |
| <b>Notes</b>               | <ol style="list-style-type: none"> <li>1. Operator can configure the threshold values with respect to the number of NFs expected within the network.</li> <li>2. NFs with NFStatus as 'SUSPENDED' or 'UNDISCOVERABLE' are not considered as registered.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### 5.3.6 OcnrfTotalNFsRegisteredBelowMajorThreshold

**Table 5-54 OcnrfTotalNFsRegisteredBelowMajorThreshold**

| Field              | Details                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Number of active registrations in OCNRF (current value is: {{ \$value }}) is below major threshold' |

Table 5-54 (Cont.) OcnrfTotalNFsRegisteredBelowMajorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Active registrations count.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Condition           | The total number of NFs currently in "REGISTERED" state with the NRF is below the major threshold.<br><b>Note:</b> The threshold values are provided as an example. The user can configure the threshold value as per the requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7043                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used         | 'ocnrf_active_registrations_count'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Recommended Actions | The alert is cleared when the number of registered NFs is above the major threshold.<br><b>Steps:</b> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running.</li> <li>2. Check if Ingress Gateway pod is up and running:<br/><br/>kubect1 get po -n &lt;namespace&gt;</li> <li>3. Check for Registration pod logs on Kibana for ERROR WARN logs.</li> <li>4. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on capturing logs, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Notes               | <ol style="list-style-type: none"> <li>1. Operator can configure the threshold values with respect to the number of NFs expected within the network.</li> <li>2. NFs with NFStatus as 'SUSPENDED' or 'UNDISCOVERABLE' are not considered as registered.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### 5.3.7 OcnrfTotalNFsRegisteredBelowMinorThreshold

Table 5-55 OcnrfTotalNFsRegisteredBelowMinorThreshold

| Field       | Details                                                                                                                                                                                                                                                  |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Number of active registrations in OCNRF (current value is: {{\$value}}) is below minor threshold'                                                                                                                                                       |
| Summary     | kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Active registrations count. |
| Severity    | Minor                                                                                                                                                                                                                                                    |

Table 5-55 (Cont.) OcnrfTotalNFsRegisteredBelowMinorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Condition           | The total number of NFs currently in "REGISTERED" state with the NRF is below the minor threshold.<br><b>Note:</b> The threshold values are provided as an example. The user can configure the threshold value as per the requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7044                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used         | 'ocnrf_active_registrations_count'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Recommended Actions | The alert is cleared when the number of registered NFs is above the minor threshold.<br><b>Steps:</b> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running.</li> <li>2. Check if Ingress Gateway pod is up and running:<br/><br/>kubect1 get po -n &lt;namespace&gt;</li> <li>3. Check for registration pod logs on Kibana for ERROR WARN logs.</li> <li>4. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on capturing logs, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</li> </ol> |
| Notes               | <ol style="list-style-type: none"> <li>1. Operator can configure the threshold values with respect to the number of NFs expected within the network.</li> <li>2. NFs with NFStatus as 'SUSPENDED' or 'UNDISCOVERABLE' are not considered as registered.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### 5.3.8 OcnrfTotalNFsRegisteredApproachingMinorThreshold

Table 5-56 OcnrfTotalNFsRegisteredApproachingMinorThreshold

| Field       | Details                                                                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Number of active registrations in OCNRF (current value is: {{ \$value }}) is approaching minor threshold'                                                                                                                                                 |
| Summary     | kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Active registrations count. |
| Severity    | Info                                                                                                                                                                                                                                                       |
| Condition   | The total number of NFs currently in "REGISTERED" state with the NRF is approaching minor threshold.<br><b>Note:</b> The threshold values provided as an example. The user can configure the threshold as per need.                                        |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7045                                                                                                                                                                                                                            |
| Metric Used | 'ocnrf_active_registrations_count'                                                                                                                                                                                                                         |

Table 5-56 (Cont.) OcnrfTotalNFsRegisteredApproachingMinorThreshold

| Field               | Details                                                                                                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | The alert is cleared when the number of registered NFs are approaching minor threshold.<br><b>Steps:</b> No action is required. This is an information alert.                                                                                                |
| Notes               | <ol style="list-style-type: none"> <li>Operator can configure the threshold values with respect to the number of NFs expected within the network.</li> <li>NFs with NFStatus as 'SUSPENDED' or 'UNDISCOVERABLE' are not considered as registered.</li> </ol> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                          |

### 5.3.9 OcnrfNFStatusTransitionToRegistered

Table 5-57 OcnrfNFStatusTransitionToRegistered

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'NF with NF profile fqdn {{ \$labels.NfProfileFqdn }} NF instance id {{ \$labels.NfInstanceId }} NF type {{ \$labels.NfType }} is REGISTERED , previous status was {{ \$labels.PreviousStatus }}'                                                                                                                                                                                                                                                          |
| Summary             | 'kubernetes_namespace: {{ \$labels.kubernetes_namespace }},nrflevel: {{ \$labels.NrfLevel }},podname: {{ \$labels.kubernetes_pod_name }},NfInstanceId: {{ \$labels.NfInstanceId }},NfProfileFqdn: {{ \$labels.NfProfileFqdn }},NfType: {{ \$labels.NfType }},PreviousStatus: {{ \$labels.PreviousStatus }},NewStatus: {{ \$labels.NewStatus }},timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} NF is REGISTERED.' |
| Severity            | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Condition           | NF Instance's status transitions to REGISTERED.<br><b>Note:</b> When multiple alerts are present for a given NF, the latest alert is always considered. The timestamp can also be seen in the "Active Since" field of the alert in Prometheus.                                                                                                                                                                                                             |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7046                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Metric Used         | ocnrf_nfInstance_status_change_total                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Recommended Actions | The alert is cleared automatically after a window of 5 minutes.<br><b>Steps:</b><br>No action is required. This is an information alert.                                                                                                                                                                                                                                                                                                                   |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

### 5.3.10 OcnrfNFServiceStatusTransitionToRegistered

Table 5-58 OcnrfNFServiceStatusTransitionToRegistered

| Field       | Details                                                                                                                                                                                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'NF service {{ \$labels.NfServiceName }} and service instance id {{ \$labels.NfServiceInstanceId }} of NF profile fqdn {{ \$labels.NfProfileFqdn }} and instance id {{ \$labels.NfInstanceId }} is REGISTERED, previous status was {{ \$labels.PreviousStatus }}' |

Table 5-58 (Cont.) OcnrfNFServiceStatusTransitionToRegistered

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}},podname: {{\$labels.kubernetes_pod_name}},NfInstanceId: {{\$labels.NfInstanceId}},NfServiceName: {{\$labels.NfServiceName}},NfServiceInstanceId: {{\$labels.NfServiceInstanceId}},NfProfileFqdn: {{\$labels.NfProfileFqdn}},NfServiceFqdn: {{\$labels.NfServiceFqdn}},PreviousStatus: {{\$labels.PreviousStatus}},NewStatus: {{\$labels.NewStatus}},timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} NF service is REGISTERED.' |
| Severity            | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Condition           | Status of an NF Instance's service transitions to REGISTERED.<br><b>Note:</b> When multiple alerts are present for a given NF, the latest alert is always considered. The timestamp can also be seen in the "Active Since" field of the alert in Prometheus.                                                                                                                                                                                                                                                                                                     |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7047                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used         | ocnrf_nfService_status_change_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Actions | The alert is cleared automatically after a window of 5 minutes.<br><b>Steps:</b><br>No action is required. This is an information alert.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### 5.3.11 OcnrfNFStatusTransitionToSuspended

Table 5-59 OcnrfNFStatusTransitionToSuspended

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'NF with NF profile fqdn {{\$labels.NfProfileFqdn}} NF instance id {{\$labels.NfInstanceId}} NF type {{\$labels.NfType}} is SUSPENDED, previous status was {{\$labels.PreviousStatus}}'                                                                                                                                                                                                                                                   |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}},podname: {{\$labels.kubernetes_pod_name}},NfInstanceId: {{\$labels.NfInstanceId}},NfProfileFqdn: {{\$labels.NfProfileFqdn}},NfType: {{\$labels.NfType}},PreviousStatus: {{\$labels.PreviousStatus}},NewStatus: {{\$labels.NewStatus}},timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} NF is SUSPENDED.' |
| Severity    | Major                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Condition   | NF Instance's status transitions to SUSPENDED.<br><b>Note:</b> When multiple alerts are present for a given NF, the latest alert is always considered. The timestamp can also be seen in the "Active Since" field of the alert in Prometheus.                                                                                                                                                                                             |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7048                                                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Used | ocnrf_nflInstance_status_change_total                                                                                                                                                                                                                                                                                                                                                                                                     |

Table 5-59 (Cont.) OcnrfNFStatusTransitionToSuspended

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared automatically after a window of 5 minutes.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check logs in NRF registration pod for failing patch requests or check Jaeger traces to see traces for incoming requests.</li> <li>2. Check Ingress Gateway logs to see if the requests are coming.</li> <li>3. Check if the NRF pods are UP.</li> <li>4. Check for the Ingress Gateway metrics in Prometheus for PATCH requests or responses in this time frame. Confirm if the responses have any non-2xx error codes.</li> <li>5. Depending on the failure reason, take the resolution steps.</li> <li>6. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on capturing logs, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### 5.3.12 OcnrfNFServiceStatusTransitionToSuspended

Table 5-60 OcnrfNFServiceStatusTransitionToSuspended

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'NF service {{labels.NfServiceName}} and service instance id {{labels.NfServiceInstanceId}} of NF profile fqdn {{labels.NfProfileFqdn}} and instance id {{labels.NfInstanceId}} is SUSPENDED, previous status was {{labels.PreviousStatus}}'                                                                                                                                                                                                                                                                                             |
| Summary     | 'kubernetes_namespace: {{labels.kubernetes_namespace}},nrflevel: {{labels.NrfLevel}},podname: {{labels.kubernetes_pod_name}},NfInstanceId: {{labels.NfInstanceId}},NfServiceName: {{labels.NfServiceName}},NfServiceInstanceId: {{labels.NfServiceInstanceId}},NfProfileFqdn: {{labels.NfProfileFqdn}},NfServiceFqdn: {{labels.NfServiceFqdn}},PreviousStatus: {{labels.PreviousStatus}},NewStatus: {{labels.NewStatus}},timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end } NF service is SUSPENDED.' |
| Severity    | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Condition   | Status of an NF Instance's service transitions to SUSPENDED.<br><b>Note:</b> When multiple alerts are present for a given NF, the latest alert is always considered. The timestamp can also be seen in the "Active Since" field of the alert in Prometheus.                                                                                                                                                                                                                                                                              |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7049                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Metric Used | ocnrf_nfService_status_change_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

Table 5-60 (Cont.) OcnrfNFServiceStatusTransitionToSuspended

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared automatically after a window of 5 minutes.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check logs in NRF registration pod for failing patch requests or check Jaeger traces to see traces for incoming requests.</li> <li>2. Check Ingress Gateway logs to see if the requests are coming.</li> <li>3. Check if the NRF pods are UP.</li> <li>4. Check for the Ingress Gateway metrics in Prometheus for PATCH requests or responses in this time frame. Confirm if the responses have any non-2xx error codes.</li> <li>5. Depending on the failure reason, take the resolution steps.</li> <li>6. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on capturing logs, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### 5.3.13 OcnrfNFStatusTransitionToUndiscoverable

Table 5-61 OcnrfNFStatusTransitionToUndiscoverable

| Field              | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'NF with NF profile fqdn {{ \$labels.NfProfileFqdn }} NF instance id {{ \$labels.NfInstanceId }} NF type {{ \$labels.NfType }} is UNDISCOVERABLE, previous status was {{ \$labels.PreviousStatus }}'                                                                                                                                                                                                                                                        |
| <b>Summary</b>     | 'kubernetes_namespace: {{ \$labels.kubernetes_namespace }},nrflevel: {{ \$labels.NrfLevel }},podname: {{ \$labels.kubernetes_pod_name }},NfInstanceId: {{ \$labels.NfInstanceId }},NfProfileFqdn: {{ \$labels.NfProfileFqdn }},NfType: {{ \$labels.NfType }},PreviousStatus: {{ \$labels.PreviousStatus }},NewStatus: {{ \$labels.NewStatus }},timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end } NF is UNDISCOVERABLE.' |
| <b>Severity</b>    | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Condition</b>   | NF Instance's status transitions to UNDISCOVERABLE.<br><b>Note:</b> When multiple alerts are present for a given NF, the latest alert is always considered. The timestamp can also be seen in the "Active Since" field of the alert in Prometheus.                                                                                                                                                                                                          |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7050                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Metric Used</b> | ocnrf_nfInstance_status_change_total                                                                                                                                                                                                                                                                                                                                                                                                                        |

Table 5-61 (Cont.) OcnrfNFStatusTransitionToUndiscoverable

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared automatically after a window of 5 minutes.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check logs in NRF registration pod to verify if the NF has sent UNDISCOVERABLE status in NFRegister or NfUpdate requests or check Jaeger traces to see traces for incoming requests.</li> <li>2. If there is no such incoming request, collect the logs and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on capturing logs, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### 5.3.14 OcnrfNFServiceStatusTransitionToUndiscoverable

Table 5-62 OcnrfNFServiceStatusTransitionToUndiscoverable

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'NF service {{labels.NfServiceName}} and service instance id {{labels.NfServiceInstanceId}} of NF profile fqdn {{labels.NfProfileFqdn}} and instance id {{labels.NfInstanceId}} is UNDISCOVERABLE, previous status was {{labels.PreviousStatus}}'                                                                                                                                                                                                                                                                                               |
| Summary     | 'kubernetes_namespace: {{labels.kubernetes_namespace}},nrflevel: {{labels.NrfLevel}},podname: {{labels.kubernetes_pod_name}},NfInstanceId: {{labels.NfInstanceId}},NfServiceName: {{labels.NfServiceName}},NfServiceInstanceId: {{labels.NfServiceInstanceId}},NfProfileFqdn: {{labels.NfProfileFqdn}},NfServiceFqdn: {{labels.NfServiceFqdn}},PreviousStatus: {{labels.PreviousStatus}},NewStatus: {{labels.NewStatus}},timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} NF service is UNDISCOVERABLE.' |
| Severity    | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Condition   | Status of an NF Instance's service transitions to UNDISCOVERABLE.<br><b>Note:</b> When multiple alerts are present for a given NF, the latest alert is always considered. The timestamp can also be seen in the "Active Since" field of the alert in Prometheus.                                                                                                                                                                                                                                                                                |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7051                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Metric Used | ocnrf_nfService_status_change_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

Table 5-62 (Cont.) OcnrfNFServiceStatusTransitionToUndiscoverable

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared automatically after a window of 5 minutes.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check logs in NRF registration pod to verify if the NF has sent UNDISCOVERABLE status in NFRegister or NfUpdate requests or check Jaeger traces to see traces for incoming requests.</li> <li>2. If there is no such incoming request, collect the logs and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on capturing logs, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### 5.3.15 OcnrfNFStatusTransitionToDeregistered

Table 5-63 OcnrfNFStatusTransitionToDeregistered

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'NF with NF profile fqdn {{\$labels.NfProfileFqdn}} NF instance id {{\$labels.NfInstanceId}} NF type {{\$labels.NfType}} is DEREGISTERED, previous status was {{\$labels.PreviousStatus}}'                                                                                                                                                                                                                                                   |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}},podname: {{\$labels.kubernetes_pod_name}},NfInstanceId: {{\$labels.NfInstanceId}},NfProfileFqdn: {{\$labels.NfProfileFqdn}},NfType: {{\$labels.NfType}},PreviousStatus: {{\$labels.PreviousStatus}},NewStatus: {{\$labels.NewStatus}},timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} NF is DEREGISTERED.' |
| Severity    | Info                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Condition   | <p>NF Instance's status transitions to DEREGISTERED.</p> <p><b>Note:</b> When multiple alerts are present for a given NF, the latest alert is always considered. The timestamp can also be seen in the "Active Since" field of the alert in Prometheus.</p>                                                                                                                                                                                  |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7052                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used | ocnrf_nfInstance_status_change_total                                                                                                                                                                                                                                                                                                                                                                                                         |

Table 5-63 (Cont.) OcnrfNFStatusTransitionToDeregistered

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared automatically after a window of 5 minutes.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check logs in NRF registration pod for failing patch requests or check Jaeger traces to see traces for incoming requests.</li> <li>2. Check Ingress Gateway logs to see if the requests are coming.</li> <li>3. Check if the NRF pods are UP.</li> <li>4. Check for the Ingress Gateway metrics in Prometheus for PATCH requests or responses in this time frame. Confirm if the responses have any non 2xx error codes.</li> <li>5. Depending on the failure reason, take the resolution steps.</li> <li>6. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on capturing logs, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 5.3.16 OcnrfNFServiceStatusTransitionToDeregistered

Table 5-64 OcnrfNFServiceStatusTransitionToDeregistered

| Field       | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'NF service {{\$labels.NfServiceName}} and service instance id {{\$labels.NfServiceInstanceId}} of NF profile fqdn {{\$labels.NfProfileFqdn}} and instance id {{\$labels.NfInstanceId}} is DEREGISTERED, previous status was {{\$labels.PreviousStatus}}'                                                                                                                                                                                                                                                                                                        |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}},podname: {{\$labels.kubernetes_pod_name}},NfInstanceId: {{\$labels.NfInstanceId}},NfServiceName: {{\$labels.NfServiceName}},NfServiceInstanceId: {{\$labels.NfServiceInstanceId}},NfProfileFqdn: {{\$labels.NfProfileFqdn}},NfServiceFqdn: {{\$labels.NfServiceFqdn}},PreviousStatus: {{\$labels.PreviousStatus}},NewStatus: {{\$labels.NewStatus}},timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} NF service is DEREGISTERED.' |
| Severity    | Info                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Condition   | Status of an NF Instance's service transitions to DEREGISTERED.<br><b>Note:</b> When multiple alerts are present for a given NF, the latest alert is always considered. The timestamp can also be seen in the "Active Since" field of the alert in Prometheus.                                                                                                                                                                                                                                                                                                   |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7053                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used | ocnrf_nfService_status_change_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

Table 5-64 (Cont.) OcnrfNFServiceStatusTransitionToDeregistered

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared automatically after a window of 5 minutes.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check logs in NRF registration pod for failing patch requests or check Jaeger traces to see traces for incoming requests.</li> <li>2. Check Ingress Gateway logs to see if the requests are coming.</li> <li>3. Check if the NRF pods are UP.</li> <li>4. Check for the Ingress Gateway metrics in Prometheus for PATCH requests or responses in this time frame. Confirm if the responses have any non 2xx error codes.</li> <li>5. Depending on the failure reason, take the resolution steps.</li> <li>6. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on capturing logs, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 5.4 Feature Specific Alerts

This section lists the feature specific alerts.

### 5.4.1 KeyID for AccessToken Feature

This section lists the alerts that are specific to KeyID for AccessToken feature. For more information about the feature, see the "Key-ID for AccessToken" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

#### 5.4.1.1 OcnrfAccessTokenCurrentKeyIdNotConfigured

Table 5-65 OcnrfAccessTokenCurrentKeyIdNotConfigured

| Field              | Details                                                                                                                                                                                                                                                                                                            |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'AccessToken request(s) have been rejected by OCNRF (current value is: {{ \$value }})'                                                                                                                                                                                                                             |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} AccessToken Request has been rejected by OCNRF as Current Key Id is not configured.' |
| <b>Severity</b>    | Critical                                                                                                                                                                                                                                                                                                           |
| <b>Condition</b>   | NRF Access Token Rejected due to CurrentKeyId not configured                                                                                                                                                                                                                                                       |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7033                                                                                                                                                                                                                                                                                    |
| <b>Metric Used</b> | 'ocnrf_accessToken_tx_responses_total'                                                                                                                                                                                                                                                                             |

**Table 5-65 (Cont.) OcnrfAccessTokenCurrentKeyIdNotConfigured**

| Field                      | Details                                                                                                                                                                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | The alert is automatically cleared as it is raised when NRF receives Access Token Request, and at that point, Current Key Id is not selected. For more information about configuring currentKeyId parameter, see <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i> . |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                      |

### 5.4.1.2 OcnrfAccessTokenCurrentKeyIdInvalidDetails

**Table 5-66 OcnrfAccessTokenCurrentKeyIdInvalidDetails**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'AccessToken request(s) have been rejected by OCNRF (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                         |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, KeyType: {{\$labels.KeyType}}, RejectionReason: {{\$labels.RejectionReason}},timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} AccessToken Request has been rejected by OCNRF as CurrentKeyId details are invalid.' |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Condition</b>           | NRF Access Token Rejected due to token signing details corresponding to CurrentKeyId are invalid.                                                                                                                                                                                                                                                                                              |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7034                                                                                                                                                                                                                                                                                                                                                                |
| <b>Metric Used</b>         | 'ocnrf_accessToken_tx_responses_total'                                                                                                                                                                                                                                                                                                                                                         |
| <b>Recommended Actions</b> | The alert is automatically cleared when NRF receives Access Token Request, and at that point, Current Key Id details are invalid. For more information about configuring currentKeyId parameter, see <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i> .                                                                                    |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                             |

### 5.4.1.3 OcnrfOauthCurrentKeyNotConfigured

**Table 5-67 OcnrfOauthCurrentKeyNotConfigured**

| Field              | Details                                                                                                                                                                                                                                                                                  |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'OCNRF Oauth Access token Current Key Id is not configured'                                                                                                                                                                                                                              |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Oauth Access token Current Key Id is not configured.' |
| <b>Severity</b>    | Critical                                                                                                                                                                                                                                                                                 |
| <b>Condition</b>   | Oauth Current Key ID is not configured                                                                                                                                                                                                                                                   |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7035                                                                                                                                                                                                                                                          |
| <b>Metric Used</b> | ocnrf_oauth_currentKeyId_configuredStatus                                                                                                                                                                                                                                                |

Table 5-67 (Cont.) OcnrfOauthCurrentKeyNotConfigured

| Field               | Details                                                                                                                                                                                                                                                                                                                 |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | The alert is cleared when the current key ID is configured.<br><b>Steps:</b><br>Configure valid current key ID in Access Token Configuration. For more information about configuring currentKeyID parameter, see <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                      |

#### 5.4.1.4 OcnrfOauthCurrentKeyDataHealthStatus

Table 5-68 OcnrfOauthCurrentKeyDataHealthStatus

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'OCNRF Oauth Access token Current Key Id status is not healthy'                                                                                                                                                                                                                                                                                                                                            |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflvel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, KeyId: {{\$labels.KeyId}}, KeyType: {{\$labels.KeyType}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Oauth Access token Current Key Id status is not healthy.'                                                     |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                   |
| Condition           | Oauth Current Key ID details health is not good.                                                                                                                                                                                                                                                                                                                                                           |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7036                                                                                                                                                                                                                                                                                                                                                                            |
| Metric Used         | ocnrf_oauth_keyData_healthStatus                                                                                                                                                                                                                                                                                                                                                                           |
| Recommended Actions | The alert is cleared when the current key ID status is healthy.<br><b>Steps:</b> Rectify the condition by checking ErrorCondition<br>For example: For ErrorCondition Invalid_Key_Details, check if the k8SecretName, k8SecretNameSpace, and filename combination exists correctly for both privateKey and certificate. Make sure that the pem file data is not corrupt or the certificate has not expired. |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                         |

#### 5.4.1.5 OcnrfOauthNonCurrentKeyDataHealthStatus

Table 5-69 OcnrfOauthNonCurrentKeyDataHealthStatus

| Field       | Details                                                                                                                                                                                                                                                                                                                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF Oauth Access token Non current Key Id status is not healthy'                                                                                                                                                                                                                                                                                        |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflvel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, KeyId: {{\$labels.KeyId}}, KeyType: {{\$labels.KeyType}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Oauth Access token non current Key Id status is not healthy.' |
| Severity    | Info                                                                                                                                                                                                                                                                                                                                                       |
| Condition   | Oauth Non Current Key details health is not good                                                                                                                                                                                                                                                                                                           |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7037                                                                                                                                                                                                                                                                                                                            |
| Metric Used | ocnrf_oauth_keyData_healthStatus                                                                                                                                                                                                                                                                                                                           |

Table 5-69 (Cont.) OcnrfOauthNonCurrentKeyDataHealthStatus

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | The alert is cleared when the current key ID status is healthy.<br><b>Steps:</b> Rectify the condition by checking ErrorCondition<br>For example: For ErrorCondition Invalid_Key_Details, check if the k8SecretName, k8SecretNameSpace, and filename combination exists correctly for both privateKey and certificate. Make sure that the pem file data is not corrupt or the certificate has not expired. |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                         |

### 5.4.1.6 OcnrfOauthCurrentCertificateExpiringIn1Week

Table 5-70 OcnrfOauthCurrentCertificateExpiringIn1Week

| Field                      | Details                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'OCNRF Oauth Access token current Key Id certificate is expiring in less than 1 week'                                                                                                                                                                                                                                                          |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, KeyId: {{\$labels.KeyId}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Oauth Access token current Key Id certificate is expiring in less than 1 week.' |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                       |
| <b>Condition</b>           | Oauth Current Key ID details are expiring in less than 1 week                                                                                                                                                                                                                                                                                  |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7038                                                                                                                                                                                                                                                                                                                |
| <b>Metric Used</b>         | ocnrf_oauth_keyData_expiryStatus                                                                                                                                                                                                                                                                                                               |
| <b>Recommended Actions</b> | The alert is cleared when the key expiry time is more than 1 week.<br><b>Steps:</b><br>Replace expiring certificate key pair with new ones. For more information on creating certificate key pair, see <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> .           |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                             |

### 5.4.1.7 OcnrfOauthNonCurrentCertificateExpiringIn1Week

Table 5-71 OcnrfOauthNonCurrentCertificateExpiringIn1Week

| Field              | Details                                                                                                                                                                                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'OCNRF Oauth Access token non current Key Id certificate is expiring in less than 1 week'                                                                                                                                                                                                                                                          |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, KeyId: {{\$labels.KeyId}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Oauth Access token non current Key Id certificate is expiring in less than 1 week.' |
| <b>Severity</b>    | Info                                                                                                                                                                                                                                                                                                                                               |
| <b>Condition</b>   | Oauth Non Current Key ID details are expiring in less than 1 week                                                                                                                                                                                                                                                                                  |

Table 5-71 (Cont.) OcnrfOauthNonCurrentCertificateExpiringIn1Week

| Field               | Details                                                                                                                                                                                                                                                                                                                                  |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7039                                                                                                                                                                                                                                                                                                          |
| Metric Used         | ocnrf_oauth_keyData_expiryStatus                                                                                                                                                                                                                                                                                                         |
| Recommended Actions | The alert is cleared when the key expiry time is more than 1 week.<br><br><b>Steps:</b><br>Replace expiring certificate key pair with new ones. For more information on creating certificate key pair, see <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                       |

### 5.4.1.8 OcnrfOauthCurrentCertificateExpiringIn30days

Table 5-72 OcnrfOauthCurrentCertificateExpiringIn30days

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'OCNRF Oauth Access token current Key Id certificate is expiring in less than 30 days'                                                                                                                                                                                                                                                                                 |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflvel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, KeyId: {{\$labels.KeyId}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Oauth Access token current Key Id certificate is expiring in less than 30 days.'                         |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                  |
| Condition           | Oauth Current Key ID details are expiring in more than 24 hours and less than 30 days                                                                                                                                                                                                                                                                                  |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7040                                                                                                                                                                                                                                                                                                                                        |
| Metric Used         | ocnrf_oauth_keyData_expiryStatus                                                                                                                                                                                                                                                                                                                                       |
| Recommended Actions | The alert is cleared when certificate for the current key id's expiry time is more than 30 days.<br><br><b>Steps:</b><br>Replace expiring certificate key pair with new ones. For more information on creating certificate key pair, see <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                     |

### 5.4.1.9 OcnrfOauthNonCurrentCertificateExpiringIn30days

Table 5-73 OcnrfOauthNonCurrentCertificateExpiringIn30days

| Field       | Details                                                                                    |
|-------------|--------------------------------------------------------------------------------------------|
| Description | 'OCNRF Oauth Access token non current Key Id certificate is expiring in less than 30 days' |

Table 5-73 (Cont.) OcnrfOauthNonCurrentCertificateExpiringIn30days

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrlevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, KeyId: {{\$labels.KeyId}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Oauth Access token non current Key Id certificate is expiring in less than 30 days.'                                 |
| Severity            | Info                                                                                                                                                                                                                                                                                                                                                                               |
| Condition           | Oauth Non Current Key ID details are expiring in more than 24 hours and less than 30 days                                                                                                                                                                                                                                                                                          |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7041                                                                                                                                                                                                                                                                                                                                                    |
| Metric Used         | ocnrf_oauth_keyData_expiryStatus                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Actions | The alert is cleared when certificate for the non-current key id's certificate expiry time is more than 30 days.<br><b>Steps:</b><br>Replace expiring certificate key pair with new ones. For more information on creating certificate key pair, see <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                 |

## 5.4.2 Overload Control Based on Percentage Discards Feature

This section lists the alerts that are specific to Overload Control Based on Percentage Discards feature. For more information about the feature, see the "Overload Control Based on Percentage Discards" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.2.1 OcnrfMemoryUsageCrossedMinorThreshold

Table 5-74 OcnrfMemoryUsageCrossedMinorThreshold

| Field       | Details                                                                                                                                                                                                                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'OCNRF Memory Usage for pod <Pod name> has crossed the configured minor threshold (50 %) (value={{ \$value }}) of its limit.'                                                                                                                             |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Memory Usage of pod exceeded 50% of its limit.'           |
| Severity    | Minor                                                                                                                                                                                                                                                     |
| Condition   | A pod has reached the configured minor threshold (50%) of its memory resource limits.                                                                                                                                                                     |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7030                                                                                                                                                                                                                           |
| Metric Used | 'container_memory_usage_bytes' and 'container_spec_memory_limit_bytes'<br><b>Note:</b> This is a Kubernetes metric used for instance availability monitoring. If the metric is not available, use the similar metric as exposed by the monitoring system. |

Table 5-74 (Cont.) OcnrfMemoryUsageCrossedMinorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert gets cleared when the memory utilization falls below the minor threshold or crosses the major threshold, in which case <a href="#">OcnrfMemoryUsageCrossedMajorThreshold</a> alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the alerts file.</p> <p>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</p> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### 5.4.2.2 OcnrfMemoryUsageCrossedMajorThreshold

Table 5-75 OcnrfMemoryUsageCrossedMajorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'OCNRF Memory Usage for pod <Pod name> has crossed the major threshold (60%) (value = {{ \$value }}) of its limit.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Summary             | 'kubernetes_namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Memory Usage of pod exceeded 60% of its limit.'                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Condition           | A pod has reached the configured major threshold (60%) of its memory resource limits.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7031                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used         | <p>'container_memory_usage_bytes' and 'container_spec_memory_limit_bytes'</p> <p><b>Note:</b> This is a Kubernetes metric used for instance availability monitoring. If the metric is not available, use the similar metric as exposed by the monitoring system.</p>                                                                                                                                                                                                                                                                                                                                                                                                  |
| Recommended Actions | <p>The alert gets cleared when the memory utilization falls below the major threshold or crosses the critical threshold, in which case <a href="#">OcnrfMemoryUsageCrossedCriticalThreshold</a> alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the alert file.</p> <p>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</p> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### 5.4.2.3 OcnrfMemoryUsageCrossedCriticalThreshold

**Table 5-76 OcnrfMemoryUsageCrossedCriticalThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'OCNRF Memory Usage for pod <Pod name> has crossed the configured critical threshold (70%) (value = {{ \$value }}) of its limit.'                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Memory Usage of pod exceeded 70% of its limit.'                                                                                                                                                                                                                                                                               |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Condition</b>           | A pod has reached the configured critical threshold (70%) of its memory resource limits.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7032                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Metric Used</b>         | 'container_memory_usage_bytes' and 'container_spec_memory_limit_bytes'<br><b>Note:</b> This is a Kubernetes metric used for instance availability monitoring. If the metric is not available, use a similar metric as exposed by the monitoring system.                                                                                                                                                                                                                                                                       |
| <b>Recommended Actions</b> | The alert gets cleared when the memory utilization falls below the critical threshold.<br><b>Note:</b> The threshold is configurable in the alert file.<br>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a> .<br><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i> . |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### 5.4.2.4 OcnrfOverloadThresholdBreachedL1

**Table 5-77 OcnrfOverloadThresholdBreachedL1**

| Field              | Details                                                                                                                                                                                     |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Overload Level of {{\$labels.app_kubernetes_io_name}} service is L1'                                                                                                                       |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: Overload Level of {{\$labels.app_kubernetes_io_name}} service is L1'                   |
| <b>Severity</b>    | Warning                                                                                                                                                                                     |
| <b>Condition</b>   | NRF Services have breached its configured threshold of Level L1 for any of the aforementioned metrics. Thresholds are configured for CPU, svc_failure_count, svc_pending_count, and memory. |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7059                                                                                                                                                             |
| <b>Metric Used</b> | load_level                                                                                                                                                                                  |

Table 5-77 (Cont.) OcnrfOverloadThresholdBreachedL1

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the Ingress Traffic rate falls below the configured L1 threshold.</p> <p><b>Note:</b> The thresholds can be configured using REST API.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Reassess the reasons leading to NRF receiving additional traffic.</li> <li>2. Refer to alert to determine which service is receiving high traffic. It may be due to a sudden spike in traffic.<br/>For example: When one mated site goes down, the NFs move to the given site.</li> <li>3. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>4. If this is expected traffic, then the thresholds levels may be reevaluated as per the call rate and reconfigured as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>5. If this is the unexpected traffic, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### 5.4.2.5 OcnrfOverloadThresholdBreachedL2

Table 5-78 OcnrfOverloadThresholdBreachedL2

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'Overload Level of {{\$labels.app_kubernetes_io_name}} service is L2'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: Overload Level of {{\$labels.app_kubernetes_io_name}} service is L2'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Severity            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Condition           | NRF Services have breached its configured threshold of Level L2 for any of the aforementioned metrics. Thresholds are configured for CPU, svc_failure_count, svc_pending_count, and memory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7060                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Metric Used         | load_level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Recommended Actions | <p>The alert is cleared when the Ingress Traffic rate falls below the configured L2 threshold.</p> <p><b>Note:</b> The thresholds can be configured using REST API.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Reassess the reasons leading to NRF receiving additional traffic.</li> <li>2. Refer to alert to determine which service is receiving high traffic. It may be due to a sudden spike in traffic.<br/>For example: When one mated site goes down, the NFs move to the given site.</li> <li>3. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>4. If this is expected traffic, then the thresholds levels may be reevaluated as per the call rate and reconfigured as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>5. If this is the unexpected traffic, contact <a href="#">My Oracle Support</a>.</li> </ol> |

Table 5-78 (Cont.) OcnrfOverloadThresholdBreachedL2

| Field            | Details |
|------------------|---------|
| Available in OCI | Yes     |

### 5.4.2.6 OcnrfOverloadThresholdBreachedL3

Table 5-79 OcnrfOverloadThresholdBreachedL3

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Overload Level of {{\$labels.app_kubernetes_io_name}} service is L3'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: Overload Level of {{\$labels.app_kubernetes_io_name}} service is L3'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Severity</b>            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Condition</b>           | NRF Services have breached its configured threshold of Level L3 for any of the aforementioned metrics. Thresholds are configured for CPU, svc_failure_count, svc_pending_count, and memory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7061                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Metric Used</b>         | load_level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Recommended Actions</b> | <p>The alert is cleared when the Ingress Traffic rate falls below the configured L3 threshold.</p> <p><b>Note:</b> The thresholds can be configured using REST API.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Reassess the reasons leading to NRF receiving additional traffic.</li> <li>2. Refer to alert to determine which service is receiving high traffic. It may be due to a sudden spike in traffic.<br/>For example: When one mated site goes down, the NFs move to the given site.</li> <li>3. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>4. If this is expected traffic, then the thresholds levels may be reevaluated as per the call rate and reconfigured as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>5. If this is the unexpected traffic, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI           | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### 5.4.2.7 OcnrfOverloadThresholdBreachedL4

Table 5-80 OcnrfOverloadThresholdBreachedL4

| Field              | Details                                                                                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Overload Level of {{\$labels.app_kubernetes_io_name}} service is L4'                                                                                                     |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}: Overload Level of {{\$labels.app_kubernetes_io_name}} service is L4' |
| <b>Severity</b>    | Warning                                                                                                                                                                   |

Table 5-80 (Cont.) OcnrfOverloadThresholdBreachedL4

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Condition           | NRF Services have breached its configured threshold of Level L4 for any of the aforementioned metrics. Thresholds are configured for CPU, svc_failure_count, svc_pending_count, and memory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7062                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Metric Used         | load_level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Recommended Actions | <p>The alert is cleared when the Ingress Traffic rate falls below the configured L4 threshold.</p> <p><b>Note:</b> The thresholds can be configured using REST API.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Reassess the reasons leading to NRF receiving additional traffic.</li> <li>2. Refer to alert to determine which service is receiving high traffic. It may be due to a sudden spike in traffic.<br/>For example: When one mated site goes down, the NFs move to the given site.</li> <li>3. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>4. If this is expected traffic, then the thresholds levels may be reevaluated as per the call rate and reconfigured as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>5. If this is the unexpected traffic, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 5.4.3 DNS NAPTR Update Feature

This section lists the alerts that are specific to DNS NAPTR Update feature. For more information about the feature, see the "DNS NAPTR Update" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.3.1 OcnrfDnsNaptrFailureResponseStatus

Table 5-81 OcnrfDnsNaptrFailureResponseStatus

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | OCNRF DNS NAPTR Response status is not healthy                                                                                                                                                                                                                                                                                                                                                   |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, NfInstanceId: {{\$labels.NfInstanceId}}, NfSetFqdn: {{\$labels.NfSetFqdn}}, Replacement: {{\$labels.Replacement}},timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Dns Naptr Response status is not healthy.' |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                            |
| Condition           | The DNS NAPTR response towards DNS Server is not successful.                                                                                                                                                                                                                                                                                                                                     |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7063                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used         | ocnrf_dns_naptr_failure_rx_response                                                                                                                                                                                                                                                                                                                                                              |
| Recommended Actions | This alert is cleared when DNS NAPTR response is successful either automatic through service operations, or manual trigger for update and delete NAPTR requests.                                                                                                                                                                                                                                 |

### 5.4.3.2 OcnrfAlternateRouteUpstreamDnsRetryExhausted

**Table 5-82 OcnrfAlternateRouteUpstreamDnsRetryExhausted**

| Field                      | Details                                                                                                                                                                                                                                                                                                                               |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | OCNRF alternate route upstream DNS retry exhausted                                                                                                                                                                                                                                                                                    |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, FQDNS_Name: {{\$labels.FQDNS_Name}}, Replacement_Name: {{\$labels.Replacement_Name}},timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF alternate route upstream dns retry exhausted' |
| <b>Severity</b>            | Major                                                                                                                                                                                                                                                                                                                                 |
| <b>Condition</b>           | The DNS NAPTR retry is exhausted.                                                                                                                                                                                                                                                                                                     |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7064                                                                                                                                                                                                                                                                                                       |
| <b>Metric Used</b>         | oc_alternate_route_upstream_dns_retry_exhausted                                                                                                                                                                                                                                                                                       |
| <b>Recommended Actions</b> | This alert is cleared automatically in 2 minutes.                                                                                                                                                                                                                                                                                     |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                    |

### 5.4.4 Notification Retry Feature

This section lists the alerts that are specific to Notification Retry feature. For more information about the feature, see the "Notification Retry" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

#### 5.4.4.1 OcnrfNotificationRetryExhausted

**Table 5-83 OcnrfNotificationRetryExhausted**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'OCNRF NotificationRetry Exhausted'                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, SubscriptionId: {{\$labels.SubscriptionId}}, NotificationHostPort: {{\$labels.NotificationHostPort}}'                                                                                                                                                                                                  |
| <b>Severity</b>            | Major                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Condition</b>           | This alarm is raised when number of retries are exhausted.                                                                                                                                                                                                                                                                                                                                                  |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7065                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Metric Used</b>         | ocnrf_nfStatusNotify_rx_responses_total                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Recommended Actions</b> | <p>The alert is cleared automatically after 5 minutes.</p> <p><b>Steps:</b> Check logs in NF management pod to check the reason for retry query failures.</p> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                         |

## 5.4.4.2 OcnrfNotificationFailureOtherThanRetryExhausted

**Table 5-84 OcnrfNotificationFailureOtherThanRetryExhausted**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'OCNRF notification failure other than retry exhausted'                                                                                                                                                                                                                                                                                                                                |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, SubscriptionId: {{\$labels.SubscriptionId}}, NotificationHostPort: {{\$labels.NotificationHostPort}}, NumberOfRetriesAttempted: {{\$labels.NumberOfRetriesAttempted}}'                                                                                                            |
| <b>Severity</b>            | Major                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Condition</b>           | This alarm is raised when notification failure occurs with reason other than retry count exhausted.                                                                                                                                                                                                                                                                                    |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7066                                                                                                                                                                                                                                                                                                                                                        |
| <b>Metric Used</b>         | ocnrf_nfStatusNotify_rx_responses_total                                                                                                                                                                                                                                                                                                                                                |
| <b>Recommended Actions</b> | The alert is cleared automatically after 5 minutes.<br>Steps: Check logs in NF management pod to check the reason for retry query failures.<br><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i> . |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                    |

## 5.4.5 NRF Message Feed Feature

This section lists the alerts that are specific to NRF Message Feed feature. For more information about the feature, see the "NRF Message Feed" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.5.1 OcnrfIngressGatewayDDUnreachable

**Table 5-85 OcnrfIngressGatewayDDUnreachable**

| Field                      | Details                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | OCNRF Ingress Gateway Data Director unreachable                                                                                                                                                     |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Ingress Gateway Data Director unreachable' |
| <b>Severity</b>            | Major                                                                                                                                                                                               |
| <b>Condition</b>           | This alarm is raised when data director is not reachable from Ingress Gateway.                                                                                                                      |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7067                                                                                                                                                                     |
| <b>Metric Used</b>         | oc_ingressgateway_dd_unreachable                                                                                                                                                                    |
| <b>Recommended Actions</b> | Alert gets cleared automatically when the connection with data director is established.                                                                                                             |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                  |

### 5.4.5.2 OcnrfEgressGatewayDDUnreachable

**Table 5-86 OcnrfEgressGatewayDDUnreachable**

| Field                      | Details                                                                                                                                                                                            |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | OCNRF Egress Gateway Data Director unreachable                                                                                                                                                     |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} OCNRF Egress Gateway Data Director unreachable' |
| <b>Severity</b>            | Major                                                                                                                                                                                              |
| <b>Condition</b>           | This alarm is raised when data director is not reachable from Egress Gateway.                                                                                                                      |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7068                                                                                                                                                                    |
| <b>Metric Used</b>         | oc_egressgateway_dd_unreachable                                                                                                                                                                    |
| <b>Recommended Actions</b> | Alert gets cleared automatically when the connection with data director is established.                                                                                                            |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                 |

### 5.4.6 Subscription Limit Feature

This section lists the alerts that are specific to Subscription Limit feature. For more information about the feature, see the "Subscription Limit" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

#### 5.4.6.1 OcnrfSubscriptionGlobalCountWarnThresholdBreached

**Table 5-87 OcnrfSubscriptionGlobalCountWarnThresholdBreached**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | The total number of subscriptions has breached the configured WARN level threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}: The total number of subscriptions has breached the configured WARN level threshold'                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Severity</b>            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Condition</b>           | This alarm is raised when the total number of subscriptions has breached the configured WARN level threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7069                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Metric Used</b>         | ocnrf_nfset_limit_level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Recommended Actions</b> | <p>The alert is cleared automatically when the count comes down due to unsubscription.</p> <p><b>Note:</b> The thresholds can be configured using REST API.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Reassess the reasons for new or renewal of subscription.</li> <li>2. If this is expected subscription, then the subscription limit may be reevaluated as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>3. If this is the unexpected subscription, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## 5.4.6.2 OcnrfSubscriptionGlobalCountMinorThresholdBreached

**Table 5-88 OcnrfSubscriptionGlobalCountMinorThresholdBreached**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | The total number of subscriptions has breached the configured MINOR level threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}': The total number of subscriptions has breached the configured MINOR level threshold'                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Severity</b>            | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Condition</b>           | This alarm is raised when the total number of subscriptions has breached the configured MINOR level threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7070                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Metric Used</b>         | ocnrf_nfset_limit_level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Recommended Actions</b> | <p>The alert is cleared automatically when the count comes down due to unsubscription.</p> <p><b>Note:</b> The thresholds can be configured using REST API.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Reassess the reasons for new or renewal of subscription.</li> <li>2. If this is expected subscription, then the subscription limit may be reevaluated as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>3. If this is the unexpected subscription, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## 5.4.6.3 OcnrfSubscriptionGlobalCountMajorThresholdBreached

**Table 5-89 OcnrfSubscriptionGlobalCountMajorThresholdBreached**

| Field              | Details                                                                                                                                                                                                                     |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | The total number of subscriptions has breached the configured MAJOR level threshold                                                                                                                                         |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}': The total number of subscriptions has breached the configured MAJOR level threshold' |
| <b>Severity</b>    | MAJOR                                                                                                                                                                                                                       |
| <b>Condition</b>   | This alarm is raised when the total number of subscriptions has breached the configured MAJOR level threshold.                                                                                                              |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7071                                                                                                                                                                                             |
| <b>Metric Used</b> | ocnrf_nfset_limit_level                                                                                                                                                                                                     |

**Table 5-89 (Cont.) OcnrfSubscriptionGlobalCountMajorThresholdBreached**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared automatically when the count comes down due to unsubscription.</p> <p><b>Note:</b> The thresholds can be configured using REST API.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Reassess the reasons for new or renewal of subscription.</li> <li>2. If this is expected subscription, then the subscription limit may be reevaluated as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>3. If this is the unexpected subscription, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

#### 5.4.6.4 OcnrfSubscriptionGlobalCountCriticalThresholdBreached

**Table 5-90 OcnrfSubscriptionGlobalCountCriticalThresholdBreached**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | The total number of subscriptions has breached the configured CRITICAL level threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}: The total number of subscriptions has breached the configured CRITICAL level threshold'                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Condition</b>           | This alarm is raised when the total number of subscriptions has breached the configured CRITICAL level threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7072                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Metric Used</b>         | ocnrf_nfset_limit_level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Recommended Actions</b> | <p>The alert is cleared automatically when the count comes down due to unsubscription.</p> <p><b>Note:</b> The thresholds can be configured using REST API.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Reassess the reasons for new or renewal of subscription.</li> <li>2. If this is expected subscription, then the subscription limit may be reevaluated as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> <li>3. If this is the unexpected subscription, contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

#### 5.4.6.5 OcnrfSubscriptionMigrationInProgressWarn

**Table 5-91 OcnrfSubscriptionMigrationInProgressWarn**

| Field              | Details                                                                         |
|--------------------|---------------------------------------------------------------------------------|
| <b>Description</b> | The subscription migration is pending and subscriptionLimit feature is disabled |

Table 5-91 (Cont.) OcnrfSubscriptionMigrationInProgressWarn

| Field               | Details                                                                                                                                                                                                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, subscriptionLimitFeatureStatus: {{\$labels.subscriptionLimitFeatureStatus}}: The subscription migration is pending and subscriptionLimit feature is disabled' |
| Severity            | Warning                                                                                                                                                                                                                                                  |
| Condition           | The subscription migration is pending and subscriptionLimit feature is disabled.                                                                                                                                                                         |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7073                                                                                                                                                                                                                          |
| Metric Used         | ocnrf_subscription_migration_status                                                                                                                                                                                                                      |
| Recommended Actions | This alert is cleared automatically when the migration is complete.                                                                                                                                                                                      |

### 5.4.6.6 OcnrfSubscriptionMigrationInProgressCritical

Table 5-92 OcnrfSubscriptionMigrationInProgressCritical

| Field               | Details                                                                                                                                                                                                                                                       |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | The subscription migration is pending and subscriptionLimit feature is enabled                                                                                                                                                                                |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, subscriptionLimitFeatureStatus: {{\$labels.subscriptionLimitFeatureStatus}}: The subscription migration is pending and subscriptionLimit feature is enabled'       |
| Severity            | Warning                                                                                                                                                                                                                                                       |
| Condition           | The subscription migration is pending and subscriptionLimit feature is enabled.                                                                                                                                                                               |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7074                                                                                                                                                                                                                               |
| Metric Used         | ocnrf_subscription_migration_status                                                                                                                                                                                                                           |
| Recommended Actions | This alert is cleared automatically when the migration is complete.<br><b>Steps:</b> Disable the Subscription Limit feature. For more information, see <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                            |

## 5.4.7 Pod Protection Support for NRF Subscription Microservice Feature

This section lists the alerts that are specific to Pod Protection Support for NRF Subscription Microservice feature. For more information about the feature, see the "Pod Protection Support for NRF Subscription Microservice" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.7.1 OcnrfPodInDangerOfCongestionState

Table 5-93 OcnrfPodInDangerOfCongestionState

| Field       | Details                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------|
| Description | 'The pod {{\$labels.kubernetes_pod_name}} of service {{\$labels.app_kubernetes_io_name}} is in Danger of Congestion state' |

Table 5-93 (Cont.) OcnrfPodInDangerOfCongestionState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Danger of Congestion state'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Condition           | A pod of a service is in Danger Of Congestion state. This could be due to CPU Usage or Pending Message Count above configured thresholds.<br>This alert is raised when the Pod Protection feature is enabled for nfSubscription service. Currently this is applicable for NfSubscription service only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7079                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used         | ocnrf_pod_congestion_state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Recommended Actions | <p>The alert is cleared when the CPU or Pending Message Count goes below the configured thresholds for the Danger of Congested state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register or deregister.</li> <li>2. Check for the corresponding congestion alert for CPU and Pending Message Count to understand the reason for pod congestion.</li> <li>3. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>4. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### 5.4.7.2 OcnrfPodPendingMessageCountInDangerOfCongestionState

Table 5-94 OcnrfPodPendingMessageCountInDangerOfCongestionState

| Field       | Details                                                                                                                                                                                                                                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'The pod {{\$labels.kubernetes_pod_name}} of service {{\$labels.app_kubernetes_io_name}} is in Danger of Congestion state due to Pending Message Count above threshold'                                                                                                                                                 |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Danger of Congestion state due to Pending Message Count above threshold' |
| Severity    | Major                                                                                                                                                                                                                                                                                                                   |
| Condition   | A pod of a service is in Danger Of Congestion state due to its Pending Message Count above configured thresholds.<br>Currently this is applicable for NfSubscription service only.                                                                                                                                      |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7081                                                                                                                                                                                                                                                                                         |

Table 5-94 (Cont.) OcnrfPodPendingMessageCountInDangerOfCongestionState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used         | ocnrf_pod_pending_message_count_congestion_state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Actions | <p>The alert is cleared when the pending message count goes below the configured thresholds for the Danger of Congested state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register, or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

### 5.4.7.3 OcnrfPodInCongestedState

Table 5-95 OcnrfPodInCongestedState

| Field       | Details                                                                                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'The pod {{\$labels.kubernetes_pod_name}} of service {{\$labels.app_kubernetes_io_name}} is in Congested state'                                                                                                                                                 |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Congested state' |
| Severity    | Major                                                                                                                                                                                                                                                           |
| Condition   | One or more pods of a service are in congested state. This could be due to CPU usage or Pending Message Count above configured thresholds. Currently this is applicable for NfSubscription service only.                                                        |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7082                                                                                                                                                                                                                                 |
| Metric Used | ocnrf_pod_congested_state                                                                                                                                                                                                                                       |

Table 5-95 (Cont.) OcnrfPodInCongestedState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the CPU usage or Pending Message Count goes below the configured thresholds for the congested state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register, or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

#### 5.4.7.4 OcnrfPodCpuUsageInCongestedState

Table 5-96 OcnrfPodCpuUsageInCongestedState

| Field       | Details                                                                                                                                                                                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'The pod {{\$labels.kubernetes_pod_name}} of service {{\$labels.app_kubernetes_io_name}} is in Congested state due to CPU usage above threshold'                                                                                                                                                 |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Congested state due to CPU usage above threshold' |
| Severity    | Major                                                                                                                                                                                                                                                                                            |
| Condition   | A pod of a service is in Congested state due to its CPU Usage above configured thresholds. Currently this is applicable for NfSubscription service only.                                                                                                                                         |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7083                                                                                                                                                                                                                                                                  |
| Metric Used | ocnrf_pod_cpu_congestion_state                                                                                                                                                                                                                                                                   |

Table 5-96 (Cont.) OcnrfPodCpuUsageInCongestedState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the CPU usage goes below the configured thresholds for the congested state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

### 5.4.7.5 OcnrfPodCpuUsageInDangerOfCongestionState

Table 5-97 OcnrfPodCpuUsageInDangerOfCongestionState

| Field       | Details                                                                                                                                                                                                                                                                                                     |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'The pod {{\$labels.kubernetes_pod_name}} of service {{\$labels.app_kubernetes_io_name}} is in Danger of Congestion state due to CPU usage above threshold'                                                                                                                                                 |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Danger of Congestion state due to CPU usage above threshold' |
| Severity    | Major                                                                                                                                                                                                                                                                                                       |
| Condition   | <p>A pod of a service is in Danger Of Congestion state due to its CPU above configured thresholds.</p> <p>This alert is raised when the Pod Pretoectoin feature is enabled for nfSubscription service. Currently this is applicable for NfSubscription service only.</p>                                    |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7080                                                                                                                                                                                                                                                                             |
| Metric Used | ocnrf_pod_cpu_congestion_state                                                                                                                                                                                                                                                                              |

Table 5-97 (Cont.) OcnrfPodCpuUsageInDangerOfCongestionState

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared when the CPU goes below the configured thresholds for the Danger of Congested state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

#### 5.4.7.6 OcnrfPodPendingMessageCountInCongestedState

Table 5-98 OcnrfPodPendingMessageCountInCongestedState

| Field              | Details                                                                                                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'The pod {{\$labels.kubernetes_pod_name}} of service {{\$labels.app_kubernetes_io_name}} is in Congested state due to Pending Message Count above threshold'                                                                                                                                                 |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Congested state due to Pending Message Count above threshold' |
| <b>Severity</b>    | Major                                                                                                                                                                                                                                                                                                        |
| <b>Condition</b>   | A pod of a service is in Congested state due to its Pending Message Count above configured thresholds. Currently this is applicable for NfSubscription service only.                                                                                                                                         |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7084                                                                                                                                                                                                                                                                              |
| <b>Metric Used</b> | ocnrf_pod_pending_message_count_congestion_state                                                                                                                                                                                                                                                             |

Table 5-98 (Cont.) OcnrfPodPendingMessageCountInCongestedState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the pending message count goes below the configured thresholds for the congested state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in <i>Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## 5.4.8 Controlled Shutdown of NRF Feature

This section lists the alerts that are specific to Controlled Shutdown of NRF feature. For more information about the feature, see the "Controlled Shutdown of NRF" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.8.1 OcnrfOperationalStateCompleteShutdown

Table 5-99 OcnrfOperationalStateCompleteShutdown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The operational state of NRF is Complete Shutdown.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} : The Operational state of NRF is Complete Shutdown'                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Severity            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Condition           | The operator has changed the operational state of NRF to Complete Shutdown.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7085                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Metric Used         | ocnrf_operational_state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Recommended Actions | <p>The alert is cleared when the user changes the operational state to NORMAL</p> <ul style="list-style-type: none"> <li>• If the alert is not cleared automatically after the operational state changes to NORMAL, collect the following: <ul style="list-style-type: none"> <li>– all the logs as mentioned in the NrfConfiguration, Ingress Gateway, Egress Gateway, NrfAuditor microservices</li> <li>– the database dump from the site</li> <li>– REST output of operationalState, operationalStateHistory, and controlledShutdownOptions</li> </ul> </li> <li>• Contact <a href="#">My Oracle Support</a>.</li> </ul> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## 5.4.8.2 OcnrfAuditOperationsPaused

**Table 5-100 OcnrfAuditOperationsPaused**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'The Audit procedures at NRF have been paused.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : The Audit procedures at NRF has been paused'                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Severity</b>            | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Condition</b>           | <p>The NrfAuditor microservice has paused all audit procedures. This occurs during any of the following scenarios:</p> <ol style="list-style-type: none"> <li>1. The NRF is in COMPLETE_SHUTDOWN operational state or just transitioned from COMPLETE_SHUTDOWN to a NORMAL operational state.</li> <li>2. The database has been down for a prolonged period of time. To restore the database, see section "Database Corruption" in <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i>.</li> <li>3. If the NrfAuditor pod has transitioned from READY to NOT_READY state.</li> </ol> |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7086                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Metric Used</b>         | ocnrf_audit_status                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Recommended Actions</b> | <p>The alert is expected to clear automatically, after the waiting period, and once all the above conditions are resolved.</p> <ul style="list-style-type: none"> <li>• If the alert is not cleared automatically, collect the following: <ul style="list-style-type: none"> <li>– all the logs as mentioned in the NrfConfiguration microservice, and NrfAuditor pod logs,</li> <li>– the database dump from the site,</li> <li>– REST output of operationalState, operationalStateHistory, and controlledShutdownOptions</li> </ul> </li> <li>• Contact <a href="#">My Oracle Support</a>.</li> </ul>                                                      |
| <b>Notes</b>               | NrfAuditor continues to remain in the paused state for some time, even after Ocnrf0OperationalStateCompleteShutdown alarm is cleared. For more information, see From CONTROLLED_SHUTDOWN to NORMAL subsection under "Controlled Shutdown of NRF" section in <i>Oracle Communications Cloud Native Core, Network Repository Function User Guide</i> .                                                                                                                                                                                                                                                                                                         |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.4.9 Monitoring the Availability of SCP Using SCP Health APIs Feature

This section lists the alerts that are specific to Monitoring the Availability of SCP Using SCP Health APIs feature. For more information about the feature, see the "Monitoring the Availability of SCP Using SCP Health APIs" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.9.1 OcnrfAllSCPsMarkedAsUnavailable

**Table 5-101 OcnrfAllSCPsMarkedAsUnavailable**

| Field                      | Details                                                                                                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'All SCPs have been marked unavailable.'                                                                                                                                                     |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : All SCPs have been marked as unavailable' |
| <b>Severity</b>            | Critical                                                                                                                                                                                     |
| <b>Condition</b>           | All SCPs have been marked unavailable.                                                                                                                                                       |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7088                                                                                                                                                              |
| <b>Metric Used</b>         | 'oc_egressgateway_peer_count and oc_egressgateway_peer_available_count'                                                                                                                      |
| <b>Recommended Actions</b> | NF clears the critical alarm when atleast 1 SCP peer in a peerset becomes available such that all other SCP peers in the given peerset are still unavailable.                                |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                          |

### 5.4.9.2 OcnrfSCPMarkedAsUnavailable

**Table 5-102 OcnrfSCPMarkedAsUnavailable**

| Field                      | Details                                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'An SCP has been marked unavailable.'                                                                                                                                                          |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : One of the SCP has been marked unavailable' |
| <b>Severity</b>            | Major                                                                                                                                                                                          |
| <b>Condition</b>           | One of the SCPs has been marked unhealthy.                                                                                                                                                     |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7087                                                                                                                                                                |
| <b>Metric Used</b>         | oc_egressgateway_peer_health_status                                                                                                                                                            |
| <b>Recommended Actions</b> | This alert gets cleared when unavailable SCPs become available.                                                                                                                                |
| <b>Available in OCI</b>    | Yes                                                                                                                                                                                            |

## 5.4.10 CCA Header Validation in NRF for Access Token Service Operation Feature

This section lists the alerts that are specific to CCA Header Validation in NRF for Access Token Service Operation feature. For more information about the feature, see the "CCA Header Validation in NRF for Access Token Service Operation" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.10.1 OcnrfCcaRootCertificateExpiringIn4Hours

**Table 5-103 OcnrfCcaRootCertificateExpiringIn4Hours**

| Field              | Details                                          |
|--------------------|--------------------------------------------------|
| <b>Description</b> | 'The CCA Root Certificates expiring in 4 hours'. |

Table 5-103 (Cont.) OcnrfCcaRootCertificateExpiringIn4Hours

| Field               | Details                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : CCA Root Certificate is expiring in 4 Hours'                                                                                                                                                       |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                |
| Condition           | Indicates the expiry dates of the CCA Root certificates that are expiring in four hours.                                                                                                                                                                                                                                                                |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7091                                                                                                                                                                                                                                                                                                                         |
| Metric Used         | 'oc_ingressgateway_cca_certificate_info'                                                                                                                                                                                                                                                                                                                |
| Recommended Actions | The alert is cleared when the expiring CCA root certificates are replaced with new ones.<br><b>Steps:</b> Replace expiring certificate key pair with new ones. For more information on creating certificate key pair, see <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                      |

### 5.4.10.2 OcnrfCcaRootCertificateExpiringIn1Day

Table 5-104 OcnrfCcaRootCertificateExpiringIn1Day

| Field               | Details                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The CCA Root Certificates expiring in 1 day'.                                                                                                                                                                                                                                                                                                          |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : CCA Root Certificate is expiring in 1 Day'                                                                                                                                                         |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                   |
| Condition           | Indicates the expiry dates of the CCA Root certificates that are expiring in one day.                                                                                                                                                                                                                                                                   |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7090                                                                                                                                                                                                                                                                                                                         |
| Metric Used         | 'oc_ingressgateway_cca_certificate_info'                                                                                                                                                                                                                                                                                                                |
| Recommended Actions | The alert is cleared when the expiring CCA root certificates are replaced with new ones.<br><b>Steps:</b> Replace expiring certificate key pair with new ones. For more information on creating certificate key pair, see <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                      |

### 5.4.10.3 OcnrfCcaRootCertificateExpiringIn5Days

Table 5-105 OcnrfCcaRootCertificateExpiringIn5Days

| Field       | Details                                         |
|-------------|-------------------------------------------------|
| Description | 'The CCA Root Certificates expiring in 5 days.' |

Table 5-105 (Cont.) OcnrfCcaRootCertificateExpiringIn5Days

| Field               | Details                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : CCA Root Certificate is expiring in 5 Days'                                                                                                                                                        |
| Severity            | Minor                                                                                                                                                                                                                                                                                                                                                   |
| Condition           | Indicates the expiry dates of the CCA Root certificates that are expiring in five days.                                                                                                                                                                                                                                                                 |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7089                                                                                                                                                                                                                                                                                                                         |
| Metric Used         | 'oc_ingressgateway_cca_certificate_info'                                                                                                                                                                                                                                                                                                                |
| Recommended Actions | The alert is cleared when the expiring CCA root certificates are replaced with new ones.<br><b>Steps:</b> Replace expiring certificate key pair with new ones. For more information on creating certificate key pair, see <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                      |

## 5.4.11 NRF Georedundancy Feature

This section lists the alerts that are specific to NRF Georedundancy feature. For more information about the feature, see the "NRF Georedundancy" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.11.1 OcnrfDbReplicationStatusInactive

Table 5-106 OcnrfDbReplicationStatusInactive

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The Database Replication Status is currently INACTIVE.'                                                                                                                                                                                                                                                                                                                                        |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nftype: {{\$labels.NfType}}, nrflvel:{{\$labels.NrfLevel}}, remoteNrInstanceId: {{\$labels.nrfInstanceId}}, remoteSiteName: {{\$labels.siteName}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: The database replication status is INACTIVE.' |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                        |
| Condition           | The database replication channel status between the given site and the georedundant site(s) is inactive. The alert is raised per replication channel. The alarm is raised or cleared only if the georedundancy feature is enabled.                                                                                                                                                              |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7013                                                                                                                                                                                                                                                                                                                                                                 |
| Metric Used         | 'ocnrf_dbreplication_status'                                                                                                                                                                                                                                                                                                                                                                    |
| Recommended Actions | The alert is cleared when the database channel replication status between the given site and the georedundant site(s) is up. For more information on how to check the database replication status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i> .                                                                                                                    |
| Notes               | The alarm is included only if the georedundancy feature is enabled.                                                                                                                                                                                                                                                                                                                             |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                              |

## 5.4.11.2 OcnrfReplicationStatusMonitoringInactive

**Table 5-107 OcnrfReplicationStatusMonitoringInactive**

| Field                      | Details                                                                                                                                                                                                                                               |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'OCNRF Replication Status Monitoring Inactive'                                                                                                                                                                                                        |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Pod {{\$labels.kubernetes_pod_name}} are not monitoring the replication status'                  |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                              |
| <b>Condition</b>           | This alarm is raised when one or more pods are not monitoring the replication status.                                                                                                                                                                 |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7078                                                                                                                                                                                                                       |
| <b>Metric Used</b>         | ocnrf_replication_status_monitoring_inactive                                                                                                                                                                                                          |
| <b>Recommended Actions</b> | Resolution Steps:<br><br><ol style="list-style-type: none"> <li>1. Identify the pod for which the alert is raised.</li> <li>2. Run the following command to restart the pod:<br/> kubect1 delete pod &lt;pod_name&gt; -n &lt;namespace&gt;</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                    |

## 5.4.12 XFCC Header Validation Feature

This section lists the alert that is specific to XFCC Header Validation feature. For more information about the feature, see the "XFCC Header Validation" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.12.1 OcnrfNfAuthenticationFailureRequestsRejected

**Table 5-108 OcnrfNfAuthenticationFailureRequestsRejected**

| Field                      | Details                                                                                                                                                                                                                                                                                     |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Service request(s) received from NF have been rejected by OCNRF (current value is: {{\$value}})'                                                                                                                                                                                           |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Request rejected for Nf FQDN based Authentication failure.' |
| <b>Severity</b>            | Warning                                                                                                                                                                                                                                                                                     |
| <b>Condition</b>           | NRF rejected a service request due to NF authentication failure                                                                                                                                                                                                                             |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7015                                                                                                                                                                                                                                                             |
| <b>Metric Used</b>         | 'ocnrf_nf_authentication_failure_total'                                                                                                                                                                                                                                                     |
| <b>Recommended Actions</b> | The alert is cleared automatically.<br><b>Steps:</b><br>Filter out nfAccessToken application ERROR logs on Kibana for more details.                                                                                                                                                         |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                          |

## 5.4.13 Enhanced NRF Set Based Deployment (NRF Growth) Feature

This section lists the alert that is specific to Enhanced NRF Set Based Deployment (NRF Growth) feature. For more information about the feature, see the "Enhanced NRF Set Based Deployment (NRF Growth)" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.13.1 OcnrfRemoteSetNrfSyncFailed

**Table 5-109 OcnrfRemoteSetNrfSyncFailed**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'A sync request to the NRF in the remote set has failed.'<br><b>Note:</b> The alert must be configured only if the NRF Growth feature is enabled.                                                                                                                                                                                                                                   |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : A sync request to the NRF in the remote set has failed.'                                                                                                                                                                         |
| <b>Severity</b>            | Minor                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Condition</b>           | Sync request to the NRF in the remote NRF set has failed.                                                                                                                                                                                                                                                                                                                           |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7098                                                                                                                                                                                                                                                                                                                                                     |
| <b>Metric Used</b>         | ocnrf_query_remote_cds_responses_total                                                                                                                                                                                                                                                                                                                                              |
| <b>Recommended Actions</b> | The alert is cleared when the synchronization with the remote NRF set is successful.<br><b>Steps:</b> <ol style="list-style-type: none"> <li>1. Verify the remote NRF set is up.</li> <li>2. Verify the connectivity between the local NRF set and remote NRF set.</li> <li>3. Collect logs from local NRF and remote NRF(s). Contact <a href="#">My Oracle Support</a>.</li> </ol> |

### 5.4.13.2 OcnrfSyncFailureFromAllNrfOfAnyRemoteSet

**Table 5-110 OcnrfSyncFailureFromAllNrfOfAnyRemoteSet**

| Field              | Details                                                                                                                                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Sync requests to all the NRFs of a remote set has failed.'<br><b>Note:</b> The alert must be configured only if the NRF Growth feature is enabled.                                                                     |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Sync requests to all the NRFs in any of the remote sets have failed' |
| <b>Severity</b>    | Major                                                                                                                                                                                                                   |
| <b>Condition</b>   | The sync requests to all the NRFs in the remote sets has failed.                                                                                                                                                        |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7099                                                                                                                                                                                         |
| <b>Metric Used</b> | ocnrf_remote_set_unavailable_total                                                                                                                                                                                      |

Table 5-110 (Cont.) OcnrfSyncFailureFromAllNrfOfAnyRemoteSet

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared when synchronization is successful with at least one NRF of the remote NRF set.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Verify the remote NRF sets are up.</li> <li>2. Verify the host details configured in the <code>nrfHostConfig</code> attribute using REST API. For more information about the attribute, see <i>Oracle Communications, Cloud Native Core Network Repository Function REST Specifications Guide</i>.</li> <li>3. Verify the connectivity between the local NRF set and remote NRF set.</li> <li>4. Collect logs from local NRF and remote NRF(s). Contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### 5.4.13.3 OcnrfSyncFailureFromAllNrfOfAllRemoteSets

Table 5-111 OcnrfSyncFailureFromAllNrfOfAllRemoteSets

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | <p>'Sync request to all the NRFs in all the remote sets have failed.'</p> <p><b>Note:</b> The alert must be configured only if the NRF Growth feature is enabled.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Sync request to all the NRFs in all the remote sets have failed'                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Severity</b>            | critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Condition</b>           | Sync requests to all the NRFs in all the remote sets have failed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Metric Used</b>         | ocnrf_all_remote_sets_unavailable_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Recommended Actions</b> | <p>The alert is cleared when synchronization is successful with at least one NRF of the remote set(s).</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Verify the remote NRF sets are up.</li> <li>2. Verify the host details configured in the <code>nrfHostConfig</code> attribute using REST API. For more information about the attribute, see <i>Oracle Communications, Cloud Native Core Network Repository Function REST Specifications Guide</i>.</li> <li>3. Verify the connectivity between the local NRF set and remote NRF set.</li> <li>4. Collect logs from local NRF and remote NRF(s). Contact <a href="#">My Oracle Support</a>.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## 5.4.13.4 OcnrfCacheDataServiceDown

Table 5-112 OcnrfCacheDataServiceDown

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'OCNRF NrfCacheData service {{\$labels.app_kubernetes_io_name}} is down'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Cache Data Service is down'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Condition           | Cache Data Service is unavailable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7101                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used         | up                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Recommended Actions | <p>The alert is cleared when the Cache Data Service (CDS) is available.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of the CDS and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the running state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the Running state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on service names. Check for ERROR WARNING logs.</li> <li>Check the DB status. For more information on how to check the DB status, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>. Depending on the failure reason, take the resolution steps.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use the CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using the Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 5.4.13.5 OcnrfDatabaseFallbackUsed

Table 5-113 OcnrfDatabaseFallbackUsed

| Field       | Details                                                                                                                                             |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'A service operation is unable to get data from the Cache Data Service, and hence gets the data from the cnDBTier to fulfill the service operation' |

Table 5-113 (Cont.) OcnrfDatabaseFallbackUsed

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : A service Operation is unable to get data from the Cache Data Service, so falling back to DB'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Condition           | When a service operation is unable to get data from the Cache Data Service, and hence gets the data from the database to fulfill the service operation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7102                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Metric Used         | ocnrf_db_fallback_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Recommended Actions | <p>The alert is cleared automatically.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>To check the orchestration logs of the CDS and check for liveness or readiness probe failures, do the following: <ol style="list-style-type: none"> <li>Run the following command to check the pod status: <pre>\$ kubectl get po -n &lt;namespace&gt;</pre> </li> <li>Run the following command to analyze the error condition of the pod that is not in the running state: <pre>\$ kubectl describe pod &lt;pod name not in Running state&gt; -n &lt;namespace&gt;</pre> <p>Where &lt;pod name not in Running state&gt; indicates the pod that is not in the Running state.</p> </li> </ol> </li> <li>Refer to the application logs on Kibana and filter based on service names. Check for ERROR WARNING logs.</li> <li>In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

### 5.4.13.6 OcnrfTotalNFsRegisteredAtSegmentBelowMinorThreshold

Table 5-114 OcnrfTotalNFsRegisteredAtSegmentBelowMinorThreshold

| Field       | Details                                                                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The alert is raised when the number of NFs registered at the segment is below the configured minor threshold.                                                                                                            |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : The number of NFs registered at the segment is below minor threshold' |
| Severity    | Minor                                                                                                                                                                                                                    |

Table 5-114 (Cont.) OcnrfTotalNFsRegisteredAtSegmentBelowMinorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Condition           | The number of NFs registered at the segment is below minor threshold.<br><b>Note:</b> This alert is triggered when the registered NF count is greater than or equal to 10 and below 20. This default value can be modified in the ocnrf_alertrules_25.1.200.yaml or ocnrf_alertrules_promha_25.1.200.yaml file depending on Prometheus version.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7103                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Metric Used         | ocnrf_nf_registered_count                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Recommended Actions | <p>The alert is cleared when the number of registered NFs in the segment is above the minor threshold.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running in all NRF Sets.</li> <li>2. Check if the Ingress Gateway pod is up and running in all NRF sets.<br/><br/> <pre>kubectl get po -n &lt;namespace&gt;</pre> </li> <li>3. Validate that the CDS synchronization with remote NRF sets is successful. Validate below alerts are not present in the system: <ol style="list-style-type: none"> <li>a. <a href="#">OcnrfSyncFailureFromAllNrfOfAnyRemoteSet</a></li> <li>b. <a href="#">OcnrfSyncFailureFromAllNrfOfAllRemoteSets</a></li> </ol> </li> <li>4. Check for registration pod logs on Kibana for ERROR WARN logs.</li> <li>5. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use the CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using the Data Collector tool, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

### 5.4.13.7 OcnrfTotalNFsRegisteredAtSegmentBelowMajorThreshold

Table 5-115 OcnrfTotalNFsRegisteredAtSegmentBelowMajorThreshold

| Field       | Details                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The alert is raised when the number of NFs registered at the segment is below the configured major threshold.                                                                                                             |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The number of NFs registered at the segment is below major threshold |
| Severity    | Major                                                                                                                                                                                                                     |

Table 5-115 (Cont.) OcnrfTotalNFsRegisteredAtSegmentBelowMajorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Condition           | The number of NFs registered at the segment is below major threshold.<br><b>Note:</b> This alert is triggered when the registered NF count is greater than or equal to 2 and below 10. This default value can be modified in the <code>ocnrf_alertrules_25.1.200.yaml</code> or <code>ocnrf_alertrules_promha_25.1.200.yaml</code> file depending on Prometheus version.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7104                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Metric Used         | ocnrf_nf_registered_count                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Recommended Actions | <p>The alert is cleared when the number of registered NFs in the segment is above the major threshold.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running in all NRF sets.</li> <li>2. Check if the Ingress Gateway pod is up and running in all NRF sets.<br/><br/> <code>kubectl get po -n &lt;namespace&gt;</code> </li> <li>3. Validate that the CDS synchronization with remote NRF sets is successful. Validate below alerts are not present in the system: <ol style="list-style-type: none"> <li>a. <a href="#">OcnrfSyncFailureFromAllNrfOfAnyRemoteSet</a></li> <li>b. <a href="#">OcnrfSyncFailureFromAllNrfOfAllRemoteSets</a></li> </ol> </li> <li>4. Check for registration pod logs on Kibana for ERROR WARN logs.</li> <li>5. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.<br/><b>Note:</b> Use the CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using the Data Collector tool, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

### 5.4.13.8 OcnrfTotalNFsRegisteredAtSegmentBelowCriticalThreshold

Table 5-116 OcnrfTotalNFsRegisteredAtSegmentBelowCriticalThreshold

| Field       | Details                                                                                                                                                                                                                                                                                                                                     |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | The alert is raised when the number of NFs registered at the segment is below the configured critical threshold.                                                                                                                                                                                                                            |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : The number of NFs registered at the segment is below critical threshold'                                                                                                                 |
| Severity    | Critical                                                                                                                                                                                                                                                                                                                                    |
| Condition   | The number of NFs registered at the segment is below critical threshold.<br><b>Note:</b> This alert is triggered when the registered NF count is below 2. This default value can be modified in the <code>ocnrf_alertrules_25.1.200.yaml</code> or <code>ocnrf_alertrules_promha_25.1.200.yaml</code> file depending on Prometheus version. |

Table 5-116 (Cont.) OcnrfTotalNFsRegisteredAtSegmentBelowCriticalThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7105                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used         | ocnrf_nf_registered_count                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Recommended Actions | <p>The alert is cleared when the number of registered NFs in the segment is above the critical threshold.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Check if there is traffic for requests other than registration (for example, discovery requests). This ensures that NRF FQDN is reachable from other NFs and Ingress Gateway is up and running in all NRF sets.</li> <li>2. Check if the Ingress Gateway pod is up and running in all NRF sets.</li> </ol> <pre>kubectl get po -n &lt;namespace&gt;</pre> <ol style="list-style-type: none"> <li>3. Validate that the CDS synchronization with remote NRF sets is successful. Validate below alerts are not present in the system: <ol style="list-style-type: none"> <li>a. <a href="#">OcnrfSyncFailureFromAllNrfOfAnyRemoteSet</a></li> <li>b. <a href="#">OcnrfSyncFailureFromAllNrfOfAllRemoteSets</a></li> </ol> </li> <li>4. Check for registration pod logs on Kibana for ERROR WARN logs.</li> <li>5. In case the issue persists, capture all the outputs for the above steps and contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use the CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using the Data Collector tool, see <i>Oracle Communications Cloud Native Core, cnDBTier User Guide</i>.</p> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.4.14 Ingress Gateway Pod Protection Feature

This section lists the alerts that are specific to Ingress Gateway Pod Protection feature. For more information about the feature, see the "Ingress Gateway Pod Protection" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.14.1 OcnrfIngressGatewayPodInDangerOfCongestionState

Table 5-117 OcnrfIngressGatewayPodInDangerOfCongestionState

| Field       | Details                                                                                                                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'The pod {{\$labels.kubernetes_pod_name}} is in Danger of Congestion state'                                                                                                                                                              |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Danger of Congestion state' |
| Severity    | Major                                                                                                                                                                                                                                    |
| Condition   | When Ingress Gateway pod is in Danger Of Congestion state.                                                                                                                                                                               |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7092                                                                                                                                                                                                          |
| Metric Used | oc_ingressgateway_pod_congestion_state                                                                                                                                                                                                   |

Table 5-117 (Cont.) OcnrflngressGatewayPodInDangerOfCongestionState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the pod is out of Danger Of Congestion (DoC) state.<br/> <b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b><br/> Reassess if the NRF is receiving additional traffic.<br/> If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register, or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

### 5.4.14.2 OcnrflngressGatewayPodInCongestedState

Table 5-118 OcnrflngressGatewayPodInCongestedState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The pod {{\$labels.kubernetes_pod_name}} is in Congested state'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Congested state'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Condition           | When Ingress Gateway pod is in Congested state.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7093                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Used         | oc_ingressgateway_pod_congestion_state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Recommended Actions | <p>The alert is cleared when the pod is out of Congested state.<br/> <b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b><br/> Reassess if the NRF is receiving additional traffic.<br/> If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register, or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## 5.4.14.3 OcnrflIngressGatewayPodCpuUsageInCongestedState

Table 5-119 OcnrflIngressGatewayPodCpuUsageInCongestedState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The pod {{\$labels.kubernetes_pod_name}} is in Congested state'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Congested state'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Condition           | Ingress Gateway pod is in Congested state due to CPU consumption above the configured thresholds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7094                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Metric Used         | oc_ingressgateway_pod_resource_state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Recommended Actions | <p>The alert is cleared when the CPU consumption goes below the configured thresholds for the Congested state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register, or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 5.4.14.4 OcnrflIngressGatewayPodCpuUsageInDangerOfCongestionState

Table 5-120 OcnrflIngressGatewayPodCpuUsageInDangerOfCongestionState

| Field       | Details                                                                                                                                                                                                                                                                   |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'The pod {{\$labels.kubernetes_pod_name}} is in Danger of Congestion state due to CPU usage above threshold'                                                                                                                                                              |
| Summary     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}},podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Danger of Congestion state due to CPU usage above threshold' |
| Severity    | Major                                                                                                                                                                                                                                                                     |
| Condition   | Ingress Gateway pod is in Danger of Congestion state due to CPU consumption above the configured thresholds.                                                                                                                                                              |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7095                                                                                                                                                                                                                                           |
| Metric Used | oc_ingressgateway_pod_resource_state                                                                                                                                                                                                                                      |

Table 5-120 (Cont.) OcnrflngressGatewayPodCpuUsageInDangerOfCongestionState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the CPU consumption is not as per the configured thresholds value for the Danger of Congestion state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register, or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

#### 5.4.14.5 OcnrflngressGatewayPodPendingMessageInCongestedState

Table 5-121 OcnrflngressGatewayPodPendingMessageInCongestedState

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The pod {{\$labels.kubernetes_pod_name}} is in Congested state'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Congested state'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Condition           | Ingress Gateway pod is in Congested state due to pending message count above the configured thresholds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7096                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used         | oc_ingressgateway_pod_resource_state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Recommended Actions | <p>The alert is cleared when the pending message count is not as per the configured thresholds value for the Congested state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register, or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5.4.14.6 OcnrfIngressGatewayPodPendingMessageInDangerOfCongestionState

**Table 5-122 OcnrfIngressGatewayPodPendingMessageInDangerOfCongestionState**

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'The pod {{\$labels.kubernetes_pod_name}} is in Danger of Congestion state due to Pending Message above threshold'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : The pod is in Danger of Congestion state due to Pending Message above threshold'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Condition           | Ingress Gateway pod is in Danger of Congestion state due to pending message count above the configured thresholds.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7097                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Metric Used         | oc_ingressgateway_pod_resource_state                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Recommended Actions | <p>The alert is cleared when the pending message count is not as per the configured thresholds value for the Danger of Congestion state.</p> <p><b>Note:</b> The thresholds can be viewed using REST API.</p> <p><b>Steps:</b></p> <p>Reassess if the NRF is receiving additional traffic.</p> <p>If this is unexpected, contact <a href="#">My Oracle Support</a>.</p> <ol style="list-style-type: none"> <li>1. Refer to alert to determine which pod is receiving high traffic. It may due to a sudden spike in traffic. For example: When one mated site goes down, the NFs move to the given site. Check if NF is sending high number of updates, register, or deregister.</li> <li>2. Check the service pod logs on Kibana to determine the reason for the errors.</li> <li>3. If this is expected traffic, then the thresholds levels may need to be re-evaluated as per the call rate and reconfigured as mentioned in Oracle Communications Cloud Native Core, Network Repository Function REST Specification Guide.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 5.4.15 Subscriber Location Function Feature

This section lists the alert that is specific to Subscriber Location Function feature. For more information about the feature, see the "Subscriber Location Function Feature" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.15.1 OcnrfMaxSlfAttemptsExhausted

**Table 5-123 OcnrfMaxSlfAttemptsExhausted**

| Field       | Details                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------|
| Description | 'NF discovery request with fqdn {{\$labels.NfProfileFqdn}} NF type {{\$labels.NfType}} has exhausted maximum SLF attempts' |

Table 5-123 (Cont.) OcnrfMaxSlfAttemptsExhausted

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Summary             | "kubernetes_namespace: {{\$labels.kubernetes_namespace}}, nrflevel: {{\$labels.NrfLevel}}, podname: {{\$labels.kubernetes_pod_name}}, NfProfileFqdn: {{\$labels.NfProfileFqdn}}, NfType: {{\$labels.NfType}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: The maximum slf attempts have exhausted.'                                                                                                                                                                                                                                                                                                                                                                                             |
| Severity            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Condition           | NF discovery request with FQDN of the given NFType UDR has exhausted maximum SLF attempts. This alert is raised when the ocnrf_max_slf_attempts_exhausted_total metric is pegged.<br><b>Note:</b> This alert is included if SLF selection from registered profiles is enabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7054                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used         | 'ocnrf_max_slf_attempts_exhausted_total'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Recommended Actions | The alert is cleared automatically after 5 minutes.<br><b>Steps:</b> <ol style="list-style-type: none"> <li>1. Check logs in NF discovery pod to check the reason for SLF query failures.</li> <li>2. In DISCOVERED_SLF_CONFIG_MODE, make sure that SLFs are registered with valid IPV4, PV6, or FQDN information. Verify the same in the slfDiscoveredCandidateList from the slfOptions.</li> <li>3. In STATIC_SLF_CONFIG_MODE, verify if slfHostConfig details are configured correctly.</li> </ol> <b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more information on how to collect logs using Data Collector tool, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i> . |
| Available in OCI    | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## 5.4.16 EmptyList in Discovery Response Feature

This section lists the alert that is specific to EmptyList in Discovery Response feature. For more information about the feature, see the "EmptyList in Discovery Response" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.16.1 OcnrfNFDDiscoveryEmptyListObservedNotification

Table 5-124 OcnrfNFDDiscoveryEmptyListObservedNotification

| Field       | Details                                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description | 'Empty List observed with received discovery request with NFType \$labels.NfType Feature Status \$labels.FeatureStatus'                                                                                 |
| Summary     | 'namespace: \$labels.namespace, nrflevel:\$labels.NrfLevel, podname: \$labels.pod, NfType: \$labels.NfType, FeatureStatus: \$labels.FeatureStatus: Empty List observed with received discovery request' |
| Severity    | Critical                                                                                                                                                                                                |
| Condition   | This alarm is raised when profiles do not match the discovery request.<br>Also, this alarm is raised when the SUSPENDED profile is in response to incoming request and Empty List feature is enabled.   |
| OID         | 1.3.6.1.4.1.323.5.3.36.1.2.7055                                                                                                                                                                         |

Table 5-124 (Cont.) OcnrfNFDISCOVERYEmptyListObservedNotification

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used         | ocnrf_nfDiscover_emptyList_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Recommended Actions | <p>The alert is cleared automatically after a duration of 5 minutes.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Collect the logs.</li> <li>2. Check logs for the following conditions: <ul style="list-style-type: none"> <li>• Verify if the NF has sent Empty List in response in NRF Discovery.</li> <li>• Check if NF has sent SUSPENDED profiles in response for incoming requests when EmptyList feature is ENABLED.</li> <li>• If the response is not Empty List or does not contain SUSPENDED profiles.</li> </ul> </li> <li>3. If the alert still persists, contact <a href="#">My Oracle Support</a>.</li> </ol> <p><b>Note:</b> Use CNC NF Data Collector tool for capturing logs. For more details, see <i>Oracle Communications Cloud Native Core, Network Function Data Collector User Guide</i>.</p> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## 5.4.17 Support for TLS Feature

This section lists the alert that is specific to Support for TLS feature. For more information about the feature, see the "Support for TLS" section in *Oracle Communications Cloud Native Core, Network Repository Function User Guide*.

### 5.4.17.1 OcnrfTLSCertificateExpireMinor

Table 5-125 OcnrfTLSCertificateExpireMinor

| Field               | Details                                                                                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'TLS certificate to expire in 6 months'.                                                                                                                                                                                                                                                                         |
| Summary             | 'namespace: {{\$labels.namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : TLS certificate to expire in 6 months'                                                                                                                                            |
| Severity            | Minor                                                                                                                                                                                                                                                                                                            |
| Condition           | This alert is raised when the TLS certificate is about to expire in six months.                                                                                                                                                                                                                                  |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7106                                                                                                                                                                                                                                                                                  |
| Metric Used         | security_cert_x509_expiration_seconds                                                                                                                                                                                                                                                                            |
| Recommended Actions | <p>The alert is cleared when the TLS certificate is renewed.</p> <p>For more information about certificate renewal, see "Creating Private Keys and Certificate " section in the <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i>.</p> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                               |

## 5.4.17.2 OcnrfTLSCertificateExpireMajor

Table 5-126 OcnrfTLSCertificateExpireMajor

| Field               | Details                                                                                                                                                                                                                                                                                               |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'TLS certificate to expire in 3 months.'                                                                                                                                                                                                                                                              |
| Summary             | 'namespace: {{\$labels.namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} : TLS certificate to expire in 3 months'                                                                                                                                  |
| Severity            | Major                                                                                                                                                                                                                                                                                                 |
| Condition           | This alert is raised when the TLS certificate is about to expire in three months.                                                                                                                                                                                                                     |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7107                                                                                                                                                                                                                                                                       |
| Metric Used         | security_cert_x509_expiration_seconds                                                                                                                                                                                                                                                                 |
| Recommended Actions | The alert is cleared when the TLS certificate is renewed.<br>For more information about certificate renewal, see "Creating Private Keys and Certificate" section in the <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                    |

## 5.4.17.3 OcnrfTLSCertificateExpireCritical

Table 5-127 OcnrfTLSCertificateExpireCritical

| Field               | Details                                                                                                                                                                                                                                                                                               |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'TLS certificate to expire in one month.'                                                                                                                                                                                                                                                             |
| Summary             | 'namespace: {{\$labels.namespace}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} : TLS certificate to expire in 1 month'                                                                                                                                   |
| Severity            | Critical                                                                                                                                                                                                                                                                                              |
| Condition           | This alert is raised when the TLS certificate is about to expire in one month.                                                                                                                                                                                                                        |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7108                                                                                                                                                                                                                                                                       |
| Metric Used         | security_cert_x509_expiration_seconds                                                                                                                                                                                                                                                                 |
| Recommended Actions | The alert is cleared when the TLS certificate is renewed.<br>For more information about certificate renewal, see "Creating Private Keys and Certificate" section in the <i>Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide</i> . |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                    |

## 5.4.18 Egress Gateway Pod Throttling

### 5.4.18.1 OcnrfEgressPerPodDiscardRateAboveMajorThreshold

**Table 5-128 OcnrfEgressPerPodDiscardRateAboveMajorThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Egressgateway PerPod Discard Rate is greater than the configured major threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Summary</b>             | 'kubernetes_namespace: {{labels.namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Egressgateway PerPod Discard Rate is more than 1 request per second.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Severity</b>            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Condition</b>           | This alert is raised when the Egress Gateway pods discard traffic due to its request limit is greater than the configured threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7113                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Metric Used</b>         | oc_egressgateway_podlevel_throttling_discarded_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Recommended Actions</b> | <p>The alert is cleared when the Egress Gateway pods discard traffic rate falls below the major threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Refer Egress Gateway section in Grafana to determine which service is sending high traffic.</li> <li>2. Refer Egress Gateway section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check Egress Gateway logs on Kibana to determine the reason for the errors.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

### 5.4.18.2 OcnrfEgressPerPodDiscardRateAboveCriticalThreshold

**Table 5-129 OcnrfEgressPerPodDiscardRateAboveCriticalThreshold**

| Field              | Details                                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Egressgateway PerPod Discard Rate is greater than the configured critical threshold. (current value is: {{ \$value }})'                                                                                         |
| <b>Summary</b>     | 'kubernetes_namespace: {{labels.namespace}}, timestamp: {{ with query "time()" }} {{ .   first   value   humanizeTimestamp }}{{ end }}: Egressgateway PerPod Discard Rate is more than 100 requests per second.' |
| <b>Severity</b>    | Critical                                                                                                                                                                                                         |
| <b>Condition</b>   | This alert is raised when the Egress Gateway pods discard traffic due to its request limit is greater than the configured threshold.                                                                             |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7114                                                                                                                                                                                  |
| <b>Metric Used</b> | oc_egressgateway_podlevel_throttling_discarded_total                                                                                                                                                             |

Table 5-129 (Cont.) OcnrfEgressPerPodDiscardRateAboveCriticalThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Actions | <p>The alert is cleared when the Egress Gateway pods discard traffic rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Egress Gateway section in Grafana to determine which service is sending high traffic.</li> <li>2. Refer Egress Gateway section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Check Egress Gateway logs on Kibana to determine the reason for the errors.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## 5.4.19 Ingress Gateway Pod Protection Using Rate Limiting

### 5.4.19.1 OcnrfIngressDiscardDueToRateLimitMajorThreshold

Table 5-130 OcnrfIngressDiscardDueToRateLimitMajorThreshold

| Field               | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description         | 'Ingress Gateway discards due to rate limit exceeds the configured major threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Summary             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Ingressgateway Discard due to Rate Limit is more than or equal to 1 requests per second and less than 100 requests per second.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Severity            | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Condition           | This alert is raised when Ingress Gateway discard requests as rate limit exceeds the configured major threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OID                 | 1.3.6.1.4.1.323.5.3.36.1.2.7129                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used         | oc_ingressgateway_http_request_ratelimit_denied_count_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Recommended Actions | <p>The alert is cleared when the Ingress Gateway pods discard traffic rate falls below the major threshold or exceeds the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Ingress Gateway Pod Protection By Rate Limit section in Grafana to determine which pods are overloaded and the rate of traffic received.</li> <li>2. Refer Ingress Gateway section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Refer the Grafana dashboard to determine which service traffic is above expectation.</li> </ol> |
| Available in OCI    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 5.4.19.2 OcnrflIngressDiscardDueToRateLimitCriticalThreshold

**Table 5-131 OcnrflIngressDiscardDueToRateLimitCriticalThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>         | 'Ingress gateway discards due to rate limit exceeds the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Summary</b>             | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Ingressgateway Discard due to Rate Limit is more than or equal to 100 requests per second.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Severity</b>            | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Condition</b>           | This alert is raised when Ingress Gateway discard requests as rate limit exceeds the configured critical threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>OID</b>                 | 1.3.6.1.4.1.323.5.3.36.1.2.7130                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Metric Used</b>         | oc_ingressgateway_http_request_ratelimit_denied_count_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Recommended Actions</b> | <p>The alert is cleared when the Ingress Gateway pods discard traffic rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Ingress Gateway Pod Protection By Rate Limit section in Grafana to determine which pods are overloaded and the rate of traffic received.</li> <li>2. Refer Ingress Gateway section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Refer the Grafana dashboard to determine which service traffic is above expectation.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 5.4.20 Egress Gateway Pod Protection Using Rate Limiting

### 5.4.20.1 OcnrfEgressDiscardDueToRateLimitMajorThreshold

**Table 5-132 OcnrfEgressDiscardDueToRateLimitMajorThreshold**

| Field              | Details                                                                                                                                                                                                                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | 'Egress Gateway discards due to rate limit exceeds the configured major threshold. (current value is: {{ \$value }})'                                                                                                                                                              |
| <b>Summary</b>     | 'kubernetes_namespace: {{\$labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Egressgateway Discard due to Rate Limit is more than or equal to 1 requests per second and less than 100 requests per second.' |
| <b>Severity</b>    | Major                                                                                                                                                                                                                                                                              |
| <b>Condition</b>   | This alert is raised when Egress Gateway discard requests as rate limit exceeds the configured major threshold.                                                                                                                                                                    |
| <b>OID</b>         | 1.3.6.1.4.1.323.5.3.36.1.2.7131                                                                                                                                                                                                                                                    |
| <b>Metric Used</b> | oc_egressgateway_http_request_ratelimit_denied_count_total                                                                                                                                                                                                                         |

**Table 5-132 (Cont.) OcnrfEgressDiscardDueToRateLimitMajorThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Recommended Actions</b> | <p>The alert is cleared when the Egress Gateway pods discard traffic rate falls below the major threshold or exceeds the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Egress Gateway Pod Protection By Rate Limit section in Grafana to determine which pods are overloaded and the rate of traffic received.</li> <li>2. Refer Egress Gateway section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Refer the Grafana dashboard to determine which service traffic is above expectation.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 5.4.20.2 OcnrfEgressDiscardDueToRateLimitCriticalThreshold

**Table 5-133 OcnrfEgressDiscardDueToRateLimitCriticalThreshold**

| Field                      | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Description                | 'Egress gateway discards due to rate limit exceeds the configured critical threshold. (current value is: {{ \$value }})'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Summary                    | 'kubernetes_namespace: {{labels.kubernetes_namespace}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Egressgateway Discard due to Rate Limit is more than or equal to 100 requests per second.'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Severity                   | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Condition                  | This alert is raised when Egress Gateway discard requests as rate limit exceeds the configured critical threshold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| OID                        | 1.3.6.1.4.1.323.5.3.36.1.2.7132                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Metric Used                | oc_egressgateway_http_request_ratelimit_denied_count_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Recommended Actions</b> | <p>The alert is cleared when the Egress Gateway pods discard traffic rate falls below the critical threshold.</p> <p><b>Note:</b> The threshold is configurable in the alert file. Reassess why the NRF is receiving additional traffic (for example, Mated site NRF is unavailable in georedundancy scenario). If this alert is unexpected, contact <a href="#">My Oracle Support</a>.</p> <p><b>Steps:</b></p> <ol style="list-style-type: none"> <li>1. Refer Egress Gateway Pod Protection By Rate Limit section in Grafana to determine which pods are overloaded and the rate of traffic received.</li> <li>2. Refer Egress Gateway section in Grafana to determine the increase in 4xx and 5xx error codes.</li> <li>3. Refer the Grafana dashboard to determine which service traffic is above expectation.</li> </ol> |
| <b>Available in OCI</b>    | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 5.5 NRF Alert Configuration

### NRF Alert Configuration

Follow the steps below for NRF Alert configuration in Prometheus:

#### ① Note

1. The Name is the release name used in helm install command.
2. The Namespace is the namespace used in helm install command. By default Namespace for NRF is ocnrf that must be update as per the deployment.
3. The ocnrf-config-1.1.0.0.0.zip file can be downloaded from OHC. Unzip the ocnrf-config-1.1.0.0.0.zip package after downloading to get NrfAlertrules.yaml file.

1. Take Backup of current configuration map of Prometheus:

```
kubectl get configmaps _NAME_-server -o yaml -n _Namespace_ > /tmp/tempConfig.yaml
```

2. Check and Add NRF Alert file name inside Prometheus configuration map:

```
sed -i '/etc\/config\/alertsrf\/d' /tmp/tempConfig.yaml  
sed -i '/rule_files:/a\ \- /etc/config/alertsnrf' /tmp/tempConfig.yaml
```

3. Update configuration map with updated file name of NRF alert file:

```
kubectl replace configmap _NAME_-server -f /tmp/tempConfig.yaml
```

4. Add NRF Alert rules in configuration map under file name of NRF alert file:

```
kubectl patch configmap _NAME_-server -n _Namespace_ --type merge --patch  
"$(cat ~/NrfAlertrules.yaml)"
```

#### ① Note

Prometheus server takes updated configuration map that is automatically reloaded after 60 seconds approximately. Refresh the Prometheus GUI to confirm that the NRF Alerts are loaded.

### 5.5.1 Disable Alerts

This section explains the procedure to disable the alerts in NRF.

1. Edit **NrfAlertrules-25.1.200.yaml** file to remove a specific alert.
2. Remove complete content of a specific alert from the **NrfAlertrules-25.1.200.yaml** file.

For example: If you want to remove 0cnrfTrafficRateAboveMinorThreshold alert, remove the complete content:

```
## ALERT SAMPLE START##

- alert: 0cnrfTrafficRateAboveMinorThreshold
  annotations:
    description: 'Ingress traffic Rate is above minor threshold i.e. 800 mps
(current value is: {{ $value }})'
    summary: 'Traffic Rate is above 80 Percent of Max requests per
second(1000)'
  expr:
sum(rate(oc_ingressgateway_http_requests_total{app_kubernetes_io_name="ingressgateway",kubernetes_namespace="0cnrf"}[2m])) >= 800 < 900
  labels:
    severity: Minor
## ALERT SAMPLE END##
```

3. Perform Alert configuration. For more information about configuring alerts, see [NRF Alert Configuration](#) section.

## 5.5.2 Configuring SNMP Notifier

This section describes the procedure to configure SNMP Notifier.

Configure the IP and port of the SNMP trap receiver in the SNMP Notifier using the following procedure:

1. Run the following command to edit the deployment:

```
$ kubectl edit deploy <snmp_notifier_deployment_name> -n <namespace>
```

Example:

```
$ kubectl edit deploy occne-snmp-notifier -n occne-infra
```

SNMP deployment yaml file is displayed.

2. Edit the SNMP destination in the deployment yaml file as follows:

```
--snmp.destination=<destination_ip>:<destination_port>
```

Example:

```
--snmp.destination=10.75.203.94:162
```

3. Save the file.

### Checking SNMP Traps

Following is an example on how to capture the logs of the trap receiver server to view the generated SNMP traps:

```
$ docker logs <trapd_container_id>
```

Sample output:

```
2020-04-29 15:34:24 10.75.203.103 [UDP: [10.75.203.103]:2747-
>[172.17.0.4]:162]:DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks:
(158510800) 18 days, 8:18:28.00      SNMPv2-MIB::snmpTrapOID.0 = OID:
SNMPv2-SMI::enterprises.323.5.3.36.1.2.7003      SNMPv2-
SMI::enterprises.323.5.3.36.1.2.7003.1 = STRING:
"1.3.6.1.4.1.323.5.3.36.1.2.7003[]"      SNMPv2-
SMI::enterprises.323.5.3.36.1.2.7003.2 = STRING: "critical"      SNMPv2-
SMI::enterprises.323.5.3.36.1.2.7003.3 = STRING: "Status: critical- Alert:
OcnrfActiveSubscribersBelowCriticalThreshold Summary: namespace: ocnrf,
nftype:5G_EIR, nrflevel:6faf1bbc-6e4a-4454-a507-a14ef8e1bc5c, podname: ocnrf-
nrfauditor-6b459f5db5-4kvt4,
      timestamp: 2020-04-29 15:33:24.408 +0000 UTC: Current number of
registered NFs detected below critical threshold. Description: The number of
registered NFs detected below critical threshold (current value
is: 0)
```

### MIB Files for NRF

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.

- ocnrf\_mib\_tc\_25.1.200.mib  
This is considered as NRF top level mib file, where the objects and their data types are defined.
- ocnrf\_mib\_25.1.200.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.
- toplevel\_25.1.200.mib: This defines the OIDs for all NFs.

#### Note

MIB files are packaged along with the release package. Download the file from MOS. For more information on downloading the release package, see *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*.