Oracle® Communications

Cloud Native Core, Converged Policy (Policy) Network Impact Report

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Oracle Communications Cloud Native Core, Converged Policy (Policy) Network Impact Report, Release 24.3.0

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Contents

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Acronyms

The following table lists the acronyms and the terminologies used in the document:

Table Acronyms

Acronym	Description
3GPP	3rd Generation Partnership Project
AAA	Authorization Authentication Answer
AAR	Authorization Authentication Request
AF	Application Function
AMF	Access and Mobility Management Function
API	Application Programming Interface
ARS	Alternate Route Selection
ASM	Aspen Service Mesh
ASR	Abort-Session-Request
ATS	The core service sends the subscriber state variables to PDS only when there is an update to the variables.
AVP	Attribute Value Pair
BSF	Oracle Communications Cloud Native Core, Binding Support Function
CA	Certificate Authority
CDCS	Oracle Communications CD Control Server
CHF	Charging Function
CM	Configuration Management
CNC	Cloud Native Core
CNC Console	Oracle Communications Cloud Native Configuration Console
CNE	Oracle Communication Cloud Native Core, Cloud Native Environment
CNLB	Cloud Native Load Balancer
CNPCRF	Oracle Communications Cloud Native Core, Policy and Charging Rules Function
CUSTOMER_REPO	Docker registry address including the port number, if the docker registry has an associated port.
cnDBTier	Oracle Communications Cloud Native Core, cnDBTier
DNS	Domain Name System
DRA	Diameter Routing Agent
FQDN	Fully Qualified Domain Name
GUAMI	Globally Unique AMF Identifier
IMAGE_TAG	Image tag from release tar file. You can use any tag number. However, make sure that you use that specific tag number while pushing docker image to the docker registry.
IMS	IP Multimedia Subsystem
HTTPS	Hypertext Transfer Protocol Secure
MCC	Mobile Country Code
MCPTT	Mission-critical push-to-talk
METALLB_ADDRESS_POOL	Address pool configured on metallb to provide external IPs
MNC	Mobile Network Code

Table (Cont.) Acronyms

Acronym	Description
NAD	Network Attachment Definitions
NEF	Oracle Communications Cloud Native Core, Network Exposure Function
NF	Network Function
NPLI	Network Provided Location Information
NRF	Oracle Communications Cloud Native Core, Network Repository Function
OSO	Oracle Communications Operations Services Overlay
P-CSCF	Proxy Call Session Control Function
PA Service	Policy Authorization Service
PCC	Policy and Charging Control
PDB	Pod Disruption Budget
PLMN	Public Land Mobile Network
PCF	Oracle Communications Cloud Native Core, Policy Control Function
PCRF	Oracle Communications Cloud Native Core, Policy and Charging Rules Function
PCEF	Policy and Charging Enforcement Function
PCSCF	Proxy Call Session Control Function
PDS	Policy Data Service
PRA	Presence Reporting Area
PRE	Policy Runtime Engine
PDU	Protocol Data Unit
Policy	Oracle Communications Cloud Native Core, Converged Policy
QoS	Quality of Service
RAA	Re-Auth-Answer
RAN	Radio Access Network
RAR	Re-Auth-Request
SBI	Service Based Interface
SAN	Subject Alternate Name
SCP	Oracle Communications Cloud Native Core, Service Communication Proxy
SMF	Session Management Function
S-NSSAI	Single Network Slice Selection Assistance Information
UDR	Oracle Communications Cloud Native Core, Unified Data Repository
SRA	Successful Resource Allocation
STR	Session Termination Request
TTL	Time To Live
UE	User Equipment
UPF	User Plane Function
UPSI	UE Policy Section Identifier
URSP	UE Route Selection Policies
UPSC	UE Policy Section Code
URI	Uniform Resource Identifier
VSA	Vendor Specific Attributes

What's New in This Guide

This section introduces the documentation updates for release 24.3.x.

Release 24.3.0 - G13849-01, November 2024

Updated the following sections:

- Compatibility Matrix
- Common Services Load Lineup
- Software Requirements
- Features
- Supported Upgrade and Rollback Paths
- Helm
- REST API
- CNC Console
- Metrics
- Alerts

1 Introduction

The purpose of this document is to highlight the changes made in Oracle Communications Cloud Native Core, Converged Policy (Policy) from Release 24.2.x to Release 24.3.0. These changes may have impact on the customer network operations and must be considered by the customer while planning the deployment.

1.1 References

Refer to the following documents while deploying Policy:

- *Oracle Communications Cloud Native Core, Converged Policy Network Impact Report*
- *Oracle Communications Cloud Native Core, Converged Policy User Guide*
- *Oracle Communications Cloud Native Core, Converged Policy REST API Specification Guide*
- *Oracle Communications Cloud Native Core, Converged Policy Design Guide*
- *Oracle Communications Cloud Native Core, Converged Policy Troubleshooting Guide*
- *Oracle Communications Cloud Native Core, Cloud Native Environment Installation and Upgrade Guide*
- *Oracle Communications Cloud Native Core, cnDBTier User Guide*
- *Oracle Communications Cloud Native Core, Data Collector User Guide*
- *Oracle Communications Cloud Native Core Automated Test Suite Guide*
- *Oracle Communications Cloud Native Core Release Notes*
- *Oracle Communications Cloud Native Core Solution Upgrade Guide*

1.2 Compatibility Matrix

This section lists the versions of added or updated components in release 24.3.x. To know the list of all the supported versions, see *Oracle Communications Cloud Native Core Release Notes*.

Release 24.3.0

The following table lists the versions of added or updated components in this release.

Table 1-1 Compatibility Matrix

Component	Compatible Versions
ASM	1.14.6
ATS	24.3.0
CNC Console	24.3.x
cnDBTier	24.3.x, 24.2.x, 24.1.x
CNE	24.3.x, 24.2.x, 24.1.x

Table 1-1 (Cont.) Compatibility Matrix

Component	Compatible Versions
OCCM	24.3.x
OSO	24.3.x, 24.2.x, 24.1.x

1.3 Common Services Load Lineup

This section lists the versions of added or updated common services in release 24.3.x. To know the list of all the supported versions, see *Oracle Communications Cloud Native Core Release Notes*.

Release 24.3.0

The following table lists the versions of added or updated common services in this release:

Table 1-2 Common Services Load Lineup

Common Services	Version
Alternate Route Service	24.3.3
App-Info	24.3.5
ATS Framework	24.3.1
Config-Server	24.3.5
Debug-tool	24.3.1
Egress Gateway	24.3.3
Helm Test	24.3.0
Ingress Gateway	24.3.3
NRF-Client	24.3.2
Perf-Info	24.3.5

1.4 Software Requirements

This section lists the added or updated software required to install Policy release 24.3.x. For more information about software requirements, see *Software Requirements* section in *Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*.

Release 24.3.0

The following table lists the versions of added or updated software required to install this release:

Table 1-3 Software Requirements

Software	Versions
Helm	3.14.2
Kubernetes	1.30.0,1.29.x
Podman	4.6.1

Table 1-4 Additional Software

Software	Version	Purpose
AlertManager	0.27.0	Logging
Calico	3.27.3	Security Solution
cert-manager	1.12.4	Secrets Manager
Containerd	1.7.16	Container Runtime
Fluentd - OpenSearch	1.16.2	Logging
Grafana	9.5.3	Logging
HAProxy	3.0.2	Load balancing
Prometheus	2.52.0	Metrics
Istio	1.18.2	Service Mesh
Jaeger	1.60.0	Tracing
Kyverno	1.12.5	Logging
MetalLB	0.14.4	External IP
Oracle OpenSearch	2.11.0	Logging
Oracle OpenSearch Dashboard	2.11.0	Logging
Prometheus Operator	0.76.0	Manage Prometheus on Kubernetes deployment

1.5 Orchestration

This section provides information about orchestration changes in release 24.3.x.

Release 24.3.0

The following table provides information about orchestration changes in this release:

Table 1-5 Orchestration

Orchestration Changes	Status	Notes
Support for in-service upgrade and roll back	Yes	For information about upgrade and roll back, see Supported Upgrade and Rollback Paths.
Changes in the resource information for `custom_values.yaml` file	Yes	For information about changes in the resource requirements, see Resource Requirements.
Changes in the CSAR package	No	No Generic CSAR available. The uniform package naming convention has been followed across the packages. **Note**: For more information on specific CSAR changes, contact My Oracle Support.
Changes in Role-Based Access Control (RBAC) policy	No	No new RBAC policies are added.
Changes in Life Cycle Management (LCM) Operations	No	No new LCM operations are added.
Helm Test Support	No	Policy supports Helm Test. For more information, see *Performing Helm Test* section in *Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*.

1.6 Resource Requirements

This section lists the added or updated resource requirements in release 24.3.x. For more information about resource requirements, see *Resource Requirements* section in *Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*.

Release 24.3.0

There are no changes to resource requirements in this release.

2 Features

This chapter lists the added or updated features in release 24.3.x. For more information about the features, see *Oracle Communications Cloud Native Core, Converged Policy User Guide*.

Release 24.3.0

Policy includes the following features or enhancements:

- **PCRF Core Pod Congestion Control**: The PCRF Core service supports Pod Congestion Control mechanism that helps to handle heavy traffic of incoming requests. It considers every incoming request and decides to either reject or accept it based on a defined request priority and the status of service congestion level. For more information, see the "*PCRF Core Pod Congestion Control*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **UE Service Pod Congestion Control**: The UE service supports Pod Congestion Control mechanism that helps to handle heavy traffic of incoming requests. It considers every incoming request and decides to either reject or accept it based on a defined request priority and the status of service congestion level. For more information, see the "*UE Service Pod Congestion Control*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Support for Diameter Message Response Time Latency Metrics**: The support for timer latency metrics in Diameter Gateway service provides the time taken to service a request/response in Diameter call flows. This ensures that the cnPolicy meets the required service level agreements (SLAs) for latency as set by the Customer. For more information, see the "*Support for Diameter Message Response Time Latency Metrics*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **PDS Performance Improvement**: The PDS service supports Primary key based searches in its database. With this PDS service search speed and performance is significantly improved, thereby streamlining operations and improving user experience. For more information, see the "*PDS Settings*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Support for cnDBTier APIs in CNC Console**: The Policy CNC Console GUI supports integration of read only Georeplicaiton Recovery (GRR) cnDBTier APIs. With this users can have specific information on cnDBTier statuses on the CNC Console. For more information, see the "*Support for cnDBTier APIs in CNC Console*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Traffic Segregation**: Policy supports end-to-end traffic segregation based on traffic types. This ensures that critical networks are not cross-connected or share the same routes, thereby preventing network congestion. For more information, see the "*Traffic Segregation*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Stale request cleanup for PCRF-Core service**: Policy supports identifying and removing stale requests from Diameter Gateway, PDS, PRE or Usage Monitoring to PCRF Core. PCRF Core stops further processing of such stale requests and responses and sends a 13002 (DIAMETER_ERROR_TIMED_OUT_REQUEST) error to Diameter Gateway. For more information, see the "*Support for Stale Requests Cleanup*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.

- **Stale request cleanup for SM service**: Policy supports identifying and removing stale requests from Ingress Gateway to SM service. SM service stops further processing of such stale requests and responses and sends a a 504 (Gateway Timeout) error to Ingress Gateway. For more information, see the" *Support for Stale Requests Cleanup*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Signaling and DB access processing latency histogram metrics for PCRF-Core service**: New histogram metrics on signaling and DB access processing latency are added to PCRF Core metrics. These new histogram metrics allow the monitoring of latency on PCRF-Core callflows such as, response to diameter requests, HTTP incoming and outgoing connections, and DB requests. For more information, see the "*PCRF Core Metrics*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Signaling and DB access processing latency histogram metrics for PDS service**: New histogram metrics on signaling and DB access processing latency are added to PolicyDS metrics. These new metrics allow to monitor latency distribution for the HTTP services inside PCF, Also, these metrics helps to get a variety of information which enable to easily track and disect the different flow passing through PDS and measuring their performance. This is helpful in debugging and tracking of the PDS flows. For more information, see the "*PolicyDS Metrics*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Support for End-to-End Log Identifier across Policy Services**: This feature allows to use a unique identifier to every log message, which can be used to identify the set of logs belonging to a given session across all Policy services. For more information, see the "*Support for Unique Log Identifier Across Policy Services*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Enhancements to Pending transaction Gx**: Policy has been enhanced to support configuration change for response timeout. For more information, see the "*Pending Transactions on Gx Interface*" in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Logging Support for Error Response in Policy**: Policy sends error responses to consumer NFs due to some exceptions, such as signaling, validations, and internal errors. These error responses have payloads containing the problem title, status, details, and cause of the error that are used to investigate the error. Policy has been enhanced to support logs for the error responses. For more information about this feature, see the "*Logging Support for Error Response in Policy*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.
- **Support for TLS**: Policy supports TLS 1.3 for all functions and interfaces that are supported by TLS 1.2. With this feature, Policy supports the creation of TLS 1.3 and TLS 1.2 connections and mandatory ciphers and extensions. Moreover, Policy uses Diameter Gateway to establish secured connections with consumer NFs and producer NFs, respectively. These communication protocols are encrypted using Transport Layer Security (TLS). For more information, see the "*Support for TLS*" section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.

ATS Features

There are no new Policy ATS features or enhancements in this release.

3

Supported Upgrade and Rollback Paths

This chapter lists the supported upgrade and rollback paths in release 24.3.x. For more information about upgrade and rollback, see *Upgrading Policy* section in *Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*.

Release 24.3.0

The following table lists the supported upgrade paths in this release:

Table 3-1 Supported Upgrade Paths

Source Release	Target Release
24.2.x	24.3.0
24.1.x	24.3.0

Upgrade Impact

There is no upgrade impact in this release.

The following table lists the supported rollback path in this release:

Table 3-2 Supported Rollback Paths

Source Release	Target Release
24.3.0	24.2.x
24.3.0	24.1.x

Rollback Impact

There is no rollback impact in this release.

4 Configuration

This chapter lists the configuration changes in release 24.3.x.

4.1 Helm

This section lists the Helm parameter changes in release 24.3.x. For more information about the Helm parameters, see *Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*.

Release 24.3.0

The following are the Helm parameters changes in this release:

- Added the following parameters to Diameter Gateway configuration to support stale request cleanup functionality for PCRF Core:
  - ENABLE_LATE_ARRIVAL
  - ENABLE_LATE_PROCESSING
  - LATE_ARRIVAL_MAX_RESPONSE_TIME
  - SKIP_LATE_PROCESSING_FOR_TERMINATE
- Added ENABLE_LATE_ARRIVAL to PCRF Core configuration to support stale request cleanup functionality for PCRF Core.
- Added the following parameters for Support of TLS using HTTPS:
  - clientDisabledExtension
  - serverDisabledExtension
  - tlsNamedGroups
  - clientSignatureSchemes
  - tlsVersion
  - allowedCipherSuites
  - cipherSuites
- Added the following parameters for Support of TLS in Diameter Gateway:
  - TLS_ENABLED
  - TLS_DIAMETER_PORT
  - TLS_CIPHER_SUITE
  - TLS_INITIAL_ALGORITHM
  - TLS_SECRET_NAME
  - TLS_RSA_PRIVATE_KEY_FILENAME
  - TLS_ECDSA_PRIVATE_KEY_FILENAME
  - TLS_RSA_CERTIFICATE_FILENAME

  - TLS_ECDSA_CERTIFICATE_FILENAME
  - TLS_CA_BUNDLE_FILENAME
  - TLS_MTLS_ENABLED
- Added `bulwark.congestion.responseCode` parameter to configure the response code for rejected requests during Bulwark Pod congestion.

4.2 REST API

This section lists the REST API changes in release 24.3.x. For more information about the REST APIs, see *Oracle Communications Cloud Native Core, Converged Policy REST Specification Guide*.

Release 24.3.0

The following are the REST API changes in this release:

- Added details of the timeout `notification` request/response parameter to PCF-UE Timer Profile section.

4.3 CNC Console

This section lists the CNC Console changes in release 24.3.x. For more information, see *Oracle Communications Cloud Native Core, Converged Policy User Guide*.

Release 24.3.0

The following are the CNC Console changes in this release:

- Added details of the following Advanced Settings keys to PCRF Core Service to support for configuring congestion response codes when rejecting Diameter requests:
  - `CONGESTION.USE.EXPERIMENTAL.RESULT.CODE`
  - `CONGESTION.VENDOR.ID`
  - `CONGESTION.DIAMETER.RESPONSE.CODE`
  - `GX.CREATE.REQUEST.PRIORITY`
  - `GX.MODIFY.REQUEST.PRIORITY`
  - `GX.DELETE.REQUEST.PRIORITY`
  - `RX.CREATE.REQUEST.PRIORITY`
  - `RX.MODIFY.REQUEST.PRIORITY`
  - `RX.DELETE.REQUEST.PRIORITY`
  - `SD.MODIFY.REQUEST.PRIORITY`
  - `SD.DELETE.REQUEST.PRIORITY`
- Added details of the following Advanced Settings keys to PCRF Core Service to support configuring congestion response codes when rejecting HTTP requests:
  - `CONGESTION.HTTP.RESPONSE.CODE`
  - `PDS.NOTIFY.REQUEST.PRIORITY`
  - `UM.NOTIFY.REQUEST.PRIORITY`

  - PCRF.SESSION.DELETE.REQUEST.PRIORITY
  - PCRF.SESSION.GET.REQUEST.PRIORITY
  - AUDIT.NOTIFY.REQUEST.PRIORITY
- Added details of the following Advanced Settings keys to UE service:
  - CONGESTION.HTTP.RESPONSE.CODE
  - UE.GET.SUBSCRIBER.SESSIONS.PRIORITY
  - UE.GET.POLICY.ASSOCIATION.PRIORITY
  - UE.CREATE.PRIORITY
  - UE.UPDATE.PRIORITY
  - UE.UPDATE.NOTIFICATION.PRIORITY
  - UE.DELETE.PRIORITY
  - UE.AUDIT.NOTIFY.PRIORITY
  - UE.N1.NOTIFICATION.MESSAGE.PRIORITY
  - UE.N1.FAILURE.NOTIFICATION.MESSAGE.PRIORITY
- Added details of the following Advanced Settings keys to PDS:
  - PRIMARYKEY_LOOKUP_ENABLED
  - CONCURRENCY_DETECTION_CURRENT_FLOW_ENABLED
  - NOTIFICATION_RETRY_COUNT
  - NOTIFICATION_RETRY_DELAY
- Added ENABLE_STACK_TRACE_FOR_DB_OPS flag to PDS Advanced Settings.
- Updated Timer Profiles section of PCF-UE with Timeout Per Service.notification(Non N1N2 messages. In milliseconds) field.
- Added ENABLE_LATE_PROCESSING Advanced Settings key to **PCF Session Management** under **Service Configurations** to support stale request cleanup functionality for SM service.
- Added the following Advanced Settings keys for **PCRF Core Settings** under **Service Configurations** to support stale request cleanup functionality for PCRF Core:
  - late.arrival.enabled
  - late.arrival.max.resp.time
  - skip.late.processing.for.terminate
  - sbi.timer.enabled
- Added details of **RESOURCEID.SUFFIX_LIST** Advanced Settings key to **PCRF Core Settings** to support selection of userID keys (SUPI/GPSI) that will be sent to make the lock request, when Bulwark service is enabled.
- Added Transport field under **Peer Configurations** in **Diameter Configurations** page.
- Updated the **General Settings** under **General Configurations** page to include the following parameters for Enhanced Logging Configuration:
  - Enable Enhanced Logging
  - Enable UE Identifier Information

Blockly Changes

The following are the blockly changes in this release:

- Updated description of attributes **in Request Type** and **in AMF Request** in PCF UE Policy as **n1TransferFailureCause** option is deprecated for **in Request Type** and is now available under **in AMF Request**.
- Updated the blockly **Release Sesssion with cause** for PCF-SM with **REACTIVATION_REQUESTED** attribute which can be one of the cause during Policy SM Association termination.

For more information, see *Oracle Communications Cloud Native Core, Converged Policy Design Guide*.

5 Observability

This chapter lists the observability changes in release 24.3.x.

5.1 Metrics

This section lists the added or updated metrics in release 24.3.x. For more information about metrics, see *Oracle Communications Cloud Native Core, Converged Policy User Guide*.

Release 24.3.0

The following metrics are added in this release:

- Added following metrics to support "PCRF Core Pod Congestion Control" feature:
  - Added the metric `occnp_congestion_http_pending_request_active_counter` to Pod Congestion Metrics.
  - Added the following metrics to PCRF Core Metrics:
    - `occnp_http_congestion_message_reject_total`
    - `occnp_diam_congestion_message_reject_total`
    - `occnp_http_pending_requests_total`
    - `occnp_diam_pending_requests_total`
    - `occnp_congestion_diam_pending_request_active_counter`
    - `occnp_congestion_diam_pending_request_end_to_end_id_map_size`
    - `occnp_congestion_DiamMsgBuffer_queue_msg_count`
- Added the metric `occnp_http_congestion_message_reject_total` in UE Service metrics to support "UE Service Congestion Control" feature.
- Added following metrics to support for "Timer Metrics in Diameter Gateway service":
  - `occnp_diam_response_latency_seconds`
  - `occnp_diam_service_overall_processing_time_seconds`
- Added the following metrics to support "lookup in PDS tables using Primary Key" feature:
  - Added the metric `pds_location_info_db_search_total` to Policy DS metrics.
  - Added the metric `occnp_pds_location_info_notification_total` to AM Service metrics.
  - Added the metric `occnp_pds_location_info_notification_total` to UE Service metrics.
- Added the following signaling and DB access processing latency histogram metrics to PCRF Core that are used to monitor the latency in PCRF Core call flows such as, Diameter Gateway response time for the incoming requests, HTTP incoming and outgoing connections, and DB request processing:
  - occnp_diam_response_local_processing_latency_seconds

  - occnp_http_out_conn_processing_latency_seconds
  - occnp_http_in_conn_processing_latency_seconds
- Added the following signaling and DB access processing latency histogram metrics to PDS metrics that are used to monitor the latency in PDS DB processing, HTTP incoming and outgoing connections:
  - occnp_db_processing_latency_seconds
  - occnp_http_in_conn_processing_latency_seconds
  - occnp_http_out_conn_processing_latency_seconds
- Added occnp_late_processing_rejection_total metric to SM service metrics to support "Stale request cleanup functionality for SM service" feature.
- Added the following metrics to PCRF Core metrics to support "Stale request cleanup functionality for PCRF Core" feature:
  - occnp_stale_diam_request_cleanup_total
  - occnp_stale_http_request_cleanup_total
- Added the following metrics to TLS metrics to support "TLS in Diameter Gateway" feature:
  - diam_conn_network
  - diam_failed_conn_network
  - diam_conn_network_responder
  - dgw_tls_cert_expiration_seconds

  Added the following metrics to TLS metrics to support "TLS using HTTPs" feature:
  - oc_ingressgateway_incoming_tls_connections
  - oc_egressgateway_outgoing_tls_connections
  - security_cert_x509_expiration_seconds

5.2 Alerts

This section lists the added or updated alerts in release 24.3.x. For more information about alerts, see *Alerts* section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.

Release 24.3.0

The following alerts are added or updated in this release:

- Added the following alerts to support stale request cleanup functionality for PCRF Core:
  - STALE_DIAMETER_REQUEST_CLEANUP_CRITICAL
  - STALE_DIAMETER_REQUEST_CLEANUP_MAJOR
  - STALE_DIAMETER_REQUEST_CLEANUP_MINOR
- Added the following alerts for support of TLS in Diameter Gateway feature:
  - DGW_TLS_CONNECTION_FAILURE
  - DIAM_GATEWAY_CERTIFICATE_EXPIRY_CRITICAL
  - DIAM_GATEWAY_CERTIFICATE_EXPIRY_MAJOR
  - DIAM_GATEWAY_CERTIFICATE_EXPIRY_MINOR

- Added the following alerts for support of TLS using HTTPs feature:
  - CERTIFICATE_EXPIRY_CRITICAL
  - CERTIFICATE_EXPIRY_MAJOR
  - CERTIFICATE_EXPIRY_MINOR
  - POLICY_CONNECTION_FAILURE

5.3 KPIs

This section lists the added or updated KPIs in release 24.3.x. For more information about KPIs, see *KPIs* section in *Oracle Communications Cloud Native Core, Converged Policy User Guide*.

Release 24.3.0

There are no updates to KPIs in this release.