

# Oracle® Communications

## Cloud Native Core Console User Guide



Release 22.3.2

F60925-05

January 2023

ORACLE®

Copyright © 2019, 2023, 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, and MySQL 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

|          |                                                        |      |
|----------|--------------------------------------------------------|------|
| <b>1</b> | <b>Introduction</b>                                    |      |
|          | CNC Console Compatibility Matrix                       | 1-1  |
|          | Audience                                               | 1-2  |
|          | Reference                                              | 1-2  |
| <b>2</b> | <b>CNC Console Features</b>                            |      |
|          | Support for Network Functions                          | 2-1  |
|          | Support for OCCNE Common Services                      | 2-5  |
|          | LDAP Integration                                       | 2-6  |
|          | SAML 2.0 Integration                                   | 2-7  |
|          | Logging Support                                        | 2-7  |
|          | Support for Multi Cluster Deployment                   | 2-9  |
|          | cnDBTier Integration                                   | 2-11 |
|          | TLS Certificate Support                                | 2-11 |
|          | Service Mesh Communication                             | 2-12 |
| <b>3</b> | <b>Logging into CNC Console</b>                        |      |
|          | CNC Console Dashboard                                  | 3-1  |
| <b>4</b> | <b>Configuring CNC Console IAM</b>                     |      |
|          | Role Based Access Control in CNC Console IAM           | 4-1  |
|          | Types of Roles in CNC Console                          | 4-1  |
|          | Accessing Roles in CNC Console Applications            | 4-2  |
|          | Creating or Updating Admin Password in CNC Console IAM | 4-3  |
|          | Creating or Updating User Password in CNC Console IAM  | 4-4  |
|          | Configuring the CNC Console Redirection URL            | 4-6  |
|          | Users in CNC Console IAM                               | 4-7  |
|          | Creating the Users                                     | 4-8  |
|          | Viewing the Users                                      | 4-9  |
|          | Assigning Roles to the User                            | 4-10 |

|                                                          |      |
|----------------------------------------------------------|------|
| Integrating SAML SSO with CNC Console IAM                | 4-11 |
| Integrating CNC Console LDAP Server with CNC Console IAM | 4-17 |
| Configuring User Federation with CNC Console IAM         | 4-19 |
| Grouping the LDAP Mapper and Assigning the Roles         | 4-23 |

## 5 Generating Access Tokens and Accessing NF Resources

---

## 6 REST APIs and HTTP Response Codes

---

|                                                   |      |
|---------------------------------------------------|------|
| Generate access token                             | 6-1  |
| Create a new user                                 | 6-2  |
| Get users                                         | 6-3  |
| Get single user                                   | 6-5  |
| Delete the User                                   | 6-6  |
| Set up a New Password for the User                | 6-7  |
| Get Realm Level Roles                             | 6-9  |
| Get Realm-level Role Mappings                     | 6-10 |
| Add Realm-level Role Mappings to the User         | 6-11 |
| Remove All User Sessions Associated with the User | 6-13 |
| Get the Client details                            | 6-14 |
| Update the Client                                 | 6-15 |

## 7 CNC Console Metrics

---

|                                       |      |
|---------------------------------------|------|
| CNC Console IAM Metrics               | 7-2  |
| CNCC IAM Requests                     | 7-2  |
| CNCC IAM Response                     | 7-2  |
| CNCC IAM Success Responses            | 7-3  |
| CNCC IAM 5xx Responses                | 7-3  |
| CNCC IAM 4xx Responses                | 7-4  |
| CNCC IAM Error Responses              | 7-4  |
| CNCC IAM Access Token Request         | 7-5  |
| CNCC IAM Access Token Granted         | 7-6  |
| CNCC IAM Access Token Not Granted     | 7-6  |
| CNCC IAM User Login Failure Responses | 7-7  |
| CNC Console Core Metrics              | 7-8  |
| CNCC Core Requests                    | 7-8  |
| CNCC Core Responses                   | 7-9  |
| CNCC Core Success Responses           | 7-9  |
| CNCC Core 5xx Responses               | 7-10 |
| CNCC Core 4xx Responses               | 7-10 |

|                                                |      |
|------------------------------------------------|------|
| CNCC Core Error Responses                      | 7-11 |
| CNCC Core Access Token Request                 | 7-11 |
| CNCC Core Access Token Granted Responses       | 7-12 |
| CNCC Core Access Token Not Granted Responses   | 7-13 |
| CNCC Core User Login Failure Responses         | 7-14 |
| CNCC Core User Authorization Failure Responses | 7-15 |
| CNCC Core BSF Requests                         | 7-16 |
| CNCC Core BSF Responses                        | 7-17 |
| CNCC Core NRF Requests                         | 7-17 |
| CNCC Core NRF Responses                        | 7-18 |
| CNCC Core POLICY Requests                      | 7-19 |
| CNCC Core POLICY Responses                     | 7-19 |
| CNCC Core SCP Requests                         | 7-20 |
| CNCC Core SCP Responses                        | 7-20 |
| CNCC Core SEPP Requests                        | 7-21 |
| CNCC Core SEPP Responses                       | 7-21 |
| CNCC Core UDR Requests                         | 7-22 |
| CNCC Core UDR Responses                        | 7-23 |
| CNCC Core NSSF Requests                        | 7-23 |
| CNCC Core NSSF Responses                       | 7-24 |

## 8 CNC Console Alerts

---

|                                                      |      |
|------------------------------------------------------|------|
| CNC Console IAM Alerts                               | 8-1  |
| CncclamTotalIngressTrafficRateAboveMinorThreshold    | 8-1  |
| CncclamTotalIngressTrafficRateAboveMajorThreshold    | 8-2  |
| CncclamTotalIngressTrafficRateAboveCriticalThreshold | 8-3  |
| CncclamMemoryUsageCrossedMinorThreshold              | 8-4  |
| CncclamMemoryUsageCrossedMajorThreshold              | 8-4  |
| CncclamMemoryUsageCrossedCriticalThreshold           | 8-5  |
| CncclamTransactionErrorRateAbove0.1Percent           | 8-6  |
| CncclamTransactionErrorRateAbove1Percent             | 8-6  |
| CncclamTransactionErrorRateAbove10Percent            | 8-7  |
| CncclamTransactionErrorRateAbove25Percent            | 8-7  |
| CncclamTransactionErrorRateAbove50Percent            | 8-8  |
| CncclamIngressGatewayServiceDown                     | 8-8  |
| CncclamFailedLogin                                   | 8-9  |
| AdminUserCreation                                    | 8-9  |
| CncclamAccessTokenFailure                            | 8-10 |
| CNC Console Core Alerts                              | 8-11 |
| CnccCoreTotalIngressTrafficRateAboveMinorThreshold   | 8-11 |

|                                                       |      |
|-------------------------------------------------------|------|
| CnccCoreTotalIngressTrafficRateAboveMajorThreshold    | 8-12 |
| CnccCoreTotalIngressTrafficRateAboveCriticalThreshold | 8-12 |
| CnccCoreMemoryUsageCrossedMinorThreshold              | 8-13 |
| CnccCoreMemoryUsageCrossedMajorThreshold              | 8-14 |
| CnccCoreMemoryUsageCrossedCriticalThreshold           | 8-14 |
| CnccCoreTransactionErrorRateAbove0.1Percent           | 8-15 |
| CnccCoreTransactionErrorRateAbove1Percent             | 8-16 |
| CnccCoreTransactionErrorRateAbove10Percent            | 8-16 |
| CnccCoreTransactionErrorRateAbove25Percent            | 8-17 |
| CnccCoreTransactionErrorRateAbove50Percent            | 8-17 |
| CnccCoreIngressGatewayServiceDown                     | 8-18 |
| CnccCoreFailedLogin                                   | 8-18 |
| CnccCoreUnauthorizedAccess                            | 8-19 |
| CnccCoreAccessTokenFailure                            | 8-20 |
| CNCC Alert configuration in Prometheus                | 8-20 |
| Validating Alerts                                     | 8-22 |
| Disabling Alerts                                      | 8-23 |
| Configuring SNMP-Notifier                             | 8-23 |
| MIB Files for CNCC                                    | 8-24 |

## 9 CNC Console KPIs

---

|                         |      |
|-------------------------|------|
| CNC Console IAM KPIs    | 9-1  |
| CNCC IAM Requests       | 9-1  |
| CNCC IAM Responses      | 9-1  |
| CNCC IAM Success Rate   | 9-2  |
| CNCC IAM Error Rate     | 9-3  |
| CNC Console Core KPIs   | 9-3  |
| CNCC Core Requests      | 9-4  |
| CNCC Core Responses     | 9-4  |
| CNCC Core Success Rate  | 9-7  |
| CNCC Core Error Rate    | 9-10 |
| CNC Console Common KPIs | 9-14 |
| CPU Usage               | 9-14 |
| Memory Usage            | 9-14 |

## 10 CNC Console Logs

---

|                  |      |
|------------------|------|
| Log Formats      | 10-1 |
| Types of Logs    | 10-4 |
| Examples of Logs | 10-8 |



---

# 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:

1. Select **2** for New Service Request.
2. Select **3** for Hardware, Networking and Solaris Operating System Support.
3. Select one of the following options:
  - 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**.

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**

| Acronym                   | Definition                                                                                                                                                                                                                                                                                               |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AD                        | Active Directory                                                                                                                                                                                                                                                                                         |
| ASM                       | Aspen Service Mesh                                                                                                                                                                                                                                                                                       |
| BSF                       | Binding Support Function                                                                                                                                                                                                                                                                                 |
| CNCC                      | Cloud Native Core Console                                                                                                                                                                                                                                                                                |
| CNE                       | Cloud Native Environment                                                                                                                                                                                                                                                                                 |
| OCCNE                     | Oracle Communications Cloud Native Environment                                                                                                                                                                                                                                                           |
| CS                        | Common Service                                                                                                                                                                                                                                                                                           |
| CRUD Operations           | CREATE, READ, UPDATE, DELETE                                                                                                                                                                                                                                                                             |
| ECDSA                     | Elliptic Curve Digital Signature Algorithm                                                                                                                                                                                                                                                               |
| EIR                       | Equipment Identity Register                                                                                                                                                                                                                                                                              |
| HTTPS                     | Hypertext Transfer Protocol Secure                                                                                                                                                                                                                                                                       |
| IAM                       | Identity Access Management                                                                                                                                                                                                                                                                               |
| KPI                       | Key Performance Indicator                                                                                                                                                                                                                                                                                |
| M-CNCC                    | Manager CNC Console or M-CNCC (also known as mCncc) is a CNCC instance which manages local OCCNE common service(s) and remote Agent CNC Console (s) (A-CNCC). M-CNCC has two components: M-CNCC IAM and M-CNCC Core.                                                                                     |
| M-CNCC IAM                | Manager CNC Console IAM or M-CNCC IAM (also known as mCncc Iam) is an IAM component of M-CNCC. M-CNCC IAM contains M-CNCC IAM Ingress Gateway and M-CNCC IAM back-end microservices.                                                                                                                     |
| M-CNCC Core               | Manager CNC Console Core or M-CNCC Core (also known as mCncc Core) is a core component of M-CNCC that provides GUI and API access portal for accessing NF and OCCNE common services. M-CNCC Core contains M-CNCC Core Ingress Gateway and M-CNCC Core back-end microservices.                            |
| A-CNCC                    | Agent CNC Console is a CNCC Core instance which manages local NF(s) and local OCCNE common services(s). A-CNCC is managed by M-CNCC. A-CNCC contains A-CNCC Core Ingress Gateway and A-CNCC Core back-end microservices. A-CNCC has no IAM component. A-CNCC is also known as A-CNCC Core or aCncc Core. |
| A-CNCC Kubernetes cluster | Kubernetes cluster hosting A-CNCC                                                                                                                                                                                                                                                                        |
| M-CNCC Kubernetes cluster | Kubernetes cluster hosting M-CNCC                                                                                                                                                                                                                                                                        |
| mTLS                      | Mutual Transport Layer Security                                                                                                                                                                                                                                                                          |
| Instance                  | OCNF or OCCNE common service managed by either M-CNCC Core or A-CNCC Core.                                                                                                                                                                                                                               |

**Table (Cont.) Acronyms**

| Acronym  | Definition                                                                                                        |
|----------|-------------------------------------------------------------------------------------------------------------------|
| Site     | Kubernetes Cluster                                                                                                |
| CS       | OCCNE Common Services like Grafana, Kibana, Jaeger, Prometheus, Alertmanager and so on.                           |
| MC       | Multi Cluster. In multi cluster, a single CNCC can manage NF instances that access different Kubernetes clusters. |
| MO       | Managed Objects                                                                                                   |
| MOS      | My Oracle Support                                                                                                 |
| LDAP     | Lightweight Directory Access Protocol                                                                             |
| LDAPS    | Lightweight Directory Access Protocol (Over SSL)                                                                  |
| NRF      | Network Repository Function                                                                                       |
| OCNF     | Oracle Communications Network Function                                                                            |
| OSDC     | Oracle Software Delivery Cloud                                                                                    |
| OSO      | Operations Services Overlay                                                                                       |
| REST API | Representational State Transfer Application Programming Interface                                                 |
| SCP      | Service Communication Proxy                                                                                       |
| SAML     | Security Assertion Markup Language                                                                                |
| SEPP     | Security Edge Protection Proxy                                                                                    |
| TLS      | Transport Layer Security                                                                                          |
| UDR      | Unified Data Repository                                                                                           |
| UE       | User Equipment                                                                                                    |
| URI      | Subscriber Location Function                                                                                      |

# What's New in This Guide

This section introduces the documentation updates for Release 22.3.x in Oracle Communications Cloud Native Core Console User Guide.

## **Release 22.3.2- F60925-05, January 2023**

There have been no changes in this document.

## **Release 22.3.1- F60925-04, November 2022**

There have been no changes in this document.

## **Release 22.3.1- F60925-02, October 2022**

- Updated the [Compatibility Matrix](#) section to support the latest version of NFs.
- Updated the following [CNC Console features](#):
  - [TLS Certificate Support](#)
  - [Service Mesh Communication](#)
- Updated the following metrics in the the [CNC Console Metrics](#) section to support the Equipment Identity Register (EIR):
  - CNCC Core UDR Requests
  - CNCC Core UDR Responses
- Updated the following KPIs in the [CNC Console KPIs](#) section to support the EIR:
  - CNCC Core Requests
  - CNCC Core Responses
  - CNCC Core Success Rate
  - CNCC Core Error Rate

## **Release 22.3.0- F60925-01, August 2022**

- Updated the [Compatibility Matrix](#) section to support the latest versions of NFs.
- Updated the [REST APIs and HTTP Response Codes](#) section to add request and response body examples.
- Updated the metrics filters of following metrics in the the [CNC Console Metrics](#) section:
  - CNCC IAM Requests
  - CNCC IAM Response
  - CNCC IAM Success Responses
  - CNCC IAM 5xx Responses
  - CNCC IAM 4xx Responses
  - CNCC IAM Error Responses
  - CNCC IAM Request Processing Time- Ingress only
  - CNCC IAM Request Processing Time
  - CNCC IAM Access Token Request
  - CNCC IAM Access Token Granted
  - CNCC IAM Access Token Not Granted

- 
- CNCC IAM User Login Failure Responses
  - CNCC Core Access Token Request
  - CNCC Core Access Token Granted Responses
  - CNCC Core Access Token Not Granted Responses
  - CNCC Core User Login Failure Responses
  - Updated the the metrics filters of the following KPIs in the [CNC Console KPIs](#) section:
    - CNCC IAM Requests
    - CNCC IAM Responses
    - CNCC IAM Success Rate
    - CNCC IAM Error Rate
    - CPU Usage

# 1

## Introduction

The Cloud Native Core Console (CNC Console) is a single screen solution to configure and manage Network Functions (NFs).

The CNC Console has the following modules:

- **CNC Console Core (CNCC Core):** CNCC Core acts as Graphical User Interface (GUI) or Application Programming Interface (API) portal for NFs and Oracle Communications Cloud Native Environment (OCCNE) common services. CNCC Core module is the part of CNC Console that integrates with other cloud native core network functions.
- **CNC Console Identity and Access Management (CNCC IAM):** CNCC IAM acts as local identity provider and as a broker for external identity provider. CNCC IAM module includes the required authentication and authorization procedures such as creating and assigning roles to users.

## CNC Console Compatibility Matrix

The following table provides the list of network functions that are compatible with CNC Console 22.3.x:

### Release 22.3.2

**Table 1-1 Compatibility Matrix**

| Network Functions | Compatible Versions |
|-------------------|---------------------|
| BSF               | 22.3.x              |
| NRF               | 22.3.x              |
| NSSF              | 22.3.x              |
| Policy            | 22.3.x              |
| SCP               | 22.3.x              |
| SEPP              | 22.3.x              |
| UDR               | 22.3.x              |

**Table 1-2 Compatibility Matrix**

| Components | Compatible Versions              |
|------------|----------------------------------|
| CNE        | 22.1.x, 22.2.x, 22.3.x           |
| cnDBTier   | 22.1.x, 22.2.x, 22.3.x           |
| CDCS       | 22.3.x                           |
| OSO        | 1.6.2, 1.10.x, 22.3.x            |
| ASM        | 1.4.6-am9, 1.6.14-am4, 1.9.8-am1 |

## Audience

The CNC Console User Guide is intended for system administrators, developers, professionals or anyone seeking information about CNC Console.

## Reference

Refer to the following documents for more information:

- *Oracle Communications Cloud Native Core Service Communication Proxy User Guide*
- *Oracle Communications Cloud Native Core Network Repository Function User Guide*
- *Oracle Communications Cloud Native Core Policy User Guide*
- *Oracle Communications Cloud Native Core Unified Data Repository User Guide*
- *Oracle Communications Cloud Native Core Binding Support Function User Guide*
- *Oracle Communications Cloud Native Core Security Edge Protection Proxy User Guide*
- *Oracle Communications Cloud Native Core Network Repository Function Installation and Upgrade Guide*
- *Oracle Communications Cloud Native Core Service Communication Proxy Installation Guide*
- *Oracle Communications Cloud Native Core Unified Data Repository Installation and Upgrade Guide*
- *Oracle Communications Cloud Native Core Binding Support Function Installation Guide*
- *Oracle Communications Cloud Native Core Policy Installation Guide*
- *Oracle Communications Cloud Native Core Security Edge Protection Proxy Installation Guide*

# 2

## CNC Console Features

This section explains about the CNC Console features.

### Support for Network Functions

CNC Console GUI provides a user interface to configure and manage the following network functions:

- **Binding Support Function (BSF)**

BSF provides the following functions:

- Allows PCF users to register, update, and remove the binding information
- Allows network function consumers to retrieve the binding information

CNC Console provides an interface to configure global and service parameters in BSF.

For more information about configuring parameters, see the *Configuring BSF Using CNC Console* section in *Oracle Communications Cloud Native Core Binding Support Function User Guide*.

- **Network Repository Function (NRF)**

OCNRF provides the following functions:

- Maintains the profiles of the available NF instances and their supported services in the 5G core network.
- Allows consumer NF instances to discover other provider's NF instances in the 5G core network.
- Allows NF instances to track the status of other NF instances.
- Provides OAuth2 based Access Token service for consumer NF authorization.
- Provides specific NF Type selection based on subscriber identity.
- Supports forwarding of messages from one NRF to another NRF.
- Supports georedundancy to ensure service availability.

The OCNRF interacts with every other NF in the 5G core network and it supports the above functions through the following services:

- Management Service
- Discovery Service
- AccessToken Service

CNC Console provides an interface to configure global and service parameters in NRF.

For more information about configuring parameters, see the *Configuring NRF Using CNC Console* section in *Oracle Communications Cloud Native Core Network Repository Function User Guide*.

- **Network Slice Selection Function (NSSF)**

NSSF provides the following functions:

Network slices enable the users to select customized networks with different functionalities (such as mobility) and performance requirements (such as latency, availability and reliability). Network slices differ in features supported and network function optimizations. In such cases, network slices may have different S-NSSAIs with different slice and service types. The user can deploy instances of multiple network slices delivering the same features but for different groups of User Equipments (UEs). These instances deliver different committed services as they are dedicated to a customer, the network slices may have different S-NSSAIs with the same slice or service type but different slice differentiators. The OCNSSF fulfills the requirement for determining the individual network function pertaining to a slice..

OCNSSF is a functional element that supports the following functionalities:

- OCNSSF enables the Access and Mobility Management Function (AMF) to perform initial registration and Protocol Data Unit (PDU) session establishment.
- AMF can retrieve NRF, NSI ID, and target AMFs as part of UE initial registration and PDU establishment procedure.
- OCNSSF uses an NF Service Consumer (AMF) to update the S-NSSAI(s) that AMF supports and notifies of any changes in the status.
- OCNSSF selects the network slicing instance (NSI) and determines the authorized Network Slice Selection Assistance Information (NSSAIs) and AMF to serve the UE.
- OCNSSF interaction with NRF allows retrieving specific NF services to be used for registration request.

OCNSSF provides the following information when queried by the AMF:

- Allowed NSSAIs
- Configured NSSAIs
- Restricted NSSAIs
- Candidate AMF List (in case of registration)
- Network Slice instance ID (for PDU session establishment)
- Slice-level NRF information (for PDU Connectivity)

OCNSSF supports the above functions through the following NSSF services:

- NS Selection service (Nnssf\_NSSelection): This service is used by an NF Service Consumer (AMF) to retrieve the information related to network slice. It enables network slice selection in the serving Home Public Land Mobile Network (HPLMN).
- NS Availability Service (Nnssf\_NSAvailability): This service stores and maintains list of supported S-NSSAIs per TA. It allows NF service Consumer (AMF) to update and subscribe the above data and get notifications for any addition or deletion of supported S-NSSAIs.

- **CNC Policy**

CNC Policy is a network function for policy control decision and flow based charging control. It consists of the following functions:



- Policy rules for application and service data flow detection, gating, QoS, and flow based charging to the Session Management Function (SMF)
- Access and Mobility Management related policies to the Access and Mobility Management Function (AMF)
- UE Route Selection Policies (URSP) rules to User Equipment (UE) through AMF
- Access to subscription information relevant for policy decisions in a Unified Data Repository (UDR)
- Network control for service data flow detection, gating, and Quality of Service (QoS)
- Flow based charging towards the Policy and Charging Enforcement Function (PCEF)
- Receiving session and media related information from Application Function (AF) and informing AF of traffic plane events
- Provision of Policy and Charging Control (PCC) Rules to Policy and Charging Enforcement Function (PCEF) through the Gx reference point

CNC Policy supports the above functions through the following services:

- Session Management Service
- Access and Mobility Service
- Policy Authorization Service
- User Equipment (UE) Policy Service
- PCRF Core Service

CNC Console provides an interface to configure policies and manageable objects in CNC Policy.

For more information about configuring parameters, see the *Configuring CNC Policy Using CNC Console* section in *Oracle Communications Cloud Native Core Policy User Guide*.

- **Service Communication Proxy (SCP)**

SCP provides the following functionalities to other 5G Network Functions (NFs):

- Routing/Selection: Routing rules, refresh cache, and handle application failures and redirects.
  - \* Dynamic Discovery: The 5G topology is determined from Network Repository Function (NRF) and creation of routing rules.
  - \* Static Configuration: Enables NF Profiles configuration.
- Load Balancing: Load balancing based on static capacity, NF Type, NF Specific, and NF Priority as mentioned in the NF Profile.
- NF Subscription: Subscription for all NF types.
- Circuit Breaking: Initiated on a per FQDN basis when outstanding transactions exceed a configurable value.
- Message Priority : Message Priority assignment and override based on the 3GPP-SBI-Message-Priority header.
- Congestion and Overload: Uniform load balancing and routing strategy across the network and protects the pod from overload related to various system resources.

CNC Console provides an interface to configure the SCP features.

For more information about configuring parameters, see the *Configuring SCP Using CNC Console* section in *Oracle Communications Cloud Native Core Service Communication Proxy User Guide*.

- **Security Edge Protection Proxy (SEPP)**

OCSEPP supports the following functionalities:

- Protects application layer control plane messages and sensitive data between two NFs belonging to different PLMNs that use the N32 interface to communicate with each other. The N32 interface is used between the SEPPs of a VPLMN and a HPLMN in roaming scenarios. 3GPP has specified N32 to be considered as two separate interfaces: N32-c and N32-f.
  - \* N32-c is the Control Plane interface between the SEPPs for performing the initial handshake and negotiating the parameters to be applied for the actual N32 message forwarding.
  - \* N32-f is the Forwarding interface between the SEPPs, that is used for forwarding the communication between the Network Function (NF) service consumer and the NF service producer after applying the application level security protection.
- Provides secure communication of Inter PLMN messages from Consumer NF to Producer NF using TLS protection mode (HTTP over TLS)
- Supports configuration of roaming partner profiles using REST API
- Performs mutual authentication and negotiation of cipher suites with the SEPP in the roaming partner's network
- Handles key management aspects that involve setting up the required cryptographic keys needed for securing messages on the N32 interface between two SEPPs
- Provides a single point of access and control to internal NFs
- Validates inbound traffic as to whether it is from an authorized external PLMN
- Supports cross-layer validation of source and destination addresses and identifiers to provide anti-spoofing capabilities

CNC Console provides an interface to configure different services in SEPP.

For more information about configuring parameters, see the *Configuring SEPP Using CNC Console* section in *Oracle Communications Cloud Native Core Security Edge Protection Proxy User Guide*.

**Unified Data Repository (UDR)**

Oracle's 5G UDR :

- Leverages a common Oracle Communications Cloud Native Framework
- Is compliant to 3GPP 29.505 Release 15 specification UDM
- Is compliant to 3GPP 29.519 Release 16 (backward compatible with Release 15) specification for PCF
- Has tiered architecture providing separation between the connectivity, business logic, and data layers
- Uses Oracle MySQL NDB Cluster CGE Edition as backend database in the Data Tier

- Registers with NRF in the 5G network so that the other NFs in the network can discover UDR through NRF
- Registers UDR with services like DR-SERVICE and GROUP-ID-MAP

CNC Console provides an interface to configure global and service parameters in UDR.

For more information about configuring parameters, see the *Configuring UDR Using CNC Console* section in *Oracle Communications Cloud Native Core Unified Data Repository User Guide*.

## Managing CNC Console Support for NF GUI

### Enable and Configure each NF

See *CNC Console Supported NF Configurations* in *Oracle Communications Cloud Native Core Console Installation and Upgrade Guide* for more details about enabling and configuring NFs .

### Observe

For information on Metrics and KPIs, see [CNC Console Metrics](#), and [CNC Console KPIs](#) sections.

### Maintain

If you encounter alerts at system or application levels, see [CNC Console Alerts](#) section for resolution steps.

In case the alert still persists, perform the following:

1. **Collect the logs:** For more information on how to collect logs, see [CNC Console Logs](#).
2. **Raise a service request:** See [My Oracle Support](#) for more information on how to raise a service request.

## Support for OCCNE Common Services

CNC Console Common Services GUI provides an option to enable cards (hyperlinks) for OCCNE Common services and OSO services.

### CNE Common Services

CNC Console Common Services GUI provides an option to enable cards (hyperlinks) for OCCNE Common services such as Grafana, Kibana, Jaeger, Prometheus and AlertManager.

### OSO Common Services

CNC Console Common Services GUI also provides an option to enable cards (hyperlinks) for OSO services such as Prometheus and AlertManager.

## Managing Common Service Support (OSO Cards and CNE Cards)

### Enable and Configure

For enabling and configuring Common Services , see *CNC Console Common Services GUI* section in *Oracle Communications Cloud Native Core Console Installation and Upgrade Guide*.

## Observe

For information on Metrics and KPIs, see [CNC Console Metrics](#), and [CNC Console KPIs](#) sections.

## Maintain

If you encounter alerts at system or application levels, see [CNC Console Alerts](#) section for resolution steps.

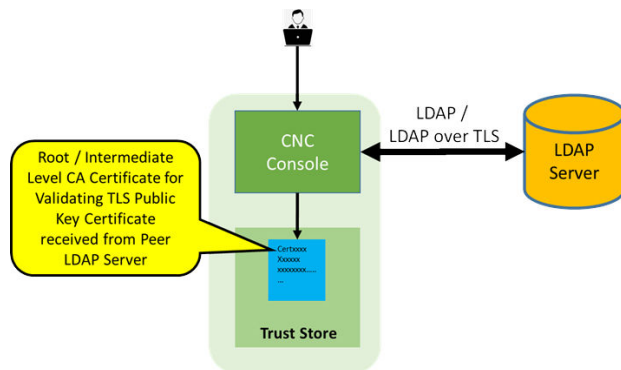
In case the alert still persists, perform the following:

1. **Collect the logs:** For more information on how to collect logs, see [CNC Console Logs](#).
2. **Raise a service request:** See [My Oracle Support](#) for more information on how to raise a service request.

# LDAP Integration

The Lightweight Directory Access Protocol (LDAP) is a protocol that defines the technique for accessing the directory data.

**Figure 2-1 LDAP**



The CNC Console IAM is used as an integration platform to connect it into existing Lightweight Directory Access Protocol (LDAP) and Active Directory (AD) servers.

CNC Console IAM can combine existing external user databases having user and credential details. You can integrate the CNC Console IAM to perform validation of these user credentials and pull in the identity information.

CNC Console IAM provides LDAP over TLS support to securely communicate with external LDAP and active directory servers.

CNC Console IAM also supports Lightweight Directory Access Protocol Secure (LDAPS) between the client and server to make the communication secure.

## Managing LDAP Integration

### Enable and Configure

For enabling and configuring LDAP integration feature, see [Integrating CNC Console LDAP Server with CNC Console IAM](#)

### Observe

For information on Metrics and KPIs, see [CNC Console Metrics](#), and [CNC Console KPIs](#) sections.

### Maintain

If you encounter alerts at system or application levels, see [CNC Console Alerts](#) section for resolution steps.

In case the alert still persists, perform the following:

1. **Collect the logs:** For more information on how to collect logs, see [CNC Console Logs](#).
2. **Raise a service request:** See [My Oracle Support](#) for more information on how to raise a service request.

## SAML 2.0 Integration

SAML (Security Assertion Markup Language) enables applications to authenticate a user using an identity provider. CNC Console can broker identity providers based on the SAML v2.0 protocol.

### Managing SAML 2.0 Integration with CNC Console

#### Enable and Configure

For enabling and configuring SAML 2.0 feature integration with CNC Console, see [Integrating SAML SSO with CNC Console IAM](#) section.

### Observe

For information on Metrics and KPIs, see [CNC Console Metrics](#), and [CNC Console KPIs](#) sections.

### Maintain

If you encounter alerts at system or application levels, see [CNC Console Alerts](#) section for resolution steps.

In case the alert still persists, perform the following:

1. **Collect the logs:** For more information on how to collect logs, see [CNC Console Logs](#).
2. **Raise a service request:** See [My Oracle Support](#) for more information on how to raise a service request.

## Logging Support

The CNC Console logs are categorized into following types:

- Regular logs
- Audit logs
- Security logs

## Regular logs

These logs contain all kinds of error messages, warnings, or other events written within the application which provide logical, high level information about the application and ongoing events.

Example:

```
{"level": "INFO","message": "Started GatewayApplication in 10.748
seconds (JVM running for 12.825)"}
{"level": "INFO","message": "Creating plain httpClient"}
{"level": "INFO","message": "Creating plain restTemplate"}
{"level": "ERROR","message": "Can't get cfgs of topic
public.dynamic.datamodel, exception is:\n
javax.ws.rs.ProcessingException: java.net.ConnectException: Connection
refused (Connection
refused)"}

```

## Audit Logs

These logs contain user related information and the activity within the system.

The Keycloak container records the Logging Error Logs as follows:

```
^[[0m^[[33m10:12:57,388 WARN [org.keycloak.events] (default task-3)
type=LOGIN_ERROR, realmId=master, clientId=security-admin-console,
userId=ef58d62e-a0a8-4f4e-bcc6-abccf917641c,
ipAddress=192.168.203.108, error=invalid_user_credentials,
auth_method=openid-connect, auth_type=code,
redirect_uri=http://10.75.240.33:30085/cncc/auth/admin/master/
console/,
code_id=3e6d822a-9e82-4660-bb01-a814f7ae8f97, username=admin,
authSessionParentId=3e6d822a-9e82-4660-bb01-a814f7ae8f97,
authSessionTabId=2ak6Xwal-28

```

## Security Logs

These logs contain the header, payload, method, scheme, URI, and other details for all the requests and corresponding responses.

## Disabling Security Logs

By default, **Security Log** is enabled for both *CCNC Core* and *CNCC IAM*. To disable, set *securityLogEnabled* flag to **false** in *custom-core\_values.yaml* and *custom-iam\_values.yaml* files.

```
# CNCC configuration
cncc:
  enabled: false
  enablehttp1: false
  securityLogEnabled: false

```

## Log Levels

The log level indicates the level of the logs.

The default log levels for CNC Console Core is as follows:

```
ingress-gateway:
  log:
    level:
      cncc:
        root: WARN
        audit: INFO
        security: INFO
```

The default log levels for CNC Console IAM is as follows:

```
ingress-gateway:
  log:
    level:
      cncc:
        root: WARN
        security: INFO
```

## Managing Security Logs and Audit Logs

### Enable and Configure

For enabling and configuring Security Logs and User Activity Logs, see [CNC Console Logs](#) section.

### Observe

For information on Metrics and KPIs, see [CNC Console Metrics](#), and [CNC Console KPIs](#) sections.

### Maintain

If you encounter alerts at system or application levels, see [CNC Console Alerts](#) section for resolution steps.

In case the alert still persists, perform the following:

1. **Collect the logs:** For more information on how to collect logs, see [CNC Console Logs](#).
2. **Raise a service request:** See [My Oracle Support](#) for more information on how to raise a service request.

# Support for Multi Cluster Deployment

Multi cluster is a method of deploying an application on or across multiple Kubernetes clusters for improving availability, isolation, and scalability.

## Support for Multicluster Deployment for NFs

CNC Console supports NF deployment across Kubernetes clusters using Manager CNC Console IAM (M-CNCC IAM), Manager CNC Console Core (M-CNCC Core), and Agent CNC Console Core (A-CNCC Core). In a multicluster deployment, the CNC Console can manage NFs and OCCNE common services deployed in the remote Kubernetes clusters.

### Support for Multiple Instances of NFs within a cluster

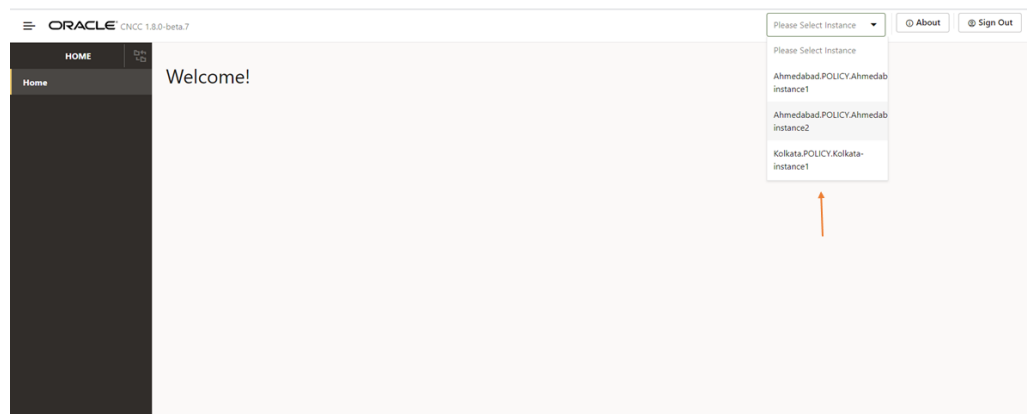
CNC Console supports multiple instances of NFs within a Kubernetes cluster using Manager CNC Console IAM (M-CNCC IAM), Manager CNC Console Core (M-CNCC Core), and Agent CNC Console Core (A-CNCC Core).

The support for multi cluster deployment mTLS Configuration is added to provide secure communication between CNC Console Master and Agent.

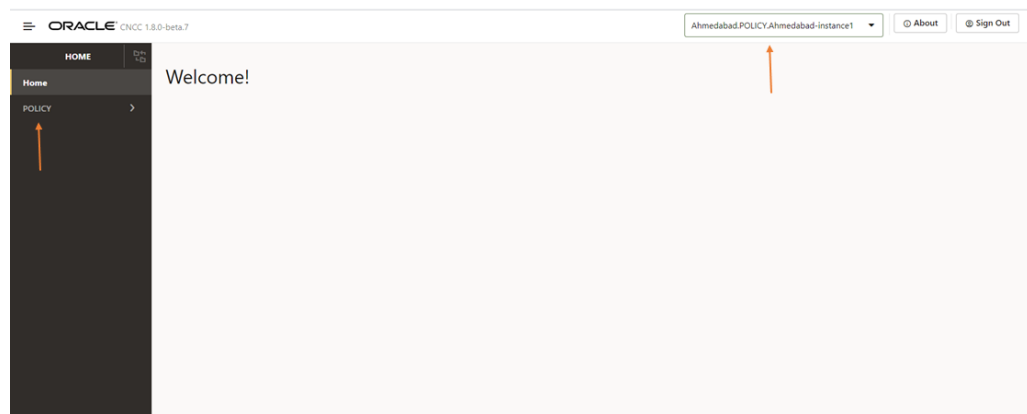
### Selecting the Instance

CNC Console multi cluster deployment has introduced a drop-down on header pane for selecting instance.

Values configured in M-CNCC Core instances section gets displayed in the drop down. Naming convention used for instance drop down display is <owner>.<type>.<instance id>



Once the user selects the required instance from the drop-down, then the corresponding menu gets loaded.





The common service instances configured in the instances section gets displayed in the drop down.



For more details about multi-cluster configurations, see *CNC Console Multi-Cluster Configurations* section in *Oracle Communications Cloud Native Core Console Installation and Upgrade Guide*.

## cnDBTier Integration

CNC Console is integrated with cnDBTier in a containerized Oracle Communications Cloud Native Environment. For more information, see *Oracle Communications cnDBTier Installation Guide*.

## TLS Certificate Support

Transport Layer Security (TLS) certificates or Secure Sockets Layer (SSL) are essential to securing internet browser connections and transactions through data encryption. TLS/SSL is the standard security technology that works behind the scenes to keep the online transactions and logins secure. HTTPS enables end to end encryption of messages to ensure security of data. HTTPS requires creation of TLS (Mutual TLS by two way exchange of ciphered keys).

This feature enables the extension of identity validation from Transport layer to the Application layer. It also provides a mechanism to validate the NF FQDN presence in TLS certificate as added by the Service Mesh against the NF Profile FQDN present in the request. HTTPS requires creation of TLS (Mutual TLS by two way exchange of ciphered keys).

### Steps to Enable HTTPS

#### Certificate Creation

To create certificate you must have the following files:

- ECDSA private key and CA signed certificate of OCNRF (if initial algorithm is ES256)
- RSA private key and CA signed certificate of OCNRF (if initial algorithm is RSA256)
- TrustStore password file
- KeyStore password file
- CA certificate

#### Secret Creation

Run the following command to create a secret:

```
$ kubectl create secret generic occnccaccesstoken-secret --from-  
file=ecdsa_private_key_pkcs8.pem --from-file=rsa_private_key_pkcs1.pem  
--from-file=trustStorePassword.txt --from-file=keyStorePassword.txt --  
from-file=ecdsa_occncc_certificate.crt--from-  
file=rsa_occncc_certificate.crt -n occncc
```

### Certificate and Key Exchange

Once the connection is established between the client and the server, using the agreed algorithm and keys, they can send messages securely to each other. The TLS handshake has the following phases:

- Hello
- Certificate Exchange
- Key Exchange

The client generates a random key to be used for the main, symmetric algorithm. The client encrypts the key using an algorithm also agreed upon the server's public key (found on its SSL certificate). The client sends this encrypted key to the server, where it is decrypted using the server's private key. The parties are identified that they are talking to the right person, and have secretly agreed on a key to symmetrically encrypt the data that they are about to send each other. The HTTP requests and responses can be sent by forming a plain text message and then encrypting and sending it. The other party is the only one who knows how to decrypt this message, and so Man In The Middle Attackers are unable to read or modify any requests that they may intercept.

CNC Console supports the following cipher suites:

- TLS\_ECDHE\_ECDSA\_WITH\_AES\_256\_GCM\_SHA384
- TLS\_ECDHE\_RSA\_WITH\_AES\_256\_GCM\_SHA384
- TLS\_ECDHE\_RSA\_WITH\_CHACHA20\_POLY1305\_SHA256
- TLS\_DHE\_RSA\_WITH\_AES\_256\_GCM\_SHA384
- TLS\_ECDHE\_ECDSA\_WITH\_AES\_128\_GCM\_SHA256
- TLS\_ECDHE\_RSA\_WITH\_AES\_128\_GCM\_SHA256

## Service Mesh Communication

CNC Console leverages the Istio or Envoy service mesh (Aspen Service Mesh) for all internal and external communication. The service mesh integration provides Console-NF communication and allows API gateway co-working with service mesh. The service mesh integration supports the services by deploying a special sidecar proxy in the environment to intercept all network communication between microservices.

For more information, see *CNC Console Configuration to Support ASM and OSO in Oracle Communications Cloud Native Core Console Installation and Upgrade Guide*.

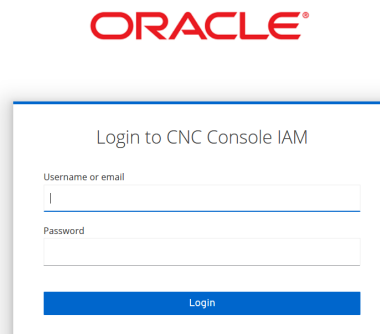
# 3

## Logging into CNC Console

The following is the procedure to log in to CNC Console:

1. Open any browser.
2. Enter the URL: ***http://<host name>:<port number>***.  
where, *host name* is cncc-iam-ingress-ip and *port number* is cncc-iam-ingressport.

The following screen appears:



3. Enter the valid credentials.
4. Click **Login**. The Welcome page of CNC Console interface appears.



### Note:

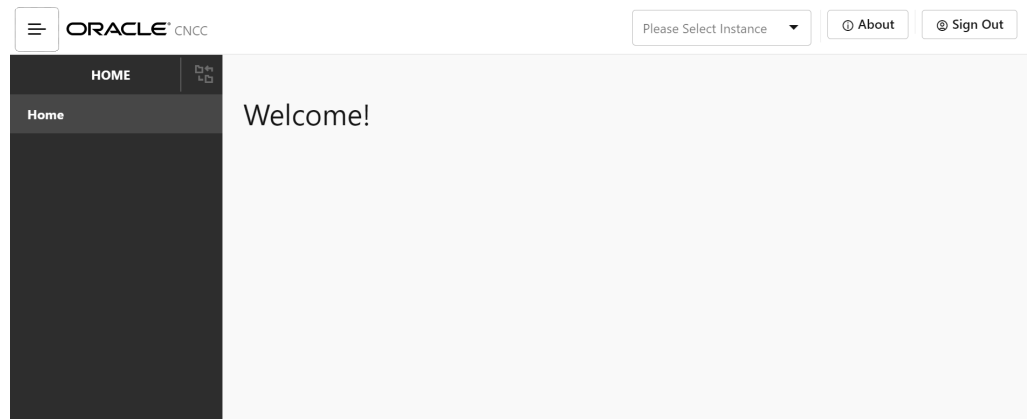
To configure CNCC IAM, see [Configuring CNC Console IAM](#) section.

## CNC Console Dashboard

This section provides an overview of the CNC Console Dashboard.

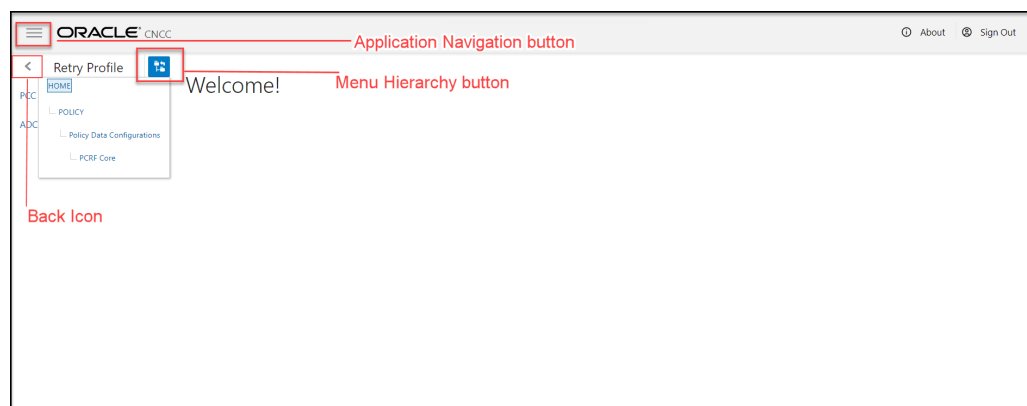
After the user logs in, the following Welcome page of the CNC Console appears:

**Figure 3-1 Welcome Page of the CNC Console**



- **Top Ribbon** -The top ribbon contains the following:
  - **Instance selection drop-down list**- You can select the NF instance from the list.
  - **About**- Conveys the product name and the version of the Interface.
  - **Sign Out**- To sign out from the Console.
- **Left Pane - NFs and Configurations**  
The left pane displays the selected Network Function and the configurations.
- **Right Pane - Details View**  
The right pane displays the configurable parameters that can be updated in the selected NFs.
- **Other dashboard options**

**Figure 3-2 Dashboard options**



- The **Menu Hierarchy** button shows the navigation path from the home screen to the current menu item.
- The **Application Navigation** button allows the user to collapse the left pane and displays full screen.

- The **Back Icon** allows the user to navigate to the Home menu. The screen does not get refreshed automatically. User must click Home or NF menu to view the updated screen.

# 4

## Configuring CNC Console IAM

This section provides details on how to configure the CNC Console IAM.

### Role Based Access Control in CNC Console IAM

Role-Based Access Control (RBAC) is one of the main methods for advanced access control. It enables you to restrict network access to authorized users based on their assigned roles.

#### Role

A Role is a collection of permissions that you can apply to users. Roles are defined according to the authority and responsibility of the users within the organization. Using roles makes it easier to add, remove, and update permissions to the users.

#### Composite Role

A Composite Role is a collection of one or more additional roles grouped together.

### Types of Roles in CNC Console

Role Based Access Control (RBAC) is controlled by Identity and Access Management (IAM) functionality provided by CNCC IAM.

The following roles are predefined in the CNC Console IAM:

- **ADMIN Level**

Role: **ADMIN**

The user assigned with this role can access all the NF and CS resources within the CNC Console. The admin user can perform create, read, update, and delete operations. For example, the admin user can read, add, update, or delete MOS configurations for any NF and CS supported CNC Console application. The admin user can also be assigned to the Composite roles which contain all NF and CS level roles.

- **NF Level**

The user assigned with this role can perform read and write operations for the assigned NFs. NF level roles are classified into:

**<NF>\_READ:** With this permission, the assigned user can perform the read operation for NFs.

For example, If user has POLICY\_READ role, then the user can only read configurations of any MOs configurations within the Policy and cannot write or update or delete any record.

**<NF>\_WRITE:** With this permission, the assigned user can perform create, read, update, and delete operations for NFs. For example, if user has POLICY\_WRITE then the user can read or write or update or delete any MOs configurations within the NF.

- **CS Level**

Role: **CS\_WRITE**

The user assigned with this role has access to all the common services and can perform CRUD operations.

The user can perform create, read, update, and delete operations. The user can read, add, update, or delete MOS configurations for all common services such as Grafana, Kibana, Jaeger, Prometheus, Alertmanager supported by CNC Console application. For example, if user has CS\_WRITE then, the user can read or write or update or delete any MOs configurations in common services.

## Accessing Roles in CNC Console Applications

1. Log into CNC Console IAM using Admin credentials. The following screen appears.

Figure 4-1 Realm Settings

The screenshot shows the Oracle CNC Console IAM interface. The left sidebar contains a navigation menu with options like Clients, Client Scopes, Roles, Identity Providers, User Federation, Authentication, Groups, Users, Sessions, Events, Import, and Export. The 'Realm Settings' option is selected. The main panel displays the 'General' tab of the Realm Settings. The fields include: Name (cnc), Display name (cnc), HTML Display name (<div class="lc-logo-text"></div>), Frontend URL, Enabled (ON), User-Managed Access (OFF), and Endpoints (OpenID Endpoint Configuration, SAML 2.0 Identity Provider Metadata). There are 'Save' and 'Cancel' buttons at the bottom.

2. To access or view the available roles, click **Roles** on the left pane. The defined roles are available on the right pane.

Figure 4-2 Roles

The screenshot shows the Oracle CNC Console IAM interface with the 'Roles' tab selected. The main panel displays a table of roles. The table has columns for Role Name, Composite, Description, and Actions. The roles listed are ADMIN, BSF\_READ, BSF\_WRITE, CS\_WRITE, default-roles-cnc, NRF\_READ, NRF\_WRITE, NSPF\_READ, NSPF\_WRITE, offline\_access, POLICY\_READ, POLICY\_WRITE, SCP\_READ, SCP\_WRITE, SEPP\_READ, SEPP\_WRITE, UDR\_READ, UDR\_WRITE, and uma\_authorization.

| Role Name         | Composite | Description                                                                                      | Actions     |
|-------------------|-----------|--------------------------------------------------------------------------------------------------|-------------|
| ADMIN             | True      | Has access to all NF resources and can perform CRUD operations                                   | Edit Delete |
| BSF_READ          | False     | Has access to only BSF resources and can only perform READ Managed Objects of BSF.               | Edit Delete |
| BSF_WRITE         | True      | Has access to only BSF resources and can perform CRUD operation on Managed Objects of BSF.       | Edit Delete |
| CS_WRITE          | False     | Has access to only CS resources and can perform CRUD operations on Managed Objects.              | Edit Delete |
| default-roles-cnc | True      | \$(role_default-roles-cnc)                                                                       | Edit Delete |
| NRF_READ          | False     | Has access to only NRF resources and can only perform READ Managed Objects of NRF.               | Edit Delete |
| NRF_WRITE         | True      | Has access to only NRF resources and can perform CRUD operations on Managed Objects.             | Edit Delete |
| NSPF_READ         | False     | Has access to only NSPF resources and can only perform READ Managed Objects of NSPF.             | Edit Delete |
| NSPF_WRITE        | True      | Has access to only NSPF resources and can perform CRUD Managed Objects of NSPF.                  | Edit Delete |
| offline_access    | False     | \$(role_offline-access)                                                                          | Edit Delete |
| POLICY_READ       | False     | Has access to only POLICY resources and can only perform READ Managed Objects of POLICY.         | Edit Delete |
| POLICY_WRITE      | True      | Has access to only POLICY resources and can perform CRUD operation on Managed Objects of POLICY. | Edit Delete |
| SCP_READ          | False     | Has access to only SCP resources and can only perform READ Managed Objects of SCP.               | Edit Delete |
| SCP_WRITE         | True      | Has access to only SCP resources and can perform CRUD operations on Managed Objects.             | Edit Delete |
| SEPP_READ         | False     | Has access to only SEPP resources and can only perform READ Managed Objects of SEPP.             | Edit Delete |
| SEPP_WRITE        | True      | Has access to only SEPP resources and can perform CRUD operations on Managed Objects of SEPP.    | Edit Delete |
| UDR_READ          | False     | Has access to only UDR resources and can only perform READ Managed Objects of UDR.               | Edit Delete |
| UDR_WRITE         | True      | Has access to only UDR resources and can perform CRUD Managed Objects of UDR.                    | Edit Delete |
| uma_authorization | False     | \$(role_uma_authorization)                                                                       | Edit Delete |



### Note:

For the details about Multi-Cluster Roles, see **Multi-Cluster Roles** under **CNC Console IAM Post Installation Steps** section in *Oracle Communication Cloud Native Core Console Installation and Upgrade Guide*.

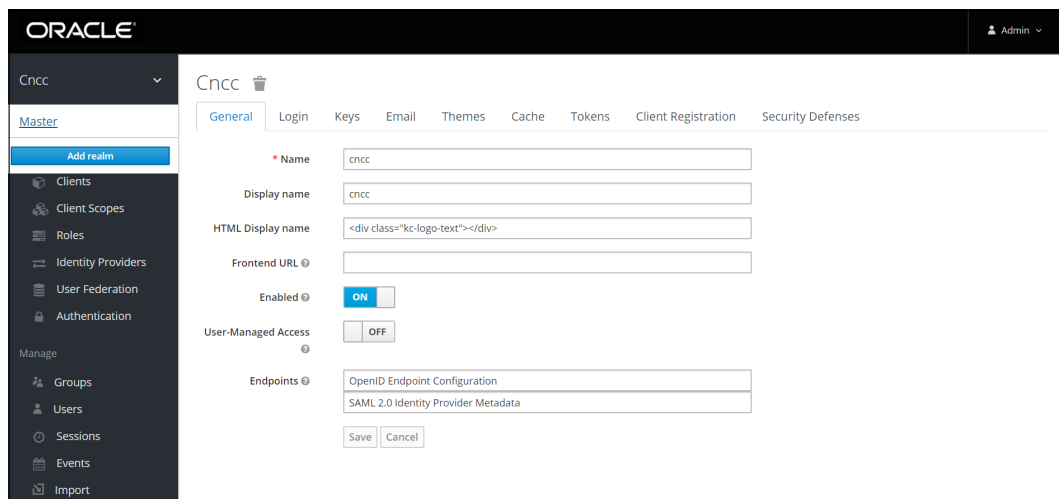
## Creating or Updating Admin Password in CNC Console IAM

This section describes about creating or updating the admin password in CNC Console IAM.

Perform the following steps to create or update the admin password:

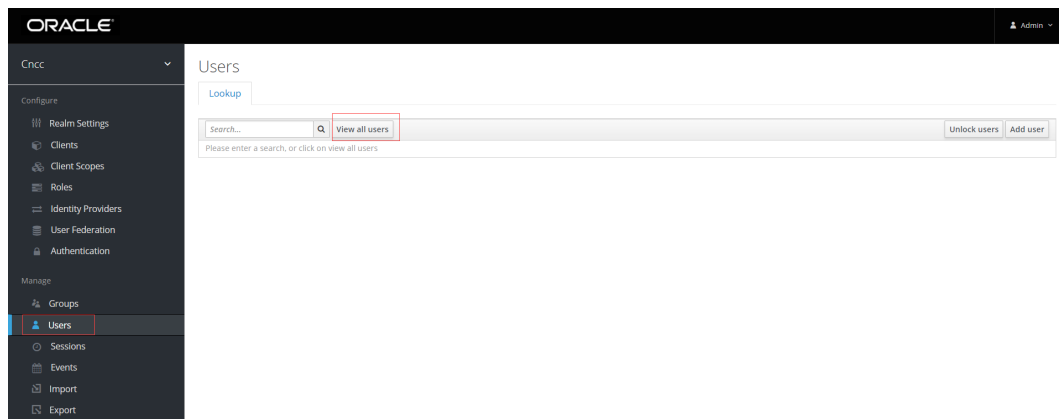
1. Select the **Master Realm** (Only applicable for Admin Users).

**Figure 4-3 Master Realm**



2. Click **Users** on the left pane and click **View all users** on the right pane.

**Figure 4-4 view all users**

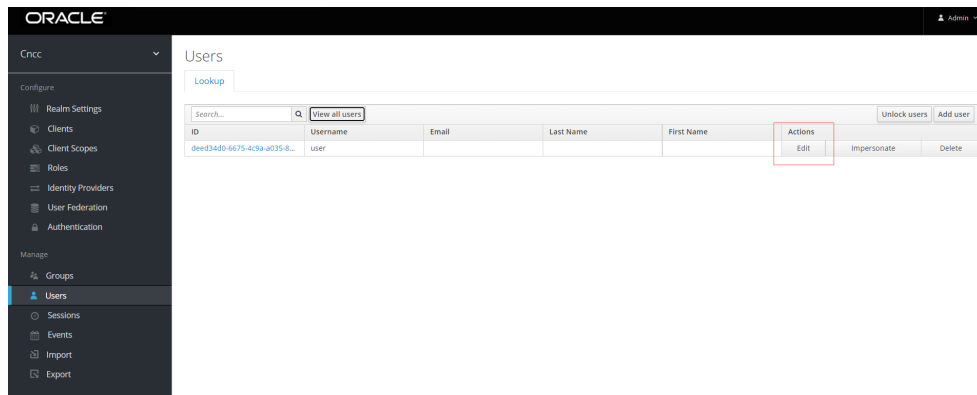


The following screen appears.



3. Click **Edit** under **Actions** to update the credentials.

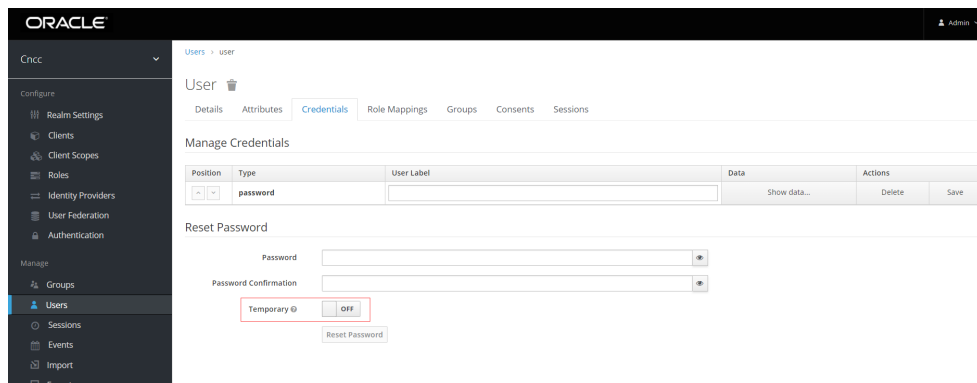
**Figure 4-5 Edit User**



The following screen appears.

4. Under **Credentials** tab, set **Temporary** to **OFF** and update the **Password**.

**Figure 4-6 Credentials**



## Creating or Updating User Password in CNC Console IAM

This section describes about creating or updating the user password in CNC Console IAM.

Perform the following steps to create or update the user password:

1. On the left pane, click **Realm Settings**. The following screen appears.

**Figure 4-7 Realm Settings**

The screenshot shows the Oracle CNC Console IAM interface. On the left, the 'Configure' menu has 'Realm Settings' selected. The main area displays the 'General' tab for the 'Cncc' realm. Fields include: Name (cncc), Display name (cncc), HTML Display name (<div class="kc-logo-text"></div>), Frontend URL (empty), Enabled (ON), User-Managed Access (OFF), and Endpoints (OpenID Endpoint Configuration, SAML 2.0 Identity Provider Metadata). 'Save' and 'Cancel' buttons are at the bottom.

2. Click **Users** on the left pane and click **view all users** on the right pane.

**Figure 4-8 view all users**

The screenshot shows the Oracle CNC Console IAM interface. On the left, the 'Manage' menu has 'Users' selected. The main area displays the 'Users' tab. At the top, there is a search bar with a 'View all users' button highlighted. Below the search bar, it says 'Please enter a search, or click on view all users'. There are also 'Unlock users' and 'Add user' buttons.

The following screen appears.

3. Click **Edit** under **Actions** to update the credentials.

**Figure 4-9 Users**

The screenshot shows the Oracle CNC Console IAM interface. On the left, the 'Manage' menu has 'Users' selected. The main area displays the 'Users' tab. Below the search bar, there is a table of users. The first user is highlighted, and the 'Actions' column for this user is highlighted, showing 'Edit', 'Impersonate', and 'Delete' options.

| ID                           | Username | Email | Last Name | First Name | Actions                                                                 |
|------------------------------|----------|-------|-----------|------------|-------------------------------------------------------------------------|
| dee03400-6675-4c9a-a035-8... | user     |       |           |            | <a href="#">Edit</a> <a href="#">Impersonate</a> <a href="#">Delete</a> |

The following screen appears.

- Under **Credentials** tab, set **Temporary** to **OFF** and update the **Password**.

**Figure 4-10 Credentials**

The screenshot shows the Oracle Identity Cloud Service (OICS) console. On the left, the 'Users' menu is expanded, and the 'Users' sub-menu is selected. The main area displays the 'User' details for a user named 'user'. The 'Credentials' tab is active, showing the 'Manage Credentials' section. A table lists the credentials, with one entry having a 'Type' of 'password'. Below the table, the 'Reset Password' section is visible, showing the 'Temporary' checkbox checked and highlighted with a red box. The 'Password' field is empty, and the 'Reset Password' button is visible.

## Configuring the CNC Console Redirection URL

After a successful deployment of CNC Console IAM, the administrator must perform the following steps to configure the CNC Console redirection URL:

- Log into CNC Console IAM using admin credentials provided during installation.
- On the left pane, select **Clients** and on the right pane select **cncc**.

**Figure 4-11 Clients Screen**

The screenshot shows the Oracle Identity Cloud Service (OICS) console. On the left, the 'Clients' menu is expanded, and the 'Clients' sub-menu is selected. The main area displays the 'Clients' screen. A table lists the clients, with one entry having a 'Client ID' of 'cncc' highlighted with a red box. The table has columns for 'Client ID', 'Enabled', 'Base URL', and 'Actions'.

| Client ID              | Enabled | Base URL                                                                                    | Actions            |
|------------------------|---------|---------------------------------------------------------------------------------------------|--------------------|
| account                | True    | http://cncc-iam-ingress-gateway.cncc.svc.cluster.local:30085/cncc/auth/realms/cncc/account/ | Edit Export Delete |
| admin-cli              | True    | Not defined                                                                                 | Edit Export Delete |
| broker                 | True    | Not defined                                                                                 | Edit Export Delete |
| cncc                   | True    | Not defined                                                                                 | Edit Export Delete |
| realm-management       | True    | Not defined                                                                                 | Edit Export Delete |
| security-admin-console | True    | http://cncc-iam-ingress-gateway.cncc.svc.cluster.local:30085/cncc/auth/admin/cncc/console/  | Edit Export Delete |

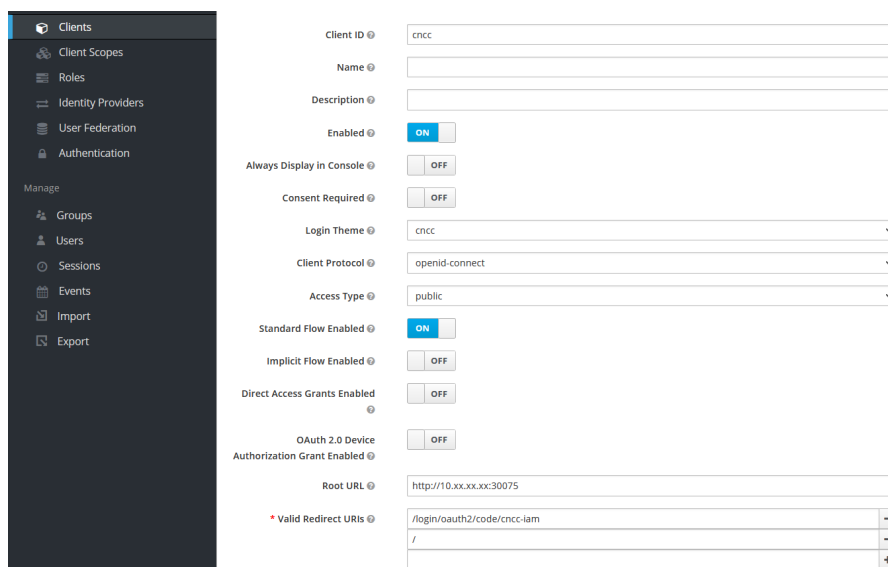
- Enter CNCC Core Ingress URI in the **Root URIs** field and **Save**.

<scheme>://<cncc-mcore-ingress IP/FQDN>:<cncc-core-ingress Port>

 **Note:**

**Redirection url** is pre-populated, only root url needs to be configured as part of Post-Installation procedure.

**Figure 4-12 Redirection url**



The screenshot shows the 'Clients' configuration page in the OICS console. The left sidebar contains the following menu items: Clients, Client Scopes, Roles, Identity Providers, User Federation, Authentication, Manage, Groups, Users, Sessions, Events, Import, and Export. The main configuration area for the client 'cncc' includes the following fields and controls:

- Client ID:** cncc
- Name:** (empty)
- Description:** (empty)
- Enabled:** ON
- Always Display in Console:** OFF
- Consent Required:** OFF
- Login Theme:** cncc
- Client Protocol:** openid-connect
- Access Type:** public
- Standard Flow Enabled:** ON
- Implicit Flow Enabled:** OFF
- Direct Access Grants Enabled:** OFF
- OAuth 2.0 Device Authorization Grant Enabled:** OFF
- Root URL:** http://10.xx.xx.xx:30075
- Valid Redirect URIs:** /login/oauth2/code/cncc-iam, /

## Users in CNC Console IAM

This section includes:

- [Creating the users](#)
- [Viewing the users](#)
- [Assigning the roles to the users](#)

 **Note:**

For the details about Setting or updating the admin password refer [Creating or Updating Admin Password in CNC Console IAM](#)

 **Note:**

For the details about Setting or updating the user password refer [Creating or Updating User Password in CNC Console IAM](#)

## Creating the Users

1. Click **Realm Settings** under **Cncc**.

2. Click **Users** under **Manage** on the left pane and click **Add user** on the right pane.

3. **Add user** screen appears. Add the user details and click **Save**.

4. The user has been created and the user details screen appears.

- For setting the password for the user, click **Users** under **Manage** on the left pane and click the **Credentials** tab on the right pane. Set the password for the user.

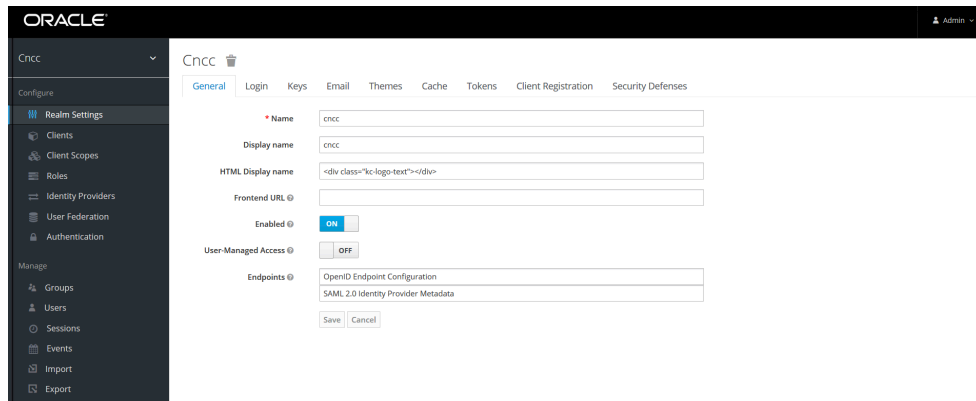


#### Note:

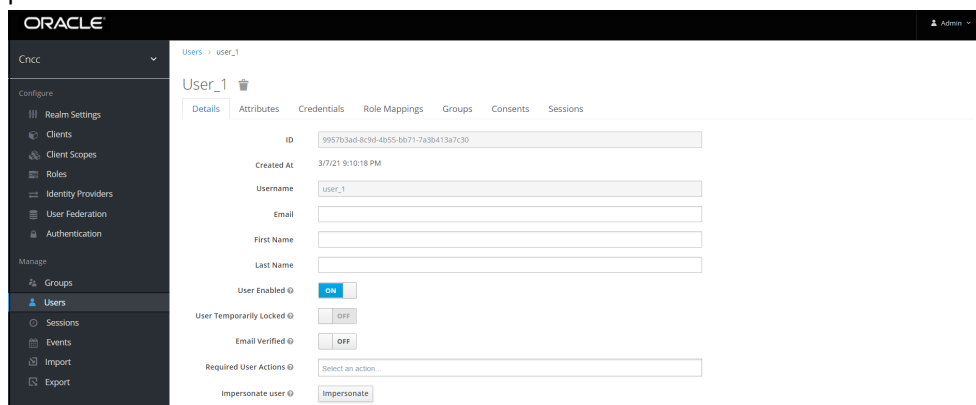
Setting the **Temporary** flag **ON** prompts the user change the password when logging in to the CNC Console for the first time.

## Viewing the Users

- Click **Realm settings**.



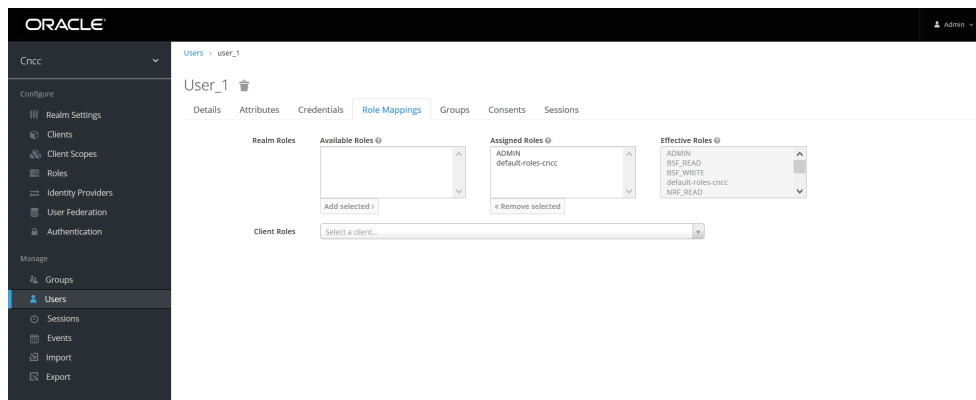
2. Select **Users** under **Manage** in the left pane and select **View all users** in the right pane.



The list of users and their details appears in the right pane.

## Assigning Roles to the User

1. Select **Users** under **Manage** in the left pane and click **View all users** in the right pane. Choose any user. Select **Role Mappings** tab in the right pane of the user screen and select the roles from **Available roles** and click **Add selected**.



The selected roles will be assigned to the user.

# Integrating SAML SSO with CNC Console IAM

## Overview

Security Assertion Markup Language (SAML) is an open standard that allows identity providers (IdP) to pass authorization credentials to service providers (SP). The identity provider authenticates the user and returns the assertion information about the authenticated user and the authentication event to the application. Using SSO, if the user tries to access any other application that uses the same identity provider for user authentication, the user need not login again. This is the principle of SSO (Single Sign On).



### Note:

CNCC supports SAML 2.0.

## Configuring SAML Identity Provider in CNCC IAM

1. To configure SAML identity provider (**IdP**) in CNCC IAM, log in to CNCC IAM Console using admin credentials provided during installation of CNCC IAM .

`http://<cncc-iam-ingress-extrenal-ip>:<cncc-iam-ingress-service-port>`  
Example: `http://cncc-iam-ingress-gateway.cncc.svc.cluster.local:30085/`

Figure 4-13 Login screen

ORACLE®

Login to CNC Console IAM

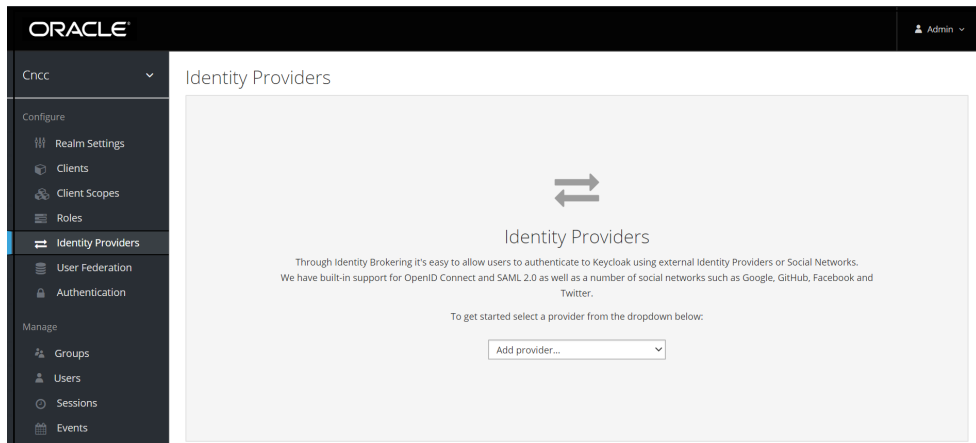
Username or email

Password

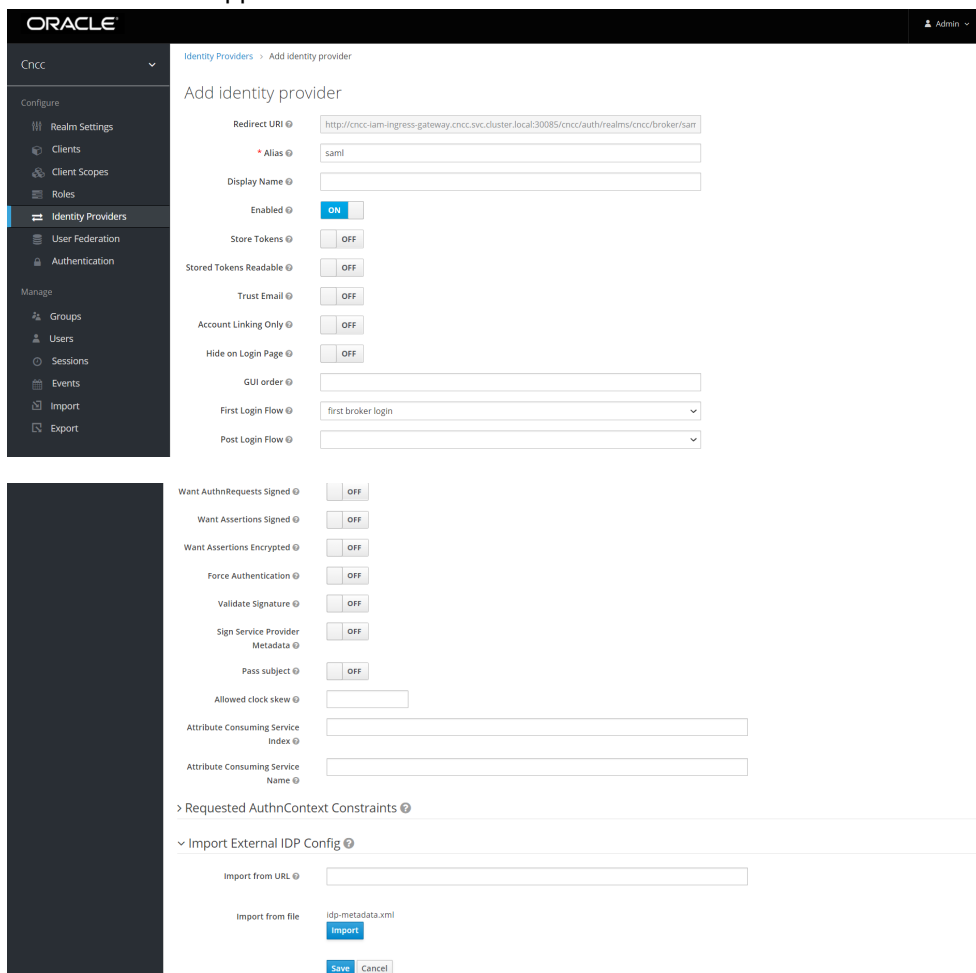
Login

2. Click **Cncc** realm and click the **Identity Provider** tab on the left pane. **Identity Providers** screen appears on the right pane.





3. Choose the **SAML v2.0** from the **Add provider** drop-down list. The **Add Identity Provider** screen appears.



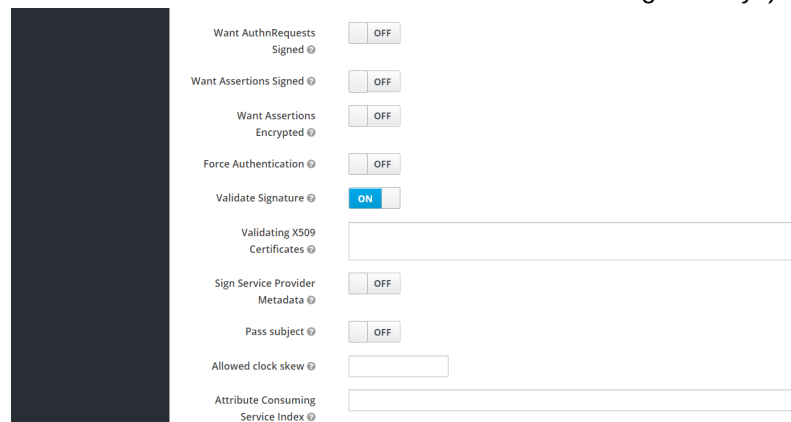
 **Note:**

- Give an appropriate name for the field **Display Name**.
- At **Import External IDP Config**, upload the 'idp-metadata.xml' file that is exported from SAML client in the IDP.

Click **Import** and **Save**. The other required fields will be filled in automatically.

Perform the following procedure to configure the IDP manually, if you are facing difficulty in importing the metadata file from the IDP Client:

- Select **SAML v2.0** in add Provider selection box
- Set the value of **Single Sign-On Service URL** to the URL of the preferred IDP.
- If the IDP is sending signed Assertions, set **Want Assertions Signed** to **ON**.
- Set **Validate Signature** to **ON**.
- Provide value for **Validating X509 Certificates** (If you are using Keycloak as an IDP, use the certificate from **master** realm -> Realm Settings -> Keys).



Want AuthnRequests Signed ☐ OFF

Want Assertions Signed ☐ OFF

Want Assertions Encrypted ☐ OFF

Force Authentication ☐ OFF

Validate Signature ☒ ON

Validating X509 Certificates

Sign Service Provider Metadata ☐ OFF

Pass subject ☐ OFF

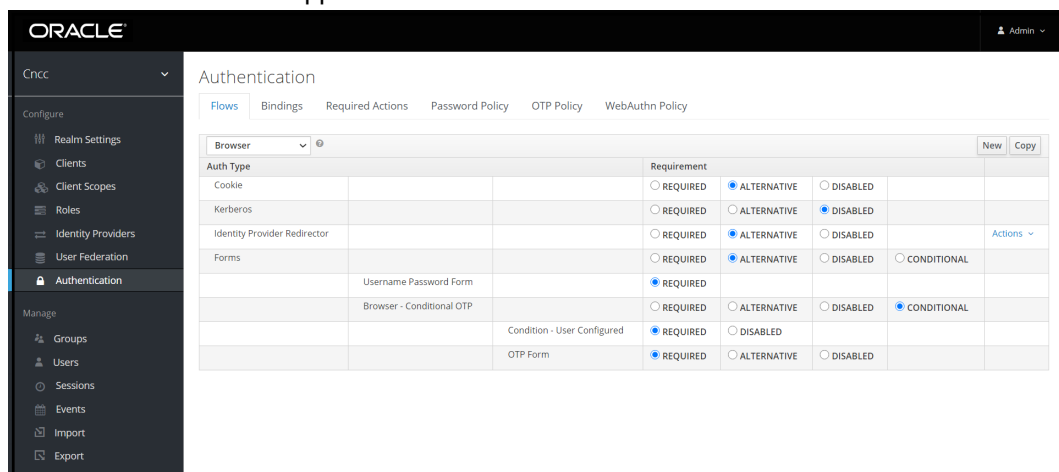
Allowed clock skew

Attribute Consuming Service Index

- Click **Save**.

IDP is now configured manually.

- To create custom '**First Login Flow**', click **Authentication** tab on the left pane. The **Authentication** screen appears.



**ORACLE** CNC

Authentication

Flows Bindings Required Actions Password Policy OTP Policy WebAuthn Policy

Browser  New Copy

| Auth Type                    | Requirement | REQUIRED                         | ALTERNATIVE                      | DISABLED                         | CONDITIONAL                      |
|------------------------------|-------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Cookie                       |             | <input type="radio"/>            | <input checked="" type="radio"/> | <input type="radio"/>            |                                  |
| Kerberos                     |             | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> |                                  |
| Identity Provider Redirector |             | <input type="radio"/>            | <input checked="" type="radio"/> | <input type="radio"/>            |                                  |
| Forms                        |             | <input type="radio"/>            | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            |
| Username Password Form       |             | <input checked="" type="radio"/> |                                  |                                  |                                  |
| Browser - Conditional OTP    |             | <input type="radio"/>            | <input type="radio"/>            | <input type="radio"/>            | <input checked="" type="radio"/> |
| Condition - User Configured  |             | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            |                                  |
| OTP Form                     |             | <input checked="" type="radio"/> | <input type="radio"/>            | <input type="radio"/>            |                                  |

- Click **New** on the right pane. **Create Top Level Form** screen appears.

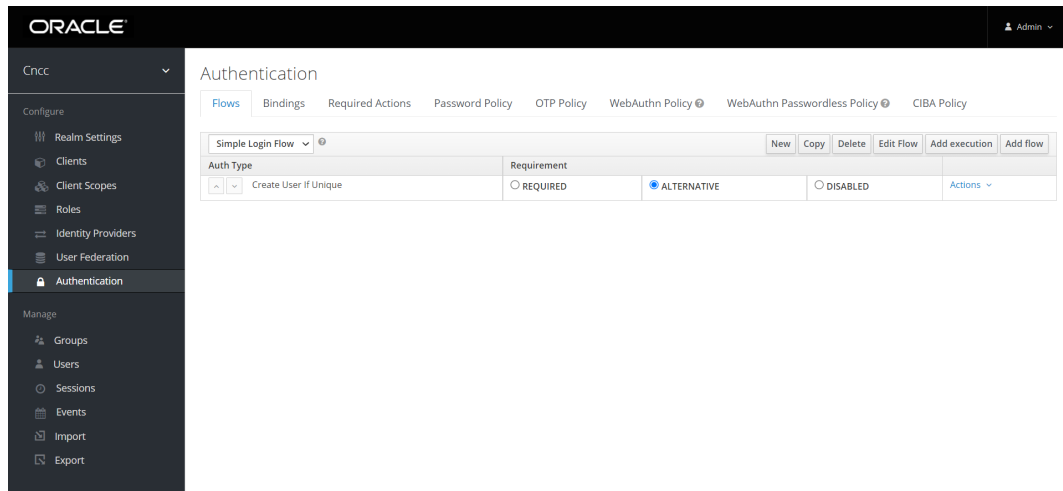
Enter the appropriate alias and click **Save**.

- The **Authentication** screen with the newly created custom flow selected in the drop-down list appears. Click **Add Execution** on the right pane .

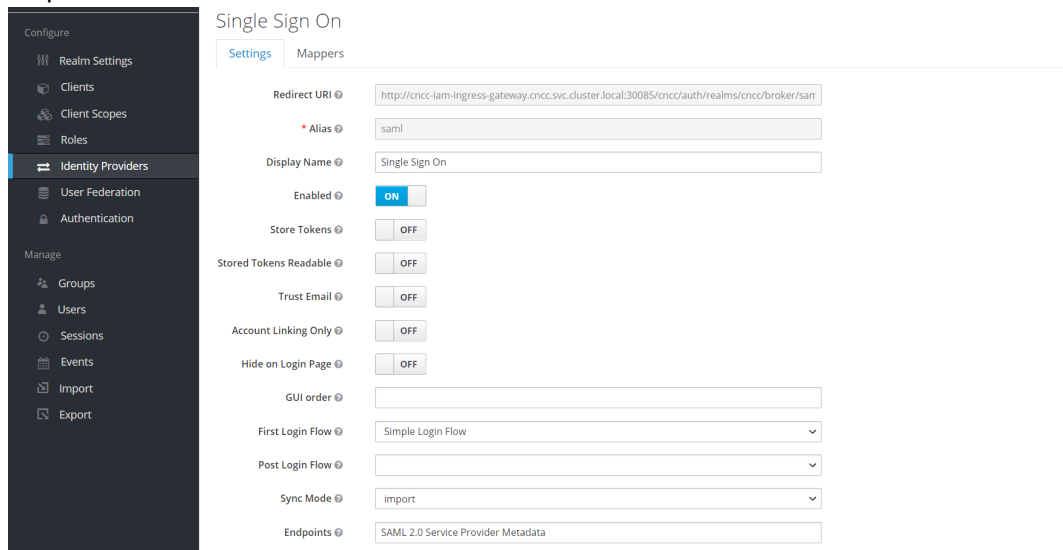
- Create Authenticator Execution** screen appears.

Select **Create User If Unique** from the **Provider** drop-down list. Click **Save**.

- The **Authentication** screen with the newly created custom flow selected in the drop-down. Under **Requirement** section, select **Alternative**.



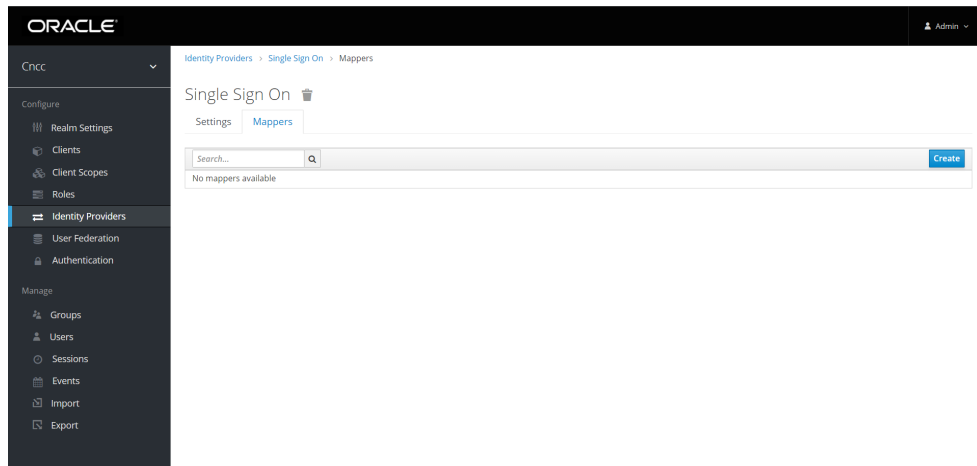
- Click **Identity Provider** in the left pane. Select the custom flow from **First Login Flow** drop-down list.



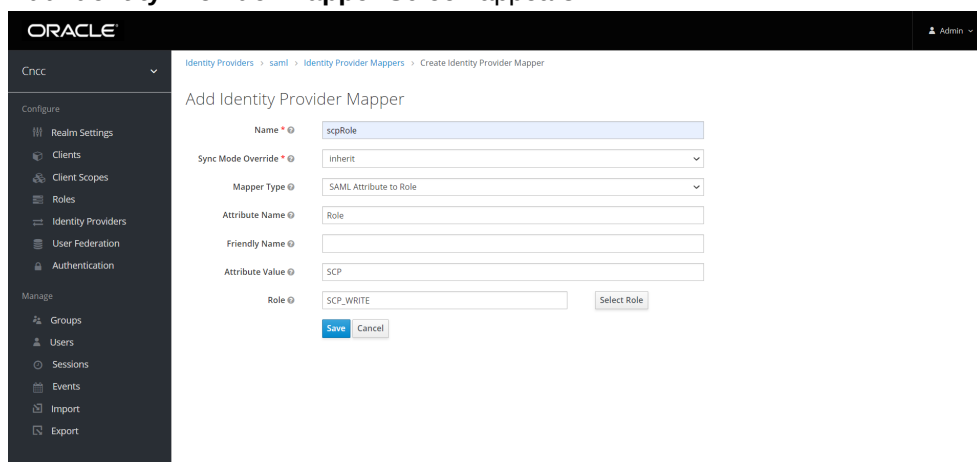
The above screen appears. Now the SAML IdP roles must be mapped with CNC Console IAM API roles.

### Mapping SAML IdP roles with CNC Console IAM API roles

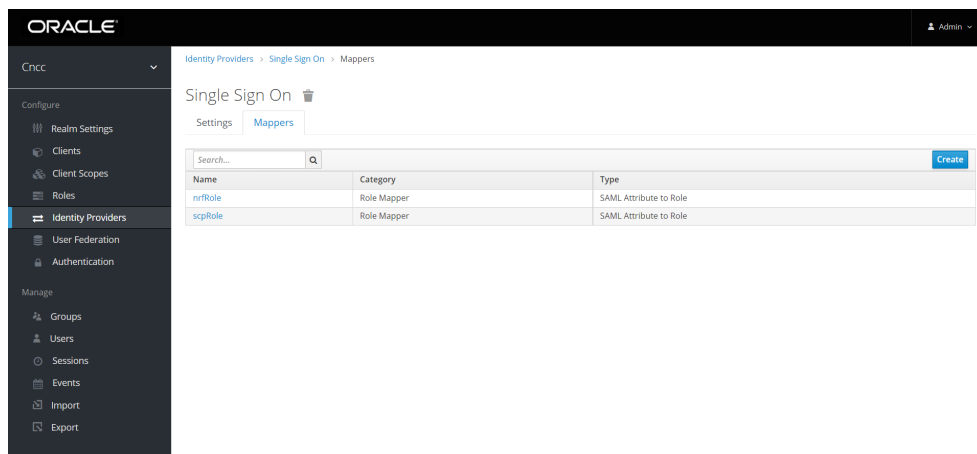
- After saving SAML IdP configurations in CNCC IAM, select **Identity Providers** on the left pane and click **Mappers** tab on the right pane. Click **Create**.



## 2. Add Identity Provider Mapper Screen appears.



- Give an appropriate name for the field **Identity Provider Mapper**.
- Select 'SAML Attribute to Role' from **Mapper Type** drop-down.
- Enter the **Attribute Value** as the one of the roles added in SAML IdP.  
Example: 'NRF', 'SCP', etc.
- Click **Select Role** to select the API roles to be enabled for this mapping.
- Click **Save**.



You can create any number of mapping as per the requirements.

### Accessing CNCC Core Application

1. To log in to CNCC Core, browse to the application using hostname and port. The user will be redirected to CNCC IAM (broker).

`http://<cncc-iam-ingress-extrenal-ip>:<cncc-iam-ingress-service-port>`  
Example: `http://cncc-core-ingress-gateway.cncc.svc.cluster.local:30075/`

A screenshot of a web login form titled "Login to CNCC". It features two input fields: "Username or email" and "Password". Below these fields is a blue "Log In" button. Underneath the button is a horizontal line, followed by the text "Or sign in with", and then a button labeled "Single Sign On".

2. Click **Single Sign On** to authenticate using SAML SSO. The user is redirected to SAML IdP log in. Enter user details to access CNCC Core application.

## Integrating CNC Console LDAP Server with CNC Console IAM

### Overview

The CNC Console IAM can be used as an integration platform to connect it into existing LDAP and Active Directory servers.

User Federation in CNC Console-IAM let the user to sync users and groups from LDAP and Active Directory servers and assign roles respectively.

CNCC IAM provides an option to configure a secured connection URL to your LDAP store.

example: ``ldaps://myhost.com:636'`

CNCC IAM uses SSL for communication with the LDAP server. The truststore must be properly configured on the CNCC IAM server side, otherwise CNCC IAM cannot trust the SSL connection to LDAP.

### Sample LDAP Idif File

```
dn: dc=oracle,dc=org
objectclass: top
objectclass: domain
objectclass: extensibleObject
dc: oracle

dn: ou=groups,dc=oracle,dc=org
objectclass: top
objectclass: organizationalUnit
ou: groups

dn: ou=people,dc=oracle,dc=org
objectclass: top
objectclass: organizationalUnit
ou: people

dn: uid=ben,ou=people,dc=oracle,dc=org
objectclass: top
objectclass: person
objectclass: organizationalPerson
objectclass: inetOrgPerson
cn: Ben Alex
sn: Alex
uid: ben
userPassword: benspass

dn: uid=bob,ou=people,dc=oracle,dc=org
objectclass: top
objectclass: person
objectclass: organizationalPerson
objectclass: inetOrgPerson
cn: Bob Hamilton
sn: Hamilton
uid: bob
userPassword: bobspass

dn: uid=joe,ou=people,dc=oracle,dc=org
objectclass: top
objectclass: person
objectclass: organizationalPerson
objectclass: inetOrgPerson
cn: Joe Smeth
sn: Smeth
uid: joe
userPassword: joespass

dn: cn=admin,ou=groups,dc=oracle,dc=org
objectclass: top
objectclass: groupOfUniqueNames
```

```
cn: admin
uniqueMember: uid=ben,ou=people,dc=oracle,dc=org
ou: admins

dn: cn=scp,ou=groups,dc=oracle,dc=org
objectclass: top
objectclass: groupOfUniqueNames
cn: scp
uniqueMember: uid=ben,ou=people,dc=oracle,dc=org
uniqueMember: uid=joe,ou=people,dc=oracle,dc=org
ou: scpusers

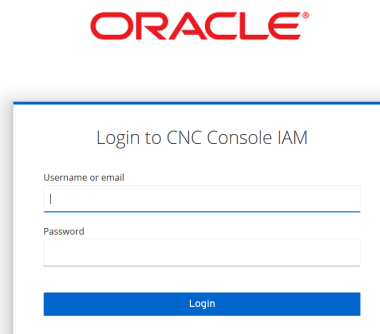
dn: cn=nrf,ou=groups,dc=oracle,dc=org
objectclass: top
objectclass: groupOfUniqueNames
cn: nrf
uniqueMember: uid=ben,ou=people,dc=oracle,dc=org
uniqueMember: uid=bob,ou=people,dc=oracle,dc=org
ou: nrfusers
```

## Configuring User Federation with CNC Console IAM

This section provides information about configuring user federation with CNC Console IAM (LDAP Server integration).

1. Login to CNCC IAM console **<http://<cncc-iam-ingress-ip>:<cncc-iam-ingress-port>>** using admin credentials provided during installation of CNCC IAM.

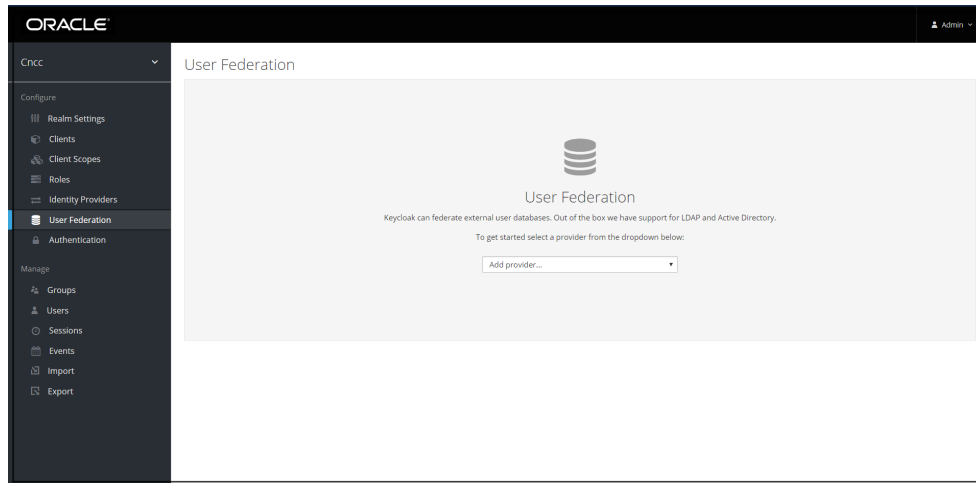
**Figure 4-14 Login Screen**



2. Click **Realm Settings** and click **Add realm** under **Cncc**. Click the **User Federation** on the left pane. The **User Federation** screen appears in the right pane.

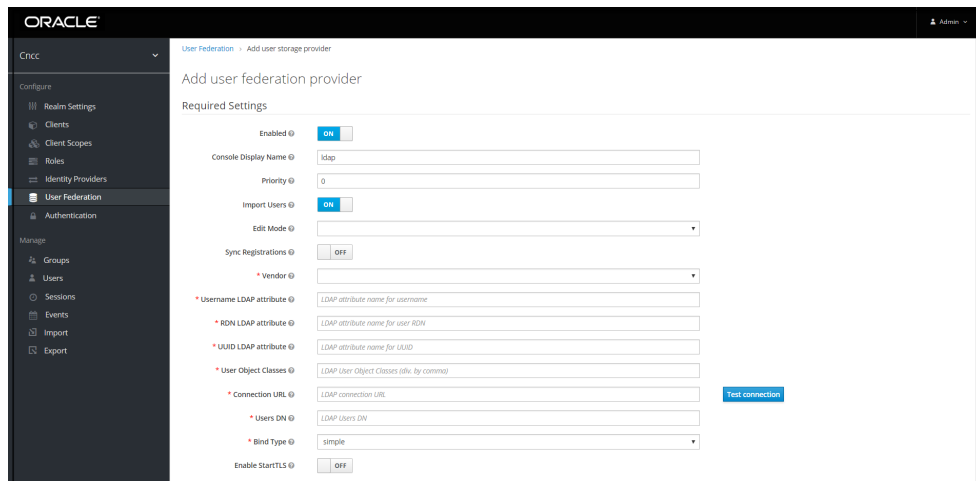


**Figure 4-15 User Federation Screen**



- From the drop-down list in the **User federation** screen select **ldap**, the **Add user federation provider** screen appears.

**Figure 4-16 Add user federation provider screen**



- Enter the values for the following fields:
  - Console Display Name:** Enter the display name.
  - Edit Mode:** Select **READ\_ONLY**.
  - Vendor:** Enter the LDAP server provider name for the company.

 **Note:**

This usually fill the defaults for many of the fields. But in case user have a different setup than the defaults, the correct values must be provided. Current set up is **Spring embedded LDAP**, so select the last option "Other" from the drop-down list.

**Figure 4-17 User Federation**

Settings Mappers

Required Settings

Provider ID 7b2b7879-8f07-4c3a-8f27-3fbf2d33432

Enabled ☒

Console Display Name ldap

Priority 0

Import Users ☒

Edit Mode READ\_ONLY

Sync Registrations ☐

Vendor Other

Username LDAP attribute uid

RDN LDAP attribute uid

UUID LDAP attribute uid

User Object Classes LDAP User Object Classes (div. by comma)

Connection URL LDAP connection URL

Users DN ou=people,dc=oracle,dc=org

Custom User LDAP Filter LDAP Filter

Test connection

- In most case the **UUID LDAP attribute** value set as "entryUUID". If you do not have a suitable value, use an alternate unique identifier.
  - The default setting for **Import Users** is 'ON'. Change it to 'OFF' to disable user sync.
  - Provide company LDAP server details. The same as provided for *ldap-ldif* file, that is, the connection url (hostname prefixed with *ldap://* or when LDAP Secure connection enabled (LDAPS) hostname prefix should be *ldaps://*), the port.
  - If the LDAP is secured then select 'simple' from the **Bind Type** drop-down and provide the admin bind username and password else select **Bind Type** as "none". Sample data for the field **Bind DN** "cn=admin,dc=oracle,dc=org".
  - Click "Test Connection" and "Test Authentication".
  - Set Cache policy as "NO\_CACHE".
5. After filling the required fields, the screen appears as below. Click **Save**.

**Figure 4-18 User Federation**

User Federation

Authentication

Manage

Groups

Users

Sessions

Events

Import

Export

Console Display Name ldap

Priority 0

Import Users ☒

Edit Mode READ\_ONLY

Sync Registrations ☐

Vendor Other

Username LDAP attribute uid

RDN LDAP attribute uid

UUID LDAP attribute uid

User Object Classes inetOrgPerson, organizationalPerson, person, top

Connection URL ldaps://10.75.1.75:199:30899

Users DN ou=people,dc=oracle,dc=org

Custom User LDAP Filter LDAP Filter

Search Scope One Level

Bind Type simple

Bind DN cn=admin,dc=oracle,dc=org

Bind Credential \*\*\*\*\*

Test connection

Test authentication

6. New buttons (**Synchronize changed users**, **Synchronize all users**, **Remove imported**, **Unlink users**) appears next to the **Save** and **Cancel**.

**Figure 4-19 User Federation**

The screenshot shows the 'User Federation' configuration page. It includes sections for 'Use Truststore SPI', 'Connection Pooling', 'Kerberos Integration', 'Sync Settings', and 'Cache Settings'. The 'Synchronize all users' button is highlighted in blue.

7. To import users to CNCC IAM, Click **Synchronize all users**. If the synchronization is successful, the success message appears. If the synchronization fails, see the troubleshooting section in *Oracle Communication Cloud Native Core Console Installation and Upgrade Guide* and also look at **cncc-iam logs** in debug mode. See [CNC Console Logs](#) for further details.

**Figure 4-20 User Federation**

The screenshot shows the 'User Federation' configuration page with a success message at the top: 'Success! Sync of users finished successfully. Synchronization ignored as it's already in progress.' The 'Synchronize all users' button is highlighted in blue.

8. The user can view the imported users by clicking **Users** under **Manage** in the left pane and click **View all users** in the right pane. The list of users and details appears.

Figure 4-21 User Screen

|                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                            |          |       |           |              |         |             |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------|-------|-----------|--------------|---------|-------------|--------|
| <div>Configure</div> <ul style="list-style-type: none"> <li>Realm Settings</li> <li>Clients</li> <li>Client Scopes</li> <li>Roles</li> <li>Identity Providers</li> <li>User Federation</li> <li>Authentication</li> </ul> <div>Manage</div> <ul style="list-style-type: none"> <li>Groups</li> <li><b>Users</b></li> <li>Sessions</li> <li>Events</li> <li>Import</li> <li>Export</li> </ul> | Lookup                                                                                     |          |       |           |              |         |             |        |
|                                                                                                                                                                                                                                                                                                                                                                                              | <div>Search...</div> <div>View all users</div> <div>Unlock users</div> <div>Add user</div> |          |       |           |              |         |             |        |
|                                                                                                                                                                                                                                                                                                                                                                                              | ID                                                                                         | Username | Email | Last Name | First Name   | Actions |             |        |
|                                                                                                                                                                                                                                                                                                                                                                                              | 2290ccb5-b8e9-406f-a8b7-...                                                                | admin    |       | Alex      | Ben Alex     | Edit    | Impersonate | Delete |
|                                                                                                                                                                                                                                                                                                                                                                                              | b6c14232-1115-454a-a409-...                                                                | ben      |       | Hamilton  | Bob Hamilton | Edit    | Impersonate | Delete |
|                                                                                                                                                                                                                                                                                                                                                                                              | 1a5ac7a0-d0dc-44c3-ba9e-...                                                                | bob      |       | Smeth     | Joe Smeth    | Edit    | Impersonate | Delete |
|                                                                                                                                                                                                                                                                                                                                                                                              | 3a7ff906-2b93-49d8-b0cd-7...                                                               | joe      |       |           |              |         |             |        |

- The user can remove the imported users by clicking the **Remove imported** and set **Import Users** to **OFF** to ensure that the users are not imported to CNCC IAM on your subsequent logins.

Figure 4-22 User Screen

Search Scope

One Level

Success! Remove imported users finished successfully.

Validate Password Policy

OFF

Trust Email

OFF

Use Truststore SPI

Only for Idps

Connection Pooling

ON

Connection Pooling Settings

Connection Timeout

Connection Timeout

Read Timeout

Read Timeout

Pagination

ON

Kerberos Integration

Allow Kerberos authentication

OFF

Use Kerberos For Password Authentication

OFF

Sync Settings

Batch Size

1000

Periodic Full Sync

OFF

Periodic Changed Users Sync

OFF

Cache Settings

Cache Policy

NO\_CACHE

Save

Cancel

Synchronize changed users

Synchronize all users

Remove imported

Unlink users

**Note:**

The steps 8 and 9 are optional.

## Grouping the LDAP Mapper and Assigning the Roles

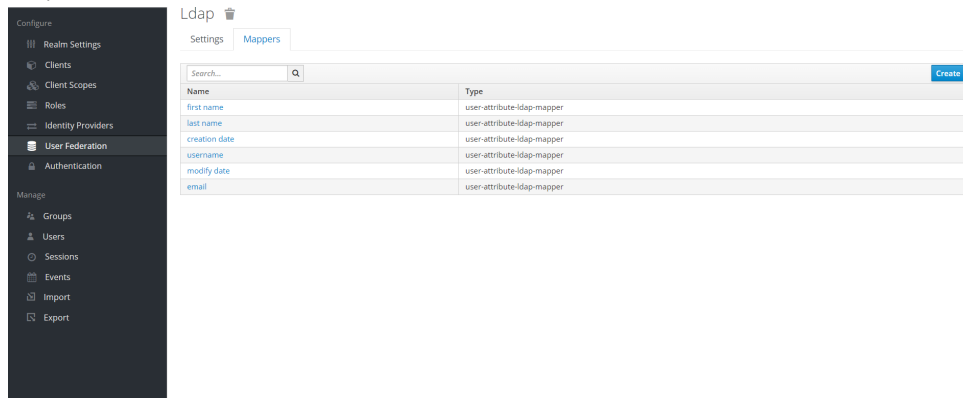
When an LDAP Federation provider is created, CNC Console-IAM provides a set of built-in mappers for this provider. User can change the set and create a new mapper or update and delete existing ones.

### Group Mapper

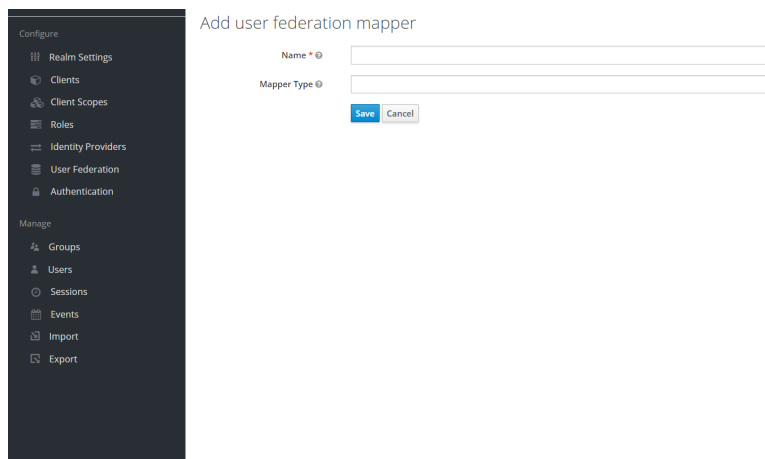
The Group Mapper allows you to configure group mappings from LDAP into cncc-iam group mappings. Group mapper can be used to map LDAP groups from a particular branch of an LDAP tree into groups in cncc-iam. It also propagates user-group mappings from LDAP into user-group mappings in cncc-iam.

Perform the following procedure to add the group mapper and assign the roles:

1. Click **Configure** and click **User Federation**. Click **Ldap** and select the **Mappers** tab, and click **Create**.



2. The **Add User federation mapper** page appears. Give an appropriate name for the field **Name**. Select 'group-ldap-mapper' as **Mapper Type** drop down menu. Click **Save**.



The following screen appears.

Configuration form for a group mapper:

- Name: group-mapper
- Mapper Type: group-ldap-mapper
- LDAP Groups DN: ou=groups,dc=oracle,dc=org
- Group Name LDAP Attribute: cn
- Group Object Classes: groupOfUniqueNames, top
- Preserve Group Inheritance: ON
- Ignore Missing Groups: OFF
- Membership LDAP Attribute: uniqueMember
- Membership Attribute Type: DN
- Membership User LDAP Attribute: uid
- LDAP Filter:
- Mode: READ\_ONLY
- User Groups Retrieve Strategy: LOAD\_GROUPS\_BY\_MEMBER\_ATTRIBUTE
- Member-Of LDAP Attribute: memberOf
- Mapped Group Attributes:

**Note:**

When selected, default values will be set by cncc-iam. But you need change some values based on your ldap records.

- Click **Save**. New buttons appears next to the **Save** and **Cancel**. They are **Synchronize LDAP Groups to Keycloak** and **Synchronize Keycloak Groups to LDAP**.

Configuration form with additional buttons:

- Buttons at the bottom: Save, Cancel, Sync LDAP Groups To Keycloak, Sync Keycloak Groups To LDAP

- Click **Synchronize LDAP Groups to Keycloak**. The success message appears with the number of groups imported and so on.

### Note:

If this step fails then you might need to check to the trouble shooting section and look at cncc-iam logs in debug mode. See the *Oracle Communication Cloud Native Core Console Troubleshooting Guide* and see [CNC Console Logs](#) for further details.

5. Select the **Groups** in the left pane and click the **View all groups** in the right pane.

6. Click any group and click **Edit**. The following tabs appear: **Settings**, **Attributes**, **Role Mappings**, and **Members**.

- Select **Role Mapping** tab to see a list of roles that are pre-defined in cncc-iam.
- Select one or more roles from **Available Roles** and assign it to the group. For example, If group "admin" is assigned with role "ADMIN", it means that any user which belongs to the admin group will be automatically assigned the admin role which allows him to access all the NF resource of CNC console that it supports.
- Once done you can test authentication and authorization by logging into CNC Console GUI.

 **Note:**

- When the password of user is updated from CNCC-IAM and sent to LDAP, it is always sent in plain-text. This is different from updating the password to built-in CNCC-IAM database, when the hashing and salting is applied to the password before it is sent to DB. In the case of LDAP, the CNCC-IAM relies on the LDAP server to provide hashing and salting of passwords.
- Most of LDAP servers (Microsoft Active Directory, RHDS, FreeIPA) provide this by default. Some others (OpenLDAP, ApacheDS) may store the passwords in plain text by default and user need to explicitly enable password hashing for them.



# 5

## Generating Access Tokens and Accessing NF Resources

CNC Console provides a secure option for direct API access of NF resources through CNCC IAM access token. This chapter describes how to generate and refresh access tokens through CNC Console IAM REST API. You can request access tokens through the CNC Console IAM REST API by using curl or Postman. Once the access token is granted, CNC Console will be able to access the required NF resources.

### Access Token Generation

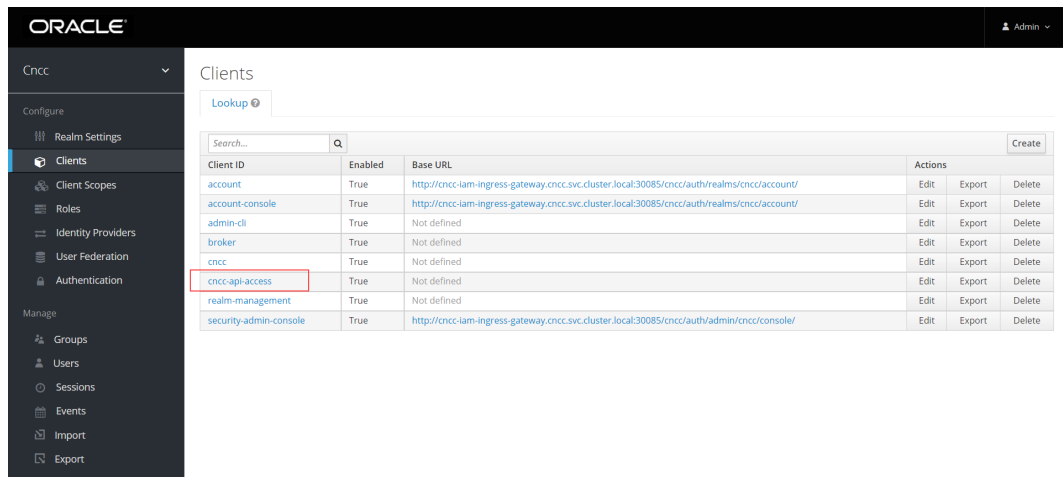
CNCC IAM provides a REST API for generating and refreshing access tokens.

You must use *cncc-api-access* client for accessing NF resources through REST APIs. For security reasons, **Direct Access Grants Enabled** is set to OFF by default.

Perform the following steps to set **Direct Access Grants Enabled** to ON.

1. Log in to CNC IAM with valid credentials.
2. Click **Cncc** realm.
3. On the right pane, click **Clients**. The following screen appears:

Figure 5-1 Clients



| Client ID              | Enabled | Base URL                                                                                    | Actions            |
|------------------------|---------|---------------------------------------------------------------------------------------------|--------------------|
| account                | True    | http://cncc-iam-ingress-gateway.cncc.svc.cluster.local:30085/cncc/auth/realms/cncc/account/ | Edit Export Delete |
| account-console        | True    | http://cncc-iam-ingress-gateway.cncc.svc.cluster.local:30085/cncc/auth/realms/cncc/account/ | Edit Export Delete |
| admin-cli              | True    | Not defined                                                                                 | Edit Export Delete |
| broker                 | True    | Not defined                                                                                 | Edit Export Delete |
| cncc                   | True    | Not defined                                                                                 | Edit Export Delete |
| cncc-api-access        | True    | Not defined                                                                                 | Edit Export Delete |
| realm-management       | True    | Not defined                                                                                 | Edit Export Delete |
| security-admin-console | True    | http://cncc-iam-ingress-gateway.cncc.svc.cluster.local:30085/cncc/auth/admin/cncc/console/  | Edit Export Delete |

4. Click **cncc-api-access** the following screen appears.

The screenshot shows the Oracle Cloud IAM console interface. On the left is a navigation menu with options like 'Clients', 'Client Scopes', 'Roles', etc. The main panel displays the configuration for a client named 'cncc-api-access'. The 'Settings' tab is active. At the bottom of the settings, the 'Direct Access Grants Enabled' toggle is highlighted with a red rectangular box and is currently set to 'ON'.

**5. Set the Direct Access Grants Enabled to ON and Save.**

Perform the following procedure to **generate the access tokens**:

1. Acquire an access token from CNC Console IAM by sending a POST request to the following URL:

```
http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-port}/cncc/auth/realms/${realm}/protocol/openid-connect/token
```

Example:

```
http://10.75.182.79:8080/cncc/auth/realms/cncc/protocol/openid-connect/token
```

2. The body of the request must be *x-www-form-urlencoded* as follows:

```
'client_id': 'your_client_id',
'username': 'your_username',
'password': 'your_password',
'grant_type': 'password'
```

Example:

```
'client_id': 'cncc-api-access',
'username': 'user1',
'password': 'User123!',
'grant_type': 'password'
```

3. The Curl Command to access the token is as follows:

```
curl --location --request POST 'http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-port}/cncc/auth/realms/cncc/protocol/openid-connect/token' \
--header 'Content-Type: application/x-www-form-urlencoded' \
--data-urlencode 'grant_type=password' \
--data-urlencode 'username=user1' \
--data-urlencode 'password=User123!' \
--data-urlencode 'client_id=cncc-api-access'
```





**Note:**

M-CNCC IAM IP/FQDN is used to request access token and M-CNCC IAM IP/FQDN which is specified in *custom-cncc\_values.yaml* should be the same.

## Refresh the Access Tokens

Perform the following procedure to refresh the access tokens:

If the `access_token` has expired, it can be refreshed by sending a POST request to the same URL as above; but must have the refresh token instead of username and password. The format is as follows:

```
'client_id': 'your_client_id',
'refresh_token': refresh_token_from_previous_request,
'grant type': 'refresh token'
```

Example:

```
'client_id': 'cncc-api-access',  
'refresh_token':  
'eyJhbGciOiJIUzI1NiIsInR5cCI6IkpZYTEyYjcyZi00MWE1LT  
RkMTETyJmZS01NDZjZGU5NjY2MTUifQ.eyJqdGkiOiJmYjAwZTY2OC0xZTkYLTRlMTUtYT  
VlMS1jZjgxNDFlMDMiLCJleHAiOjE1ODQzMDE3MzUsIm5iziI6MCwiaWF0IjoxtNgON  
jk5OTM1Ljcpc3MiOiJodHRwOi8vMTAuNzUuMjEyZDcwMDI0L2NuY2MvYXV0aC9yZWFs  
bXMvY25jYyIsImF1ZCI6Imh0dHA6Ly8xcMc4NS4yMTMuNjA6MzAwMjQvY25jYy9hdXR0L3J  
lYWxtcy9jbWljbmNjIiwic3ViOiJoImDeYzTQyNjktNmM2MC00MzViLWFWMTQtMmFiNzZiYzZlNT  
IzIiwidHlwIjoiUmVmcmVzaCIsImF6ciI6ImFwaSluYXRld2F5IiwiaXYXV0aF90aWllIjowL  
CjZzZXNzaW9uX3N0YXRlIjoiNmM0MmQ5Nzg0MTRhYy00NzkzLWExZTMtNzg5Y2ZiZGIyYjco  
IiwicmVhbGlzfWNjZHNzIjp7InJvbGVzIjpbIlBDRL9SRUFElwiUENGXldSSVRFIiwuON  
QXlJFQUQiLCJvZmZsaW5lX2FjY2VzcyIsIk5SRl9XUklURSI6ImFETUlOIiwidWlhX2F1dG  
hvcmcl6YXRpb24iLCJOuKZFukVBRCIsIlNDUF9XUklURSIdSwicmVzb3VyY2VfYWNjaXZNzi  
jp7ImFjY291bnQiOnsicm9sZXMIolsibWFuYXdllWFjY291bnQiLCJtYW5hZDUtYWNjaXZ3Vu  
dClSaW5rcyIsInZpZXctCHJvZmlsZSJdfX0sInNjb3BlIjoizW1haWwgchHJVzmlsZSJ9.l8  
w3jlmgNgbIKSYdvCmJQfg6yIfkdKnMFb5vKPF-ZIg',  
'grant_type': 'refresh token'
```

In response, you will receive a new **access token** and **refresh token**.

## NF API Access

Perform the following procedure to access NF Resources APIs:

To access NF Resources, you must use the access token in every request to an NF resource by placing it in the Authorization header.

The following headers are to be included while sending API request:

- Authorization : The access token should be used in every request to a NF resource by placing it in the *Authorization* header
- oc-cncc-id : M-CNCC uses the oc-cncc-id header to find the agent or master owning the instance.

- `oc-cncc-instance-id` : A-CNCC Core (or M-CNCC Core ) uses the `oc-cncc-instance-id` header to find the NF instance for routing.

Following headers needs to be passed in curl/postman request while accessing NF resource:

```
GET : http://${cncc-mcore-ingress-external-ip}:${cncc-mcore-ingress-service-port}/<NF API URI>
```

```
headers: {  
  'Authorization': 'Bearer' + access_token  
  'oc-cncc-id': 'oc-cncc-id value"  
  'oc-cncc-instance-id': 'oc-cncc-instance-id value"  
}
```

**Example:** While accessing SCP Canary Release API following headers needs to be passed in curl/postman request while accessing NF resource:

```
GET : http://${cncc-mcore-ingress-external-ip}:${cncc-mcore-ingress-service-port}/ocscp/scpc-configuration/v1/canaryrelease
```

```
headers: {  
  'Authorization': 'Bearer' + access_token  
  'oc-cncc-id': 'Cluster2"  
  'oc-cncc-instance-id': 'Cluster2-scp-instancel"  
}
```

# 6

## REST APIs and HTTP Response Codes

The following are the supported REST APIs and HTTP Response Codes:

### Generate access token

CNC Console uses `Generate access token` REST API to generate the access token.

**Type:** POST

**URI:**

`POST /{realm}/protocol/openid-connect/token`

**Table 6-1 Request Body Parameters**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)/<br>Conditional(C) | Description                          |
|------------|-----------|-------------------------------------------------|--------------------------------------|
| client_id  | string    | M                                               | Id that has been given to the client |
| username   | string    | M                                               | Login Username                       |
| password   | string    | M                                               | Login Password                       |
| grant_type | string    | M                                               | Type of Authorization used           |

**Sample URI:**

`http://{cncc-iam-ingress-extrenal-ip}:{cncc-iam-ingress-service-port}/cncc/auth/realms/master/protocol/openid-connect/token`

**Example curl command:**

```
curl --location --request POST 'http://{cncc-iam-ingress-extrenal-ip}:{cncc-iam-ingress-service-port}/cncc/auth/realms/master/protocol/openid-connect/token' \
--header 'Content-Type: application/x-www-form-urlencoded' \
--data-urlencode 'client_id=admin-cli' \
--data-urlencode 'username=admin' \
--data-urlencode 'password=xxxxxx' \
--data-urlencode 'grant_type=password'
```

**Example of the Request Body**

The following is the example of the request body:

```
{
  "client_id": "admin-cli",
  "username": "admin",
  "password": "xxxxxxx",
  "grant_type": "password",
}
```

### Example of the Response Body

The following is the example of the response body:

```
{
  "access_token": "eyJhbGciOiJIUzI1NiIsInR5cCIgOiAiSldUIiwia2lkIjEiMfag",
  "expires_in": 60,
  "refresh_expires_in": 1800,
  "refresh_token":
"eyJhbGciOiJIUzI1NiIsInR5cCIgOiAiSldUIiwia2lkIjEiMfag"
  "not-before-policy": 0,
  "session_state": "52dd8d7c-f8d9-4009-9c34-0262bb7d3722",
  "scope": "email profile"
}
```

### Table 6-2 Supported Response Codes

| Code             | Description                         |
|------------------|-------------------------------------|
| 200 OK           | Get users. Returns a list of users. |
| 401 Unauthorised | Missing Authentication              |
| 404 Not Found    | Realm not found                     |

## Create a new user

CNC Console uses `Create a new user` REST API to create a new user. The user name must be unique.

**Type:** POST

**URI:**

POST /{realm}/users

**Table 6-3 Request Body Parameters**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)/<br>Conditional(C) | Description                                                     |
|------------|-----------|-------------------------------------------------|-----------------------------------------------------------------|
| enabled    | boolean   | M                                               | Set to true to enable the user , an disabled user can not login |
| username   | string    | M                                               | Name of the new user                                            |

Sample URI:

```
http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-port}/cncc/  
auth/realms/cncc/users
```

Example curl command:

```
{curl --location --request POST 'http://${cncc-iam-ingress-extrenal-ip}:${  
{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/users' \  
--header 'Authorization: Bearer <token>' \  
--header 'Content-Type: application/json' \  
--data-raw '{  "enabled": true,  
    "username": "user6"}'
```

### Example of the Request Body

The following is the example of the request body:

```
{  "enabled": true,  
    "username": "user6"}
```

### Example of the Response Code

The following is the example of the response code:

201 Created

**Table 6-4 Supported Response Codes**

| Code             | Description                                                    |
|------------------|----------------------------------------------------------------|
| 201 Created      | Create a new user.Username must beunique.<br>{Requirespayload} |
| 401 Unauthorised | MissingAuthentication                                          |
| 404 Not Found    | Realm not found                                                |
| 409 Conflict     | User exists withsame username                                  |

## Get users



CNC Console uses `Get users` REST API to return a list of users.

**Type:** GET

**URI:**

```
GET /{realm}/users
```

**Sample URI:**

```
http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-  
port}/cncc/auth/realms/cncc/users
```

**Example curl command:**

```
curl --location --request GET 'http://${cncc-iam-ingress-extrenal-ip}:$  
{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/users' \  
--header 'Authorization: Bearer <token>'
```

### Example of the Response Body

The following is the example of the response body:

```
[  
  {  
    "id": "48cf183c-d3e4-4917-b3e5-5e01109f534c",  
    "createdTimestamp": 1659952887114,  
    "username": "user",  
    "enabled": true,  
    "emailVerified": false,  
    "access": {  
      "manageGroupMembership": true,  
      "view": true,  
      "mapRoles": true,  
      "impersonate": true,  
      "manage": true  
    }  
  },  
  ....  
]
```

**Table 6-5 Supported Response Codes**

| Code             | Description                                                                 |
|------------------|-----------------------------------------------------------------------------|
| 200 OK           | Get users. Returns a list of users, filtered according to query parameters. |
| 401 Unauthorised | Missing Authentication                                                      |
| 404 Not Found    | Realm not found                                                             |

## Get single user

CNC Console uses `Get single user` REST API to get individual user details.

**Type:** GET

**URI:**

```
GET /{realm}/users/{id}
```

**Table 6-6 Request Path Parameter**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)/<br>Conditional(C) | Description    |
|------------|-----------|-------------------------------------------------|----------------|
| id         | string    | M                                               | Id of the user |

Sample URI:

```
http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-port}/cncc/  
auth/admin/realms/cncc/users/2a3113c0-48de-46d9-a563-6ce95eabb4e4
```

Example curl command:

```
curl --location --request GET 'http://10.75.241.198:30085/cncc/auth/admin/  
realms/cncc/users/754d6f6b-4ccb-44f1-abf1-00d717885dbe' \  
--header 'Authorization: Bearer <token>'
```

### Example of the Response Body

The following is the example of the response body:

```
{  
  "id": "754d6f6b-4ccb-44f1-abf1-00d717885dbe",  
  "createdTimestamp": 1661232491550,  
  "username": "ul",  
  "enabled": true,  
  "totp": false,  
  "emailVerified": false,  
  "disableableCredentialTypes": [],  
  "requiredActions": [],  
}
```

```
"notBefore": 0,  
"access": {  
  "manageGroupMembership": true,  
  "view": true,  
  "mapRoles": true,  
  "impersonate": true,  
  "manage": true  
}  
}
```

**Table 6-7 Supported Response Codes**

| Code             | Description                                                                |
|------------------|----------------------------------------------------------------------------|
| 200 OK           | Get users. Returns a list of users, filtered according to queryparameters. |
| 401 Unauthorised | Missing Authentication                                                     |
| 404 Not Found    | Realm not found                                                            |
| 404 Not Found    | User not found                                                             |

## Delete the User

CNC Console uses Delete the User REST API to delete the user.

**Type:** DELETE

**URI:**

```
DELETE /{realm}/users/{id}
```

**Table 6-8 Request Path Parameters**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)<br>/<br>Conditiona<br>l(C) | Description    |
|------------|-----------|---------------------------------------------------------|----------------|
| id         | string    | M                                                       | Id of the user |

Sample URI:

```
http://{cncc-iam-ingress-extrenal-ip}:{cncc-iam-ingress-service-  
port}/cncc/auth/admin/realms/cncc/users/2a3113c0-48de-46d9-  
a563-6ce95eabbae4
```

Example curl command:

```
curl --location --request DELETE 'http://{cncc-iam-ingress-extrenal-  
ip}:{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/users/
```

```
7a2d3608-95b2-4a88-8efb-dad48e7778e2' \--header 'Authorization: Bearer  
<token>'
```

### Example of the Response Code

The following is the example of the response code:

```
204 No Content
```

**Table 6-9 Supported Response Codes**

| Code             | Description            |
|------------------|------------------------|
| 204 No Content   | Delete the user.       |
| 401 Unauthorised | Missing Authentication |
| 404 Not Found    | Realm not found        |
| 404 Not Found    | User not found         |

## Set up a New Password for the User

CNC Console uses Setup a New Password for the User REST API to set up a new password for the user.

**Type:** PUT

**URI:**

```
PUT /{realm}/users/{id}/reset-password
```

**Table 6-10 Request Body Parameters**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)/<br>Conditional(C) | Description                  |
|------------|-----------|-------------------------------------------------|------------------------------|
| type       | string    | M                                               | Type                         |
| value      | Integer   | M                                               | Value of new password        |
| temporary  | Boolean   | O                                               | To validate temporary or not |

**Table 6-11 Request Path Parameter**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)/<br>Conditional(C) | Description    |
|------------|-----------|-------------------------------------------------|----------------|
| id         | string    | M                                               | Id of the user |

### Sample URI:

```
http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-
port}/cncc/auth/admin/realms/cncc/users/2a3113c0-48de-46d9-
a563-6ce95eabbae4/reset-password
```

### Example curl command:

```
curl --location --request PUT 'http://${cncc-iam-ingress-extrenal-ip}:$
{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/users/
754d6f6b-4ccb-44f1-abf1-00d717885dbe/reset-password' \
--header 'Authorization: Bearer <token>' \
--header 'Content-Type: application/json' \
--data-raw
'{"type":"password","value":"Password1#","temporary":false}'
```

### Example of the Request Body

The following is the example of the request body:

```
{
  "type":"password",
  "value":"Password1#",
  "temporary":false
}
```

### Example of the Response Code

The following is the example of the response code:

```
204 No Content
```

**Table 6-12 Supported Response Codes**

| Code             | Description                                                |
|------------------|------------------------------------------------------------|
| 204 No Content   | Set up a newpassword for the CNCC user {Requires payload}. |
| 401 Unauthorised | Missing Authentication                                     |
| 404 Not Found    | Realm not found                                            |
| 404 Not Found    | User not found                                             |
| 400 Bad Request  | Invalid password                                           |

# Get Realm Level Roles

CNC Console uses Get Realm-level Roles REST API to get realm-level roles.

**Type:** GET

**URI:**

GET /{realm}/roles

**Sample URI:**

http://{cncc-iam-ingress-extrenal-ip}:{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/roles

**Example curl command:**

```
curl --location --request GET 'http://{cncc-iam-ingress-extrenal-ip}:{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/roles' \
--header 'Authorization: Bearer <token>'
```

## Example of the Response Body

The following is the example of the response body:

```
[
  {
    "id": "fc5006e0-3927-4034-a01f-af70d779f1f8",
    "name": "ADMIN",
    "description": "Has access to all NF resources and can perform CRUD operations",
    "composite": true,
    "clientRole": false,
    "containerId": "cncc"
  },
  {
    "id": "1acd6c4a-115a-44ae-bf5f-139577f9df0a",
    "name": "POLICY_WRITE",
    "description": "Has access to only POLICY resources and can perform CRUD operation on Managed Objects of POLICY.",
    "composite": true,
    "clientRole": false,
    "containerId": "cncc"
  },
  ...]
```

**Table 6-13 Supported Response Codes**

| Code   | Description                    |
|--------|--------------------------------|
| 200 OK | Generate Get Realm Level Roles |

## Get Realm-level Role Mappings

CNC Console uses Get Realm-level Role Mappings REST API to get realm-level role mappings for a specific user id .

**Type:** GET

**URI:**

GET `/ {realm}/users/{id}/role-mappings/realm`

**Table 6-14 Request Path Parameters**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)<br>/ Conditional(C) | Description             |
|------------|-----------|--------------------------------------------------|-------------------------|
| id         | string    | M                                                | ID assigned to the user |

**Sample URI:**

`http://{cncc-iam-ingress-extrenal-ip}:{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/users`

**Example curl command:**

```
curl --location --request GET 'http://{cncc-iam-ingress-extrenal-ip}:{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/roles' \
--header 'Authorization: Bearer <token>'
```

### Example of the Response Body

The following example shows the contents of the response body in JSON format:

```
[
  {
    "id": "fc5006e0-3927-4034-a01f-af70d779f1f8",
    "name": "ADMIN",
    "description": "Has access to all NF resources and can perform
CRUD operations",
    "composite": true,
    "clientRole": false,
    "containerId": "cncc"
  },
]
```

```
{
  "id": "1acd6c4a-115a-44ae-bf5f-139577f9df0a",
  "name": "POLICY_WRITE",
  "description": "Has access to only POLICY resources and can perform
CRUD operation on Managed Objects of POLICY.",
  "composite": true,
  "clientRole": false,
  "containerId": "cncc"
},
...]
```

**Table 6-15 Supported Response Codes**

| Code             | Description                                           |
|------------------|-------------------------------------------------------|
| 200 OK           | Get realm-level role mappings for a specific user id. |
| 401 Unauthorised | Missing Authentication                                |
| 404 Not Found    | Realm not found                                       |
| 404 Not Found    | User not found                                        |

## Add Realm-level Role Mappings to the User

CNC Console uses Add Realm-level Role Mappings to the User REST API to add realm-level role mappings to the user.

**Type:**POST

**URI:**

POST/{realm}/users/{id}/role mappings/ realm

**Table 6-16 Request Body Parameters**

| Field Name  | Data Type | Mandatory(M)/<br>Optional(O)/<br>Conditional(C) | Description                                               |
|-------------|-----------|-------------------------------------------------|-----------------------------------------------------------|
| description | string    | M                                               | Description of the role                                   |
| name        | string    | M                                               | Name of the role                                          |
| composite   | boolean   | M                                               | To check if the role has another realm role mapped to it  |
| clientRole  | boolean   | M                                               | To check if the role has another client role mapped to it |
| containerId | string    | M                                               | ID of the container where the role is present             |
| id          | string    | M                                               | ID assigned to the role                                   |



**Table 6-17 Request Path Parameter**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)<br>/<br>Conditiona<br>l(C) | Description    |
|------------|-----------|---------------------------------------------------------|----------------|
| id         | string    | M                                                       | Id of the user |

Sample URI:

```
http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-  
port}/cncc/auth/admin/realms/cncc/users/754d6f6b-4ccb-44f1-  
abf1-00d717885dbe/role-mappings/realm
```

Example curl command:

```
curl --location --request POST 'http://${cncc-iam-ingress-extrenal-  
ip}:${cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/users/  
754d6f6b-4ccb-44f1-abf1-00d717885dbe/role-mappings/realm' \  
--header 'Authorization: Bearer <token>' \  
--header 'Content-Type: application/json' \  
--data-raw '[  
  {  
    "id": "c47ba6c5-4cc8-4b59-96bd-2ef7e57121bd",  
    "name": "BSF_READ",  
    "description": "Has access to only BSF resources and can only perform  
    READ Managed Objects of BSF.",  
    "composite": true,  
    "clientRole": false,  
    "containerId": "cncc"  
  }  
]'
```

### Example of the Request Body

The following is the example of the request body:

```
[  
  {  
    "id": "c47ba6c5-4cc8-4b59-96bd-2ef7e57121bd",  
    "name": "BSF_READ",  
    "description": "Has access to only BSF resources and can only perform  
    READ Managed Objects of BSF.",  
    "composite": true,  
    "clientRole": false,  
    "containerId": "cncc"  
  }  
)
```

### Example of the Response Code

The following is the example of the response code:

```
204 No Content
```

**Table 6-18 Supported Response Codes**

| Code             | Description                                                |
|------------------|------------------------------------------------------------|
| 204 No Content   | Set up a newpassword for the CNCC user {Requires payload}. |
| 401 Unauthorised | Missing Authentication                                     |
| 404 Not Found    | Realm not found                                            |
| 404 Not Found    | User not found                                             |
| 404 Not Found    | Role not found                                             |

## Remove All User Sessions Associated with the User

CNC Console uses Remove All User Sessions Associated with the User REST API to remove all user sessions associated with the user.

**Type:**POST

**URI:**

```
POST /{realm}/users/{id}/logout
```

**Table 6-19 Request Path Parameter**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)/<br>Conditional(C) | Description    |
|------------|-----------|-------------------------------------------------|----------------|
| id         | string    | M                                               | Id of the user |

Sample URI:

```
http://{cncc-iam-ingress-extrenal-ip}:{cncc-iam-ingress-service-port}/cncc/  
auth/admin/realms/cncc/users/48cf183c-d3e4-4917-b3e5-5e01109f534c/logout
```

Example curl command:

```
curl --location --request POST '${cncc-iam-ingress-extrenal-ip}:${cncc-iam-  
ingress-service-port}/cncc/auth/admin/realms/cncc/users/48cf183c-d3e4-4917-  
b3e5-5e01109f534c/logout' \  
--header 'Authorization: Bearer <token>'
```

### Example of the Response Code

The following is the example of the response code:

```
204 No Content
```

**Table 6-20 Supported Response Codes**

| Code             | Description                                       |
|------------------|---------------------------------------------------|
| 204 No Content   | Remove all user sessions associated with the user |
| 401 Unauthorised | Missing Authentication                            |
| 404 Not Found    | Realm not found                                   |
| 404 Not Found    | User not found                                    |

## Get the Client details

CNC Console uses `Get the Client details` REST API to get clients belonging to the realm.

**Type:** GET

**URI:**

```
GET/{realm}/clients
```

**Sample URI:**

```
http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-  
port}/cncc/auth/admin/realms/cncc/clients
```

**Example curl command:**

```
curl --location --request GET '${cncc-iam-ingress-extrenal-ip}:${cncc-  
iam-ingress-service-port}/cncc/auth/admin/realms/cncc/clients' \--  
header 'Authorization: Bearer <token>'
```

### Example of the Response Body

The following example shows the contents of the response body in JSON format:

```
[  
  {  
    "id": "b7fa17bd-135f-441b-a5f2-1ea4897e04fc",  
    "clientId": "account",  
    "name": "${client_account}",  
    "rootUrl": "${authBaseUrl}",  
    "baseUrl": "/realms/cncc/account/",  
    "surrogateAuthRequired": false,  
    "enabled": true,  
    "alwaysDisplayInConsole": false,  
    "clientAuthenticatorType": "client-secret",  
    "redirectUris": [  
      ]  
    ]  
  ]  
]
```

```
        "/realms/cncc/account/*"
    ],
    "webOrigins": [],
    "notBefore": 0,
    "bearerOnly": false,
    "consentRequired": false,
    "standardFlowEnabled": true,
    "implicitFlowEnabled": false,
    "directAccessGrantsEnabled": false,
    "serviceAccountsEnabled": false,
    "publicClient": false,
    "frontchannelLogout": false,
    "protocol": "openid-connect",
    "attributes": {},
    "authenticationFlowBindingOverrides": {},
    "fullScopeAllowed": false,
    "nodeReRegistrationTimeout": 0,
    "defaultClientScopes": [
        "web-origins",
        "roles",
        "profile",
        "email"
    ],
    "optionalClientScopes": [
        "address",
        "phone",
        "offline_access",
        "microprofile-jwt"
    ],
    "access": {
        "view": true,
        "configure": true,
        "manage": true
    }
},
```

## Update the Client

CNC Console uses Update the Client REST API to update the client. This API can be used to update the redirect URI.

**Type:**PUT

**URI:**

PUT/{realm}/clients/{id}

**Table 6-21 Request Body Parameters**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)<br>/<br>Conditiona<br>l(C) | Description                                                   |
|------------|-----------|---------------------------------------------------------|---------------------------------------------------------------|
| clientId   | string    | M                                                       | ID given to the client which is referenced in URIs and tokens |
| rootUri    | string    | M                                                       | Url for redirection                                           |

**Table 6-22 Request Path Parameter**

| Field Name | Data Type | Mandatory(M)/<br>Optional(O)<br>/<br>Conditiona<br>l(C) | Description      |
|------------|-----------|---------------------------------------------------------|------------------|
| id         | string    | M                                                       | ID of the client |

Sample URI:

```
http://${cncc-iam-ingress-extrenal-ip}:${cncc-iam-ingress-service-  
port}/cncc/auth/admin/realms/cncc/users/clients/9faaa454-  
bbaf-4af0-91dd-2d01aa82776d
```

Example curl command:

```
curl --location --request PUT 'http://${cncc-iam-ingress-extrenal-ip}:$  
{cncc-iam-ingress-service-port}/cncc/auth/admin/realms/cncc/clients/  
9faaa454-bbaf-4af0-91dd-2d01aa82776d' \  
--header 'Authorization: Bearer <token>' \  
--header 'Content-Type: application/json' \  
--data-raw '{  
    "clientId": "cncc","rootUrl": "http://10.75.241.74:8080/"  
}'
```

### Example of the Request Body

The following is the example of the request body:

```
{  
  "clientId": "cncc",  
  "rootUrl": "http://10.75.241.74:8080/"  
}
```

### Example of the Response Code

The following is the example of the response code:

204 No Content

**Table 6-23 Supported Response Codes**

| Code             | Description                                                                      |
|------------------|----------------------------------------------------------------------------------|
| 204 No Content   | Update the client.This API can beused to update Redirect URI {Requires payload}. |
| 401 Unauthorised | Missing Authentication                                                           |
| 404 Not Found    | Realm not found                                                                  |
| 404 Not Found    | Could not find the client                                                        |

# CNC Console Metrics

This section provides the information about CNC Console Metrics.



## Note:

Sample CNCC dashboard for Grafana is delivered to the customer through CNCC Custom Templates. Metrics and functions used to achieve KPI are covered in CNCC Custom Templates. Refer to Oracle Help Center site for the information about CNCC Custom Templates.

Two sample dashboards are provided one supporting CNE 1.8 or lower, second one supporting CNE Prometheus HA (OCCNE 1.9.x and higher versions.x and higher versions)

- CNCC Metric Dashboard file : occncc\_metric\_dashboard\_<version>.json
- CNCC Metric Dashboard file supporting CNE Prometheus HA: occncc\_metric\_dashboard\_promha\_<version>.json



## Note:

Prometheus HA supported CNE (OCOCCNE 1.9.x and higher versions.x and higher versions) tags/labels are renamed as shown in below table

| CNE 1.8.0 or previous section | Prometheus HA supported CNE (OCOCCNE 1.9.x and higher versions.x and higher versions) |
|-------------------------------|---------------------------------------------------------------------------------------|
| kubernetes_namespace          | namespace                                                                             |
| kubernetes_pod_name           | pod                                                                                   |
| container_name                | container                                                                             |

Consider updating tags mentioned in following sections of the document as suggested above for Prometheus HA supported CNE

- CNCC IAM Metrics
- CNCC Core Metrics
- CNCC KPIs
- CNCC Alerts

## Dimensions Legend for the Metrics

The following table includes the details about the metrics dimensions:

**Table 7-1 Dimensions Legend for the Metrics**

| Dimension          | Description                                        | Possible Values                                                               |
|--------------------|----------------------------------------------------|-------------------------------------------------------------------------------|
| Method             | Http method                                        | GET, PUT, POST, DELETE, PATCH                                                 |
| HttpVersion        | Http protocol version                              | HTTP/1.1, HTTP/2.0                                                            |
| Scheme             | Http protocol scheme                               | HTTP, HTTPS, UNKNOWN                                                          |
| Route_Path         | Path predicate that matched the current request    | NF specific routes                                                            |
| InstanceIdentifier | Identifier for Ingress Gateway                     | cncc-iam_ingressgateway, cncc-mcore_ingressgateway, cncc-acore_ingressgateway |
| ResourcePath       | Http url                                           |                                                                               |
| ResourceType       | NF type being accessed                             | SCP, NRF...                                                                   |
| UserId             | Id of the user                                     |                                                                               |
| UserName           | Name of the user                                   |                                                                               |
| AuthenticationType | Authentication method used to access CNCC Core GUI | JWT, OAUTH                                                                    |

## CNC Console IAM Metrics

This section provides the information about the CNCC IAM Metrics:

### CNCC IAM Requests

**Table 7-2 CNCC IAM Requests**

| Metric Details | Total number of requests received by CNCC IAM                                                                                                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter  | oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*iam_ingressgateway"}                                                                                                                                                                             |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• Scheme</li> <li>• Route_path</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> </ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                       |

### CNCC IAM Response

**Table 7-3 CNCC IAM Response**

| Metric Details | Total number of responses sent by CNCC IAM |
|----------------|--------------------------------------------|
|----------------|--------------------------------------------|



**Table 7-3 (Cont.) CNCC IAM Response**

|               |                                                                                                                                                                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway"}}                                                                                                                                                                                 |
| Dimensions    | <ul style="list-style-type: none"><li>• Host</li><li>• HttpVersion</li><li>• InstanceIdentifier</li><li>• Method</li><li>• Route_path</li><li>• Scheme</li><li>• Status</li><li>• ResourcePath</li><li>• ResourceType</li><li>• UserId</li><li>• UserName</li></ul> |
| Metric Type   | Counter                                                                                                                                                                                                                                                             |

## CNCC IAM Success Responses

**Table 7-4 CNCC IAM Success Responses**

|                |                                                                                                                                                                                                                                                                     |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of success responses (2xx) for CNCC IAM                                                                                                                                                                                                                |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"2.*"}                                                                                                                                                                    |
| Dimensions     | <ul style="list-style-type: none"><li>• Host</li><li>• HttpVersion</li><li>• InstanceIdentifier</li><li>• Method</li><li>• Route_path</li><li>• Scheme</li><li>• Status</li><li>• ResourcePath</li><li>• ResourceType</li><li>• UserId</li><li>• UserName</li></ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                             |

## CNCC IAM 5xx Responses

**Table 7-5 CNCC IAM 5xx Responses**

|                |                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------|
| Metric Details | Total number of error responses (5xx) for CNCC IAM                                               |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"5.*"} |

**Table 7-5 (Cont.) CNCC IAM 5xx Responses**

|             |                                                                                                                                                                                                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions  | <ul style="list-style-type: none"> <li>ErrorOriginator</li> <li>Host</li> <li>HttpVersion</li> <li>InstanceIdIdentifier</li> <li>Method</li> <li>Route_path</li> <li>Scheme</li> <li>Status</li> <li>ResourcePath</li> <li>ResourceType</li> <li>UserId</li> <li>UserName</li> </ul> |
| Metric Type | Counter                                                                                                                                                                                                                                                                              |

## CNCC IAM 4xx Responses

**Table 7-6 CNCC IAM 4xx Responses**

|                |                                                                                                                                                                                                                                                             |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of error responses (4xx) for CNCC IAM                                                                                                                                                                                                          |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdIdentifier=~".*iam_ingressgateway",Status=~"4.*"}                                                                                                                                                          |
| Dimensions     | <ul style="list-style-type: none"> <li>Host</li> <li>HttpVersion</li> <li>InstanceIdIdentifier</li> <li>Method</li> <li>Route_path</li> <li>Scheme</li> <li>Status</li> <li>ResourcePath</li> <li>ResourceType</li> <li>UserId</li> <li>UserName</li> </ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                     |

## CNCC IAM Error Responses

**Table 7-7 CNCC IAM Error Responses**

|                |                                                                                                        |
|----------------|--------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of error responses for CNCC IAM                                                           |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdIdentifier=~".*iam_ingressgateway",Status=~"4.* 5.*"} |

Table 7-7 (Cont.) CNCC IAM Error Responses

|             |                                                                                                                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions  | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> </ul> |
| Metric Type | Counter                                                                                                                                                                                                                                                                         |

## CNCC IAM Access Token Request

Table 7-8 CNCC IAM Access Token Request

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of access token requests received for CNCC IAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Metric Filter  | <p>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token"}</p> <p><i>Group by user: (CNE 1.8.x or previous versions)</i></p> <p>sum<br/>by(Status,Method,kubernetes_namespace,ResourceType,UserId,UserName,kubernetes_pod_name,Scheme)</p> <p>(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token"})</p> <p><i>Group by user: (CNE 1.9.0 or later versions)</i></p> <p>sum<br/>by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme)</p> <p>(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token"})</p> |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## CNCC IAM Access Token Granted

**Table 7-9 CNCC IAM Access Token Granted**

| Metric Details | Total number of access token granted for CNCC IAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter  | <code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token",Status="200 OK"}</code><br><i>Group by user: (CNE 1.8.x or previous versions)</i><br><code>sum<br/>by(Status,Method,kubernetes_namespace,ResourceType,UserId,UserName,kubernetes_pod_name,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token",Status="200 OK"})</code><br><i>Group by user: (CNE 1.9.0 or later versions)</i><br><code>sum<br/>by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token",Status="200 OK"})</code> |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## CNCC IAM Access Token Not Granted

**Table 7-10 CNCC IAM Access Token Not Granted**

| Metric Details | Total number of access token not granted for CNCC IAM |
|----------------|-------------------------------------------------------|
|----------------|-------------------------------------------------------|

**Table 7-10 (Cont.) CNCC IAM Access Token Not Granted**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <pre>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token",Status=~"4.* 5.*"}</pre> <p><i>Group by user: (CNE 1.8.x or previous versions)</i></p> <pre>sum by(Status,Method,kubernetes_namespace,ResourceType,UserId, UserName,kubernetes_pod_name,Scheme) (oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token",Status=~"4.* 5.*"})</pre> <p><i>Group by user: (CNE 1.9.0 or later versions)</i></p> <pre>sum by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme) (oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/protocol/openid-connect/token",Status=~"4.* 5.*"})</pre> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## CNCC IAM User Login Failure Responses

**Table 7-11 CNCC IAM User Login Failure Responses**

|                |                                                |
|----------------|------------------------------------------------|
| Metric Details | Total number of user login failure at CNCC IAM |
|----------------|------------------------------------------------|

**Table 7-11 (Cont.) CNCC IAM User Login Failure Responses**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/login-actions/authenticate",Status="200 OK"}</code><br><i>Group by user: (CNE 1.8.x or previous versions)</i><br><code>sum<br/>by(Status,Method,kubernetes_namespace,ResourceType,UserId,UserName,kubernetes_pod_name,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/login-actions/authenticate",Status="200 OK"})</code><br><i>Group by user: (CNE 1.9.0 or later versions)</i><br><code>sum<br/>by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/master/login-actions/authenticate",Status="200 OK"})</code> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## CNC Console Core Metrics

This section provides the information about the CNCC Core Metrics:

### CNCC Core Requests

**Table 7-12 CNCC Core Requests**

|                |                                                                                                 |
|----------------|-------------------------------------------------------------------------------------------------|
| Metric Details | Total number of requests received by CNCC Core                                                  |
| Metric Filter  | <code>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway"}</code> |

**Table 7-12 (Cont.) CNCC Core Requests**

|             |                                                                                                                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions  | <ul style="list-style-type: none"><li>• Host</li><li>• HttpVersion</li><li>• Scheme</li><li>• Route_path</li><li>• InstanceIdentifier</li><li>• Method</li><li>• ResourcePath</li><li>• ResourceType</li><li>• UserId</li><li>• UserName</li><li>• AuthenticationType</li></ul> |
| Metric Type | Counter                                                                                                                                                                                                                                                                         |

## CNCC Core Responses

**Table 7-13 CNCC Core Responses**

|                |                                                                                                                                                                                                                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of responses for CNCC Core requests                                                                                                                                                                                                                                                 |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway"}                                                                                                                                                                                                              |
| Dimensions     | <ul style="list-style-type: none"><li>• Host</li><li>• HttpVersion</li><li>• InstanceIdentifier</li><li>• Method</li><li>• Route_path</li><li>• Scheme</li><li>• Status</li><li>• ResourcePath</li><li>• ResourceType</li><li>• UserId</li><li>• UserName</li><li>• AuthenticationType</li></ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                          |

## CNCC Core Success Responses

**Table 7-14 CNCC Core Success Responses**

|                |                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------|
| Metric Details | Total number of success responses (2xx) for CNCC Core requests                                    |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"2.*"} |

**Table 7-14 (Cont.) CNCC Core Success Responses**

|             |                                                                                                                                                                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions  | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul> |
| Metric Type | Counter                                                                                                                                                                                                                                                                                                       |

## CNCC Core 5xx Responses

**Table 7-15 CNCC Core 5xx Responses**

|                |                                                                                                                                                                                                                                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of error responses (5xx) for CNCC Core requests                                                                                                                                                                                                                                                  |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"5.*"}                                                                                                                                                                                                             |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                                       |

## CNCC Core 4xx Responses

**Table 7-16 CNCC Core 4xx Responses**

|                |                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------|
| Metric Details | Total number of error responses (4xx) for CNCC Core requests                                      |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"4.*"} |



**Table 7-16 (Cont.) CNCC Core 4xx Responses**

|             |                                                                                                                                                                                                                                                                                                  |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions  | <ul style="list-style-type: none"><li>• Host</li><li>• HttpVersion</li><li>• InstanceIdentifier</li><li>• Method</li><li>• Route_path</li><li>• Scheme</li><li>• Status</li><li>• ResourcePath</li><li>• ResourceType</li><li>• UserId</li><li>• UserName</li><li>• AuthenticationType</li></ul> |
| Metric Type | Counter                                                                                                                                                                                                                                                                                          |

## CNCC Core Error Responses

**Table 7-17 CNCC Core Error Responses**

|                |                                                                                                                                                                                                                                                                                                  |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of error responses sent for CNCC Core requests                                                                                                                                                                                                                                      |
| Metric Filter  | oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"4.* 5.*"}                                                                                                                                                                                            |
| Dimensions     | <ul style="list-style-type: none"><li>• Host</li><li>• HttpVersion</li><li>• InstanceIdentifier</li><li>• Method</li><li>• Route_path</li><li>• Scheme</li><li>• Status</li><li>• ResourcePath</li><li>• ResourceType</li><li>• UserId</li><li>• UserName</li><li>• AuthenticationType</li></ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                          |

## CNCC Core Access Token Request

**Table 7-18 CNCC Core Access Token Request**

|                |                                                              |
|----------------|--------------------------------------------------------------|
| Metric Details | Total number of access token requests received for CNCC Core |
|----------------|--------------------------------------------------------------|

**Table 7-18 (Cont.) CNCC Core Access Token Request**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <code>oc_ingressgateway_http_requests_total{InstanceIdIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token"}</code><br><i>Group by user: (CNE 1.8.x or previous versions)</i><br><code>sum<br/>by(Status,Method,kubernetes_namespace,ResourceType,UserId,UserName,kubernetes_pod_name,Scheme)<br/>(oc_ingressgateway_http_requests_total{InstanceIdIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token"})</code><br><i>Group by user: (CNE 1.9.0 or later versions)</i><br><code>sum<br/>by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme)<br/>(oc_ingressgateway_http_requests_total{InstanceIdIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token"})</code> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## CNCC Core Access Token Granted Responses

**Table 7-19 CNCC Core Access Token Granted Responses**

|                |                                                    |
|----------------|----------------------------------------------------|
| Metric Details | Total number of access token granted for CNCC Core |
|----------------|----------------------------------------------------|

**Table 7-19 (Cont.) CNCC Core Access Token Granted Responses**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token",Status="200 OK"}</code><br><i>Group by user: (CNE 1.8.x or previous versions)</i><br><code>sum<br/>by(Status,Method,kubernetes_namespace,ResourceType,UserId,UserName,kubernetes_pod_name,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token",Status="200 OK"})</code><br><i>Group by user: (CNE 1.9.0 or later versions)</i><br><code>sum<br/>by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token",Status="200 OK"})</code> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## CNCC Core Access Token Not Granted Responses

**Table 7-20 CNCC Core Access Token Granted Responses**

|                |                                                        |
|----------------|--------------------------------------------------------|
| Metric Details | Total number of access token not granted for CNCC Core |
|----------------|--------------------------------------------------------|

**Table 7-20 (Cont.) CNCC Core Access Token Granted Responses**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token",Status=~"4.* 5.*"}</code><br><i>Group by user: (CNE 1.8.x or previous versions)</i><br><code>sum<br/>by(Status,Method,kubernetes_namespace,ResourceType,UserId,UserName,kubernetes_pod_name,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token",Status=~"4.* 5.*"})</code><br><i>Group by user: (CNE 1.9.0 or later versions)</i><br><code>sum<br/>by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/protocol/openid-connect/token",Status=~"4.* 5.*"})</code> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## CNCC Core User Login Failure Responses

**Table 7-21 CNCC Core User Login Failure Responses**

|                |                                                 |
|----------------|-------------------------------------------------|
| Metric Details | Total number of user login failure at CNCC Core |
|----------------|-------------------------------------------------|

**Table 7-21 (Cont.) CNCC Core User Login Failure Responses**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/login-actions/authenticate",Status="200 OK"}</code><br><i>Group by user: (CNE 1.8.x or previous versions)</i><br><code>sum<br/>by(Status,Method,kubernetes_namespace,ResourceType,UserId,UserName,kubernetes_pod_name,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/login-actions/authenticate",Status="200 OK"})</code><br><i>Group by user: (CNE 1.9.0 or later versions)</i><br><code>sum<br/>by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",ResourcePath="/cncc/auth/realms/cncc/login-actions/authenticate",Status="200 OK"})</code> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## CNCC Core User Authorization Failure Responses

**Table 7-22 CNCC Core User Authorization Failure Responses**

|                |                                                                                          |
|----------------|------------------------------------------------------------------------------------------|
| Metric Details | Total number of authorization failure responses while accessing NF services at CNCC Core |
|----------------|------------------------------------------------------------------------------------------|

**Table 7-22 (Cont.) CNCC Core User Authorization Failure Responses**

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <p>oc_ingressgateway_http_responses_total{InstanceIdIdentifier=~".*core_ingressgateway",Status="403 FORBIDDEN", ResourceType!="UNKNOWN"}</p> <p><i>Group by user: (CNE 1.8.x or previous versions)</i></p> <p>sum<br/>by(Status,Method,kubernetes_namespace,ResourceType,UserId,UserName,kubernetes_pod_name,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdIdentifier=~".*core_ingressgateway",Status="403 FORBIDDEN", ResourceType!="UNKNOWN"})</p> <p><i>Group by user: (CNE 1.9.0 or later versions)</i></p> <p>sum<br/>by(Status,Method,namespace,ResourceType,UserId,UserName,pod,Scheme)<br/>(oc_ingressgateway_http_responses_total{InstanceIdIdentifier=~".*core_ingressgateway",Status="403 FORBIDDEN", ResourceType!="UNKNOWN"})</p> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## CNCC Core BSF Requests

**Table 7-23 CNCC Core BSF Requests**

|                |                                                                                                                                                                                                                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of requests received by CNCC Core for BSF                                                                                                                                                                                                                                                                       |
| Metric Filter  | <p>Single Route_path:<br/>oc_ingressgateway_http_requests_total{InstanceIdIdentifier=~".*core_ingressgateway",Route_path=~".*/bsfapi/.*"}</p> <p>Multiple Route_path:<br/>oc_ingressgateway_http_requests_total{InstanceIdIdentifier=~".*core_ingressgateway",Route_path=~".*/bsfapi/.*/oc-bsf-configuration/.*/bsf/.*"}</p> |

**Table 7-23 (Cont.) CNCC Core BSF Requests**

|             |                                                                                                                                                                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions  | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• Scheme</li> <li>• Route_path</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul> |
| Metric Type | Counter                                                                                                                                                                                                                                                                                     |

## CNCC Core BSF Responses

**Table 7-24 CNCC Core BSF Responses**

|                |                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of responses sent by CNCC Core for BSF                                                                                                                                                                                                                                                                                                                                               |
| Metric Filter  | Single Route_path:<br><code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/bsfapi/.*"}</code><br>Multiple Route_path:<br><code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/bsfapi/.*/oc-bsf-configuration/.*/bsf/.*"}</code> |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                                     |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                                                                                                                           |

## CNCC Core NRF Requests

**Table 7-25 CNCC Core NRF Requests**

|                |                                                        |
|----------------|--------------------------------------------------------|
| Metric Details | Total number of requests received by CNCC Core for NRF |
|----------------|--------------------------------------------------------|

Table 7-25 (Cont.) CNCC Core NRF Requests

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <p>Single Route_path:</p> <pre>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nrf-configuration/v1/*.*"}</pre> <p>Multiple Route_path:</p> <pre>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nrf-configuration/v1/*.*"/nrf-state-data/*.*"/ocnrf-swagger/*.*"/nrf-status-data/*.*"/nrf/nf-common-component/*.*"}</pre> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• Scheme</li> <li>• Route_path</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• Username</li> <li>• AuthenticationType</li> </ul>                                                                                                                                    |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                                                        |

## CNCC Core NRF Responses

Table 7-26 CNCC Core NRF Responses

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of responses sent by CNCC Core for NRF                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Filter  | <p>Single Route_path:</p> <pre>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/nrf-configuration/v1/*.*"}</pre> <p>Multiple Route_path:</p> <pre>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/nrf-configuration/*.*"/nrf-state-data/*.*"/ocnrf-swagger/*.*"/nrf-status-data/*.*"/nrf/nf-common-component/*.*"/nrf-configuration/v1/*.*"}</pre> |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• Username</li> <li>• AuthenticationType</li> </ul>                                                                                                                                                                                                     |



**Table 7-26 (Cont.) CNCC Core NRF Responses**

| Metric Type | Counter |
|-------------|---------|
|-------------|---------|

## CNCC Core POLICY Requests

**Table 7-27 CNCC Core POLICY Requests**

| Metric Details | Total number of requests received by CNCC Core for POLICY                                                                                                                                                                                                                                                                                        |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter  | Single Route_path:<br><code>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/policyapi/.*"}</code><br>Multiple Route_path:<br><code>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/policyapi/.*/oc-cnpolicy-configuration/.*/pcf/.*"}</code> |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• Scheme</li> <li>• Route_path</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                      |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                                                                          |

## CNCC Core POLICY Responses

**Table 7-28 CNCC Core POLICY Responses**

| Metric Details | Total number of responses sent by CNCC Core for POLICY                                                                                                                                                                                                                                                                                                                                                       |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter  | Single Route_path:<br><code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/policyapi/.*"}</code><br>Multiple Route_path:<br><code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/policyapi/.*/oc-cnpolicy-configuration/.*/pcf/.*"}</code> |

**Table 7-28 (Cont.) CNCC Core POLICY Responses**

|             |                                                                                                                                                                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions  | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul> |
| Metric Type | Counter                                                                                                                                                                                                                                                                                                       |

## CNCC Core SCP Requests

**Table 7-29 CNCC Core SCP Requests**

|                |                                                                                                                                                                                                                                                                                             |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of requests received by CNCC Core for SCP                                                                                                                                                                                                                                      |
| Metric Filter  | oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/ocscp/.*"}                                                                                                                                                                                |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• Scheme</li> <li>• Route_path</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                     |

## CNCC Core SCP Responses

**Table 7-30 CNCC Core SCP Responses**

|                |                                                                                                                                                                   |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of responses sent by CNCC Core for SCP                                                                                                               |
| Metric Filter  | Single Route_path:<br>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/ocscp/.*" } |

**Table 7-30 (Cont.) CNCC Core SCP Responses**

|             |                                                                                                                                                                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions  | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul> |
| Metric Type | Counter                                                                                                                                                                                                                                                                                                       |

## CNCC Core SEPP Requests

**Table 7-31 CNCC Core SEPP Requests**

|                |                                                                                                                                                                                                                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of requests received by CNCC Core for SEPP                                                                                                                                                                                                                                                        |
| Metric Filter  | Single Route_path:<br>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/sepp-configuration/.*" }<br>Multiple Route_path:<br>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/sepp-configuration/.*/sepp/.*" } |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• Scheme</li> <li>• Route_path</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                    |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                                        |

## CNCC Core SEPP Responses

**Table 7-32 CNCC Core SEPP Responses**

|                |                                                      |
|----------------|------------------------------------------------------|
| Metric Details | Total number of responses sent by CNCC Core for SEPP |
|----------------|------------------------------------------------------|

Table 7-32 (Cont.) CNCC Core SEPP Responses

|               |                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter | <p>Single Route_path:<br/>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/sepp-configuration/."} }</p> <p>Multiple Route_path:<br/>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/sepp-configuration/.*/sepp/."} }</p> |
| Dimensions    | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                           |
| Metric Type   | Counter                                                                                                                                                                                                                                                                                                                                                                                 |

## CNCC Core UDR Requests

Table 7-33 CNCC Core UDR Requests

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Details | Total number of requests received by CNCC Core for UDR                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Filter  | <p>Single Route_path:<br/>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nudr-config/."} }</p> <p>Multiple Route_path:<br/>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*cncc-core_ingressgateway",Route_path=~".*/nudr-dr-prov/.*/nudr-dr-mgm/.*/nudr-group-id-map-prov/.*/slf-group-prov/.*/nudr-config/.*/udr/nf-common-component/.*/n5g-eir-prov/."} }</p> |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• Scheme</li> <li>• Route_path</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                                                                                      |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                                                                                                                                                          |

## CNCC Core UDR Responses

**Table 7-34 CNCC Core UDR Responses**

| Metric Details | Total number of responses sent by CNCC Core for UDR                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter  | <p>Single Route_path:</p> <pre>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/nudr-dr-prov/.*"}</pre> <p>Multiple Route_path:</p> <pre>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/nudr-dr-prov/.*/nudr-dr-mgm/.*/nudr-group-id-map-prov/.*/slf-group-prov/.*/nudr-config/.*/udr/nf-common-component/.*/n5g-eir-prov/.*"}</pre> |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• Route_path</li> <li>• Scheme</li> <li>• Status</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul>                                                                                                                                                                                        |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## CNCC Core NSSF Requests

**Table 7-35 CNCC Core NSSF Requests**

| Metric Details | Total number of requests received by CNCC Core for NSSF                                                                                                                                                                                                                                     |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter  | <pre>oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nssf-configuration/.*/nssf/.*"}</pre>                                                                                                                                                |
| Dimensions     | <ul style="list-style-type: none"> <li>• Host</li> <li>• HttpVersion</li> <li>• Scheme</li> <li>• Route_path</li> <li>• InstanceIdentifier</li> <li>• Method</li> <li>• ResourcePath</li> <li>• ResourceType</li> <li>• UserId</li> <li>• UserName</li> <li>• AuthenticationType</li> </ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                                                     |

## CNCC Core NSSF Responses

**Table 7-36 CNCC Core NSSF Responses**

| Metric Details | Total number of responses sent by CNCC Core for NSSF                                                                                                                                                                                                                            |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Filter  | <code>oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status="200 OK",Method="GET",Route_path=~".*/nnssf-configuration/.*/.*/nnssf/.*"}</code>                                                                                               |
| Dimensions     | <ul style="list-style-type: none"><li>• Host</li><li>• HttpVersion</li><li>• Scheme</li><li>• Route_path</li><li>• InstanceIdentifier</li><li>• Method</li><li>• ResourcePath</li><li>• ResourceType</li><li>• UserId</li><li>• UserName</li><li>• AuthenticationType</li></ul> |
| Metric Type    | Counter                                                                                                                                                                                                                                                                         |

# 8

## CNC Console Alerts

This section provides information about CNC Console Alerts.



### Note:

Alert file is packaged with CNCC custom templates. The *occncc\_custom\_configtemplates\_<version>.zip* file can be downloaded from MOS. Unzip the file to get *occncc\_alerting\_rules\_promha\_<version>.yaml* file.

- Review the *occncc\_alerting\_rules\_promha\_<version>.yaml* file and edit the value of the parameters in the *occncc\_alerting\_rules\_promha\_<version>.yaml* file (if needed to be changed from default values) before configuring the alerts.
- *kubernetes\_namespace* is configured as kubernetes namespace in which CNCC is deployed. Default value is cncc. Update the *occncc\_alertrules\_<version>.yaml* file to reflect the correct CNCC kubernetes namespace.

Two sample Alert files are provided, one for supporting CNE 1.8 or lower and second one supporting CNE Prometheus HA.

- CNCC Alert Rules file: *occncc\_alertrules\_<version>.yaml* file.
- CNCC Alert Rules file supporting CNE Prometheus HA: *occncc\_alerting\_rules\_promha\_<version>.yaml* file.

## CNC Console IAM Alerts

This section provides information about CNC Console IAM Alerts.

### CncclamTotalIngressTrafficRateAboveMinorThreshold

**Table 8-1 CncclamTotalIngressTrafficRateAboveMinorThreshold**

|                   |                                                                                                                                                                                                                                                                                    |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition | The total CNCC IAM Ingress Message rate has crossed the configured minor threshold of 700 TPS.<br><br>Default value of this alert trigger point in <i>occncc_alertrules_&lt;version&gt;.yaml</i> is when CNCC IAM Ingress Rate crosses 70 % of 1000 (Maximum ingress request rate) |
| Severity          | Minor                                                                                                                                                                                                                                                                              |

**Table 8-1 (Cont.) CncclamTotalIngressTrafficRateAboveMinorThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alert details provided  | <p><b>Description:</b> CNCC IAM Ingress traffic Rate is above the configured minor threshold i.e. 700 requests per second (current value is: {{ \$value }})</p> <p><b>For CNE 1.9.0 or later versions:</b><br/> <b>summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 70 Percent of Max requests per second(1000)'</p> <p><b>For CNE 1.8.x or previous versions:</b><br/> <b>summary:</b> 'namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 70 Percent of Max requests per second(1000)'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Metric Used             | oc_ingressgateway_http_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Resolution              | <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 <i>CncclamTotalIngressTrafficRateAboveMajorThreshold</i> alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Reassess why the CNCC IAM is receiving additional traffic.</li> <li>2. If this is unexpected, contact My Oracle Support.</li> </ol>                                                                                                                                                                                                                       |

## CncclamTotalIngressTrafficRateAboveMajorThreshold

**Table 8-2 CncclamTotalIngressTrafficRateAboveMajorThreshold**

|                   |                                                                                                                                                                                                                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition | <p>The total CNCC IAM Ingress Message rate has crossed the configured major threshold of 800 TPS.</p> <p>Default value of this alert trigger point in <i>occncc_alertrules_&lt;version&gt;.yaml</i> is when CNCC IAM Ingress Rate crosses 80 % of 1000 (Maximum ingress request rate)</p> |
| Severity          | Major                                                                                                                                                                                                                                                                                     |



**Table 8-2 (Cont.) CncclamTotalIngressTrafficRateAboveMajorThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alert details provided  | <p><b>Description:</b> 'CNCC IAM Ingress traffic Rate is above the configured major threshold i.e. 800 requests per second (current value is: {{ \$value }})'</p> <p><b>For CNE 1.9.0 or later versions:</b><br/> <b>summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 80 Percent of Max requests per second(1000)'</p> <p><b>For CNE 1.8.x or previous versions:</b><br/> <b>summary:</b> 'namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 80 Percent of Max requests per second(1000)'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Metric Used             | oc_ingressgateway_http_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Resolution              | <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 <i>CncclamTotalIngressTrafficRateAboveCriticalThreshold</i> alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Reassess why the CNCC IAM is receiving additional traffic.</li> <li>2. If this is unexpected, contact My Oracle Support.</li> </ol>                                                                                                                                                                                                                          |

## CncclamTotalIngressTrafficRateAboveCriticalThreshold

**Table 8-3 CncclamTotalIngressTrafficRateAboveCriticalThreshold**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition      | The total CNCC IAM Ingress Message rate has crossed the configured critical threshold of 900TPS. Default value of this alert trigger point in <i>occncc_alertrules_&lt;version&gt;.yaml</i> is when CNCC IAM Ingress Rate crosses 90 % of 1000 (Maximum ingress request rate)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Severity               | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Alert details provided | <p><b>Description:</b> CNCC IAM Ingress traffic Rate is above the configured critical threshold, that is, 900 requests per second (current value is: {{ \$value }})</p> <p><b>For CNE 1.9.0 or later versions:</b><br/> <b>summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 90 Percent of Max requests per second(1000)'</p> <p><b>For CNE 1.8.x or previous versions:</b><br/> <b>summary:</b> 'namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 90 Percent of Max requests per second(1000)'</p> |

**Table 8-3 (Cont.) CncclamTotalIngressTrafficRateAboveCriticalThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7001                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used             | oc_ingressgateway_http_requests_total                                                                                                                                                                                                                                                                                                                                                                 |
| Resolution              | <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 <i>ocncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Reassess why the CNCC IAM is receiving additional traffic.</li> <li>2. If this is unexpected, contact My Oracle Support.</li> </ol> |

## CncclamMemoryUsageCrossedMinorThreshold

**Table 8-4 CncclamMemoryUsageCrossedMinorThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | A pod has reached the configured minor threshold( 70%) of its memory resource limits.                                                                                                                                                                                                                                                                                                                 |
| Severity                | Minor                                                                                                                                                                                                                                                                                                                                                                                                 |
| Alert details provided  | <p><b>Description:</b> 'CNCC IAM Memory Usage for pod {{ \$labels.pod }} has crossed the configured minor threshold (70%) (value={{ \$value }}) of its limit.'</p> <p><b>Summary:</b> 'namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Memory Usage of pod exceeded 70% of its limit.'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7002                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used             | <p>container_memory_usage_bytes,<br/>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 a similar metric as exposed by the monitoring system.</p>                                                                                                                                        |
| Resolution              | <p>The alert gets cleared when the memory utilization falls below the Minor Threshold or crosses the major threshold, in which case <i>CncclamMemoryUsageCrossedMajorThreshold</i> alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the <i>ocncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>If guidance is required, contact My Oracle Support.</p>                        |

## CncclamMemoryUsageCrossedMajorThreshold

**Table 8-5 CncclamMemoryUsageCrossedMajorThreshold**

|                   |                                                                                       |
|-------------------|---------------------------------------------------------------------------------------|
| Trigger Condition | A pod has reached the configured major threshold( 80%) of its memory resource limits. |
| Severity          | Major                                                                                 |

**Table 8-5 (Cont.) CncclamMemoryUsageCrossedMajorThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alert details provided  | <b>Description:</b> 'CNCC IAM Memory Usage for pod {{ \$labels.pod }} has crossed the configured major threshold (80%) (value = {{ \$value }}) of its limit.'<br><b>Summary:</b> 'namespace: {{ \$labels.namespace}}, podname: {{ \$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Memory Usage of pod exceeded 80% of its limit.' |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7002                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used             | container_memory_usage_bytes,<br>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.                                                                                                                                          |
| Resolution              | The alert gets cleared when the memory utilization falls below the Major Threshold or crosses the critical threshold, in which case <i>CncclamMemoryUsageCrossedCriticalThreshold</i> alert shall be raised.<br><b>Note:</b> The threshold is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.<br>If guidance is required, contact My Oracle Support.                 |

## CncclamMemoryUsageCrossedCriticalThreshold

**Table 8-6 CncclamMemoryUsageCrossedCriticalThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | A pod has reached the configured critical threshold ( 90% ) of its memory resource limits                                                                                                                                                                                                                                                                                                       |
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                        |
| Alert details provided  | <b>Description:</b> 'CNCC IAM Memory Usage for pod {{ \$labels.pod }} has crossed the configured critical threshold (90%) (value = {{ \$value }}) of its limit.'<br><b>Summary:</b> 'namespace: {{ \$labels.namespace}}, podname: {{ \$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Memory Usage of pod exceeded 90% of its limit.' |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7002                                                                                                                                                                                                                                                                                                                                                                 |
| Metric Used             | container_memory_usage_bytes,<br>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.                                                                                                                                             |
| Resolution              | The alert gets cleared when the memory utilization falls below the Critical Threshold.<br><b>Note :</b> The threshold is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.<br>If guidance is required, contact My Oracle Support.                                                                                                                                         |

## CncclamTransactionErrorRateAbove0.1Percent

**Table 8-7 CncclamTransactionErrorRateAbove0.1Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 0.1 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                   |
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Alert details provided  | <b>Description:</b> 'CNCC IAM transaction Error rate is above 0.1 Percent of Total Transactions (current value is {{ \$value }})'<br><b>Summary:</b> 'CNCC IAM transaction Error Rate detected above 0.1 Percent of Total Transactions'                                                                                                                                                                                                                                             |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7003                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Resolution              | <p>The alert is cleared when the number of failed transactions is below 0.1% of the total transactions or when the number of failed transactions crosses the 1% threshold in which case the <i>CncclamTransactionErrorRateAbove1Percent</i> is raised.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CncclamTransactionErrorRateAbove1Percent

**Table 8-8 CncclamTransactionErrorRateAbove1Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 1 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                     |
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Alert details provided  | <b>Description:</b> 'CNCC IAM transaction Error rate is above 1 Percent of Total Transactions (current value is {{ \$value }})'<br><b>Summary:</b> 'CNCC IAM transaction Error Rate detected above 1 Percent of Total Transactions'                                                                                                                                                                                                                                                 |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7003                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Resolution              | <p>The alert is cleared when the number of failed transactions is below 1% of the total transactions or when the number of failed transactions crosses the 10% threshold in which case the <i>CncclamTransactionErrorRateAbove10Percent</i> is raised.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CncclamTransactionErrorRateAbove10Percent

**Table 8-9 CncclamTransactionErrorRateAbove10Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 10 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                     |
| Severity                | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Alert details provided  | <b>Description:</b> CNCC IAM transaction Error rate is above 10 Percent of Total Transactions (current value is {{ \$value }})<br><b>Summary:</b> 'CNCC IAM transaction Error rate is above 10 Percent of Total Transactions (current value is {{ \$value }})'                                                                                                                                                                                                                       |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7003                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Resolution              | <p>The alert is cleared when the number of failed transactions is below 10% of the total transactions or when the number of failed transactions crosses the 25% threshold in which case the <i>CncclamTransactionErrorRateAbove25Percent</i> is raised.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CncclamTransactionErrorRateAbove25Percent

**Table 8-10 CncclamTransactionErrorRateAbove25Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 25 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                    |
| Severity                | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Alert details provided  | <b>Description:</b> 'CNCC IAM transaction Error Rate detected above 25 Percent of Total Transactions (current value is {{ \$value }})'<br><b>Summary:</b> 'CNCC IAM transaction Error Rate detected above 25 Percent of Total Transactions'                                                                                                                                                                                                                                         |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7003                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Resolution              | <p>The alert is cleared when the number of failed transactions are below 25% of the total transactions or when the number of failed transactions cross the 50% threshold in which case the <i>CncclamTransactionErrorRateAbove50Percent</i> is raised.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CncclamTransactionErrorRateAbove50Percent

**Table 8-11 CncclamTransactionErrorRateAbove50Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 50 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                           |
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Alert details provided  | <p><b>Description:</b> The number of failed transactions is above 50 percent of the total transactions.</p> <p><b>Summary:</b> 'CNCC IAM transaction Error Rate detected above 50 Percent of Total Transactions'.</p>                                                                                                                                                                                                                      |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7003                                                                                                                                                                                                                                                                                                                                                                                                            |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                     |
| Resolution              | <p>The alert is cleared when the number of failed transactions is below 50 percent of the total transactions.</p> <p>The threshold is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CncclamIngressGatewayServiceDown

**Table 8-12 CncclamIngressGatewayServiceDown**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The pods of the CNCC IAM Ingress Gateway microservice is available.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Alert details provided  | <p><b>Description:</b> 'CNCC IAM Ingress-Gateway service InstanceIdentifier=~.*cncc-iam_ingressgateway' is down'</p> <p><b>For CNE 1.9.0 or later versions:</b></p> <p><b>summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} : Ingress-gateway service down'</p> <p><b>For CNE 1.8.x or previous versions:</b></p> <p><b>summary:</b> 'namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }} : Ingress-gateway service down'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 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 8-12 (Cont.) CncclamIngressGatewayServiceDown**

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resolution | <p>The alert is cleared when the cncc-iam_ingressgateway service is available.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the orchestration logs of cncc-iam_ingressgateway service and check for liveness or readiness probe failures.</li> <li>2. Refer to the application logs on Kibana and filter based on cncc-iam_ingressgateway service names. Check for ERROR WARNING logs related to thread exceptions.</li> <li>3. Depending on the failure reason, take the resolution steps.</li> <li>4. In case the issue persists, contact My Oracle Support.</li> </ol> |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CncclamFailedLogin

**Table 8-13 CncclamFailedLogin**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The count of failed login attempts in CNCC-IAM by a user goes above '3'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alert details provided  | <p><b>Description:</b> '{{ \$value }}' failed Login attempts have been detected in CNCC IAM for user {{ \$labels.UserName }}, the configured threshold value is 3 failed login attempts for every 5 min'</p> <p><b>For CNE 1.9.0 or later versions:</b></p> <p><b>summary:</b> 'namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: failed login attempts are more than the configured threshold value'</p> <p><b>For CNE 1.8.x or previous versions:</b></p> <p><b>summary:</b> 'namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: failed login attempts are more than the configured threshold value'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Resolution              | <p>The alert gets cleared when the total failed login attempts for a particular user goes below the threshold value (default value is '3') in the last 5 min (default value is 5 m).</p> <p><b>Note:</b> The threshold and time is configurable in the <i>alerts.yaml</i> file.</p> <p>If guidance is required, contact My Oracle Support.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## AdminUserCreation

**Table 8-14 AdminUserCreation**

|                   |                                                     |
|-------------------|-----------------------------------------------------|
| Trigger Condition | If a new admin account is created in the last 5 min |
| Severity          | Warning                                             |

Table 8-14 (Cont.) AdminUserCreation

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alert details provided  | <p><b>For CNE 1.9.0 or later versions:</b></p> <p><b>Description:</b> '{{ \$value }} admin users have been created by {{ \$labels.UserName }} '</p> <p>summary: 'namespace: {{ \$labels.namespace }}'</p> <p><b>summary:</b> {{ \$labels.pod }}, user: {{ \$labels.UserName }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Admin users have been created '</p> <p><b>For CNE 1.8.x or previous versions:</b></p> <p><b>Description:</b> '{{ \$value }} admin users have been created by {{ \$labels.UserName }} '</p> <p>summary: 'namespace: {{ \$labels.kubernetes_namespace }}'</p> <p><b>summary:</b> {{ \$labels.kubernetes_pod_name }}, user: {{ \$labels.UserName }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Admin users have been created '</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Used             | oc_ingressgateway_http_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Resolution              | <p>The alert gets cleared when the total failed login attempts for a particular user go below the threshold value (default value is '3') in the last 5 min (default value is 5 m)</p> <p><b>Note:</b> The threshold and time is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>Login to admin GUI and review the user created.</p> <p>If guidance is required, contact My Oracle Support.</p>                                                                                                                                                                                                                                                                                                                                                                                                                             |

## CncclamAccessTokenFailure

Table 8-15 CncclamAccessTokenFailure

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | If the count of failed token for CNCC-IAM goes above configured value of '3'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Alert details provided  | <p><b>Description:</b> 'CNCC Iam Access Token Failure count is above the configured value i.e. 3 for every 5 min. Failed access token request count per second is (current value is: {{ \$value }})'</p> <p><b>For CNE 1.9.0 or later versions:</b></p> <p><b>summary:</b> 'namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Access Token Failure count is above the configured threshold value'</p> <p><b>For CNE 1.8.x or previous versions:</b></p> <p><b>summary:</b> 'namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Access Token Failure count is above the configured threshold value'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.7007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



**Table 8-15 (Cont.) CncclamAccessTokenFailure**

|            |                                                                                                                                                                                                                                                                                                                                                               |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resolution | <p>The alert gets cleared when the total failed tokens for a particular user go below the threshold value (default value is '3') in the last 5 min (default value is 5 m)</p> <p><b>Note:</b> The threshold and time is configurable in the <i>ocncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>If guidance is required, contact My Oracle Support.</p> |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CNC Console Core Alerts

This section provides the information about CNC Console Core Alerts.

### CnccCoreTotalIngressTrafficRateAboveMinorThreshold

**Table 8-16 CnccCoreTotalIngressTrafficRateAboveMinorThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | <p>The total CNCC Core Ingress Message rate has crossed the configured minor threshold of 700 TPS.</p> <p>Default value of this alert trigger point in <i>cncc_alert_rules.yaml</i> is when CNCC Core Ingress Rate crosses 70 % of 1000 (Maximum ingress request rate)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Severity                | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alert details provided  | <p><b>Description:</b> 'CNCC Core Ingress traffic Rate is above the configured minor threshold i.e. 700 requests per second (current value is: {{ \$value }})'</p> <p><b>For CNE 1.9.0 or later versions:</b><br/> <b>summary:</b> 'namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 70 Percent of Max requests per second(1000)'</p> <p><b>For CNE 1.8.x or previous versions:</b><br/> <b>summary:</b> 'namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 70 Percent of Max requests per second(1000)'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Metric Used             | oc_ingressgateway_http_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Resolution              | <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 <i>CnccCoreTotalIngressTrafficRateAboveMajorThreshold</i> alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the <i>ocncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Reassess why the CNCC Core is receiving additional traffic.</li> <li>2. If this is unexpected, contact My Oracle Support.</li> </ol>                                                                                                                                                                                                                               |

## CnccCoreTotalIngressTrafficRateAboveMajorThreshold

**Table 8-17 CnccCoreTotalIngressTrafficRateAboveMajorThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The total CNCC Core Ingress Message rate has crossed the configured major threshold of 800 TPS.<br>Default value of this alert trigger point in cncc_alert_rules.yaml is when CNCC Core Ingress Rate crosses 80 % of 1000 (Maximum ingress request rate)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Severity                | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Alert details provided  | <b>Description:</b> 'CNCC Core Ingress traffic Rate is above the configured major threshold i.e. 800 requests per second (current value is: {{ \$value }})'<br><br><b>For CNE 1.9.0 or later versions:</b><br><b>summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 80 Percent of Max requests per second(1000)'<br><br><b>For CNE 1.8.x or previous versions:</b><br><b>summary:</b> 'namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }}: Traffic Rate is above 80 Percent of Max requests per second(1000)' |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used             | oc_ingressgateway_http_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Resolution              | 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 CnccCoreTotalIngressTrafficRateAboveCriticalThreshold.<br><b>Note:</b> The threshold is configurable in the <i>alerts.yaml</i> file.<br>Steps:<br><ol style="list-style-type: none"><li>1. Reassess why the CNCC Core is receiving additional traffic.</li><li>2. If this is unexpected, contact My Oracle Support.</li></ol>                                                                                                                                                                                                                                                                               |

## CnccCoreTotalIngressTrafficRateAboveCriticalThreshold

**Table 8-18 CnccCoreTotalIngressTrafficRateAboveCriticalThreshold**

|                   |                                                                                                                                                                                                                                                            |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition | The total CNCC Core Ingress Message rate has crossed the configured critical threshold of 900TPS.<br>Default value of this alert trigger point in cncc_alert_rules.yaml is when CNCC Core Ingress Rate crosses 90 % of 1000 (Maximum ingress request rate) |
| Severity          | Critical                                                                                                                                                                                                                                                   |

**Table 8-18 (Cont.) CnccCoreTotalIngressTrafficRateAboveCriticalThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alert details provided  | <p><b>Description:</b> 'CNCC Core Ingress traffic Rate is above the configured critical threshold i.e. 900 requests per second (current value is: {{ \$value }})'</p> <p><b>For CNE 1.9.0 or later versions:</b></p> <p><b>summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }}: Traffic Rate is above 90 Percent of Max requests per second(1000)'</p> <p><b>For CNE 1.8.x or previous versions:</b></p> <p><b>summary:</b> 'namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }}: Traffic Rate is above 90 Percent of Max requests per second(1000)'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric Used             | oc_ingressgateway_http_requests_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Resolution              | <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 <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Reassess why the CNCC IAM is receiving additional traffic.</li> <li>2. If this is unexpected, contact My Oracle Support.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                              |

## CnccCoreMemoryUsageCrossedMinorThreshold

**Table 8-19 CnccCoreMemoryUsageCrossedMinorThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | A pod has reached the configured minor threshold( 70%) of its memory resource limits.                                                                                                                                                                                                                                                                                                              |
| Severity                | Minor                                                                                                                                                                                                                                                                                                                                                                                              |
| Alert details provided  | <p><b>Description:</b> 'CNCC Core Memory Usage for pod {{ \$labels.pod }} has crossed the configured minor threshold (70%) (value={{ \$value }}) of its limit.'</p> <p><b>Summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }} : Memory Usage of pod exceeded 70% of its limit.'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8002                                                                                                                                                                                                                                                                                                                                                                    |
| Metric Used             | <p>container_memory_usage_bytes</p> <p>container_spec_memory_limit_bytes</p> <p>Note : 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>                                                                                                                                      |

**Table 8-19 (Cont.) CnccCoreMemoryUsageCrossedMinorThreshold**

|            |                                                                                                                                                                                                                                                                                                                                                                           |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resolution | <p>The alert gets cleared when the memory utilization falls below the Minor Threshold or crosses the major threshold, in which case CnccCoreMemoryUsageCrossedMajorThreshold alert is raised.</p> <p><b>Note:</b> The threshold is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>If guidance is required, contact My Oracle Support.</p> |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CnccCoreMemoryUsageCrossedMajorThreshold

**Table 8-20 CnccCoreMemoryUsageCrossedMajorThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | A pod has reached the configured major threshold( 80%) of its memory resource limits.                                                                                                                                                                                                                                                                                                                    |
| Severity                | Major                                                                                                                                                                                                                                                                                                                                                                                                    |
| Alert details provided  | <p><b>Description:</b> 'CNCC Core Memory Usage for pod {{ \$labels.pod }} has crossed the configured major threshold (80%) (value = {{ \$value }}) of its limit.'</p> <p><b>Summary:</b> 'namespace: {{ \$labels.namespace}}, podname: {{ \$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Memory Usage of pod exceeded 80% of its limit.'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8002                                                                                                                                                                                                                                                                                                                                                                          |
| Metric Used             | <p>container_memory_usage_bytes</p> <p>container_spec_memory_limit_bytes</p> <p>Note : 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>                                                                                                                                            |
| Resolution              | <p>The alert gets cleared when the memory utilization falls below the Major Threshold or crosses the critical threshold, in which case CnccCoreMemoryUsageCrossedCriticalThreshold alert is raised</p> <p><b>Note:</b> The threshold is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.</p> <p>If guidance is required, contact My Oracle Support.</p>                           |

## CnccCoreMemoryUsageCrossedCriticalThreshold

**Table 8-21 CnccCoreMemoryUsageCrossedCriticalThreshold**

|                   |                                                                                           |
|-------------------|-------------------------------------------------------------------------------------------|
| Trigger Condition | A pod has reached the configured critical threshold ( 90% ) of its memory resource limits |
| Severity          | Critical                                                                                  |

**Table 8-21 (Cont.) CnccCoreMemoryUsageCrossedCriticalThreshold**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alert details provided  | <b>Description:</b> 'CNCC Core Memory Usage for pod {{ \$labels.pod }} has crossed the configured critical threshold (90%) (value = {{ \$value }}) of its limit.'<br><b>Summary:</b> 'namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Memory Usage of pod exceeded 90% of its limit.' |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8002                                                                                                                                                                                                                                                                                                                                                                    |
| Metric Used             | container_memory_usage_bytes<br>container_spec_memory_limit_bytes<br>Note : 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.                                                                                                                                                     |
| Resolution              | The alert gets cleared when the memory utilization falls below the Critical Threshold.<br><b>Note:</b> The threshold is configurable in the <i>occncc_alertrules_&lt;version&gt;.yaml</i> file.<br>If guidance is required, contact My Oracle Support.                                                                                                                                             |

## CnccCoreTransactionErrorRateAbove0.1Percent

**Table 8-22 CnccCoreTransactionErrorRateAbove0.1Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 0.1 percent of the total transactions..                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Alert details provided  | <b>Description:</b> 'CNCC Core transaction Error rate is above 0.1 Percent of Total Transactions (current value is {{ \$value }})'<br><b>Summary:</b> 'CNCC Core transaction Error rate is above 0.1 Percent of Total Transactions (current value is {{ \$value }})'                                                                                                                                                                                                                                                                      |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Resolution              | The alert is cleared when the number of failed transactions are below 0.1% of the total transactions or when the number of failed transactions cross the 1% threshold in which case the <i>CnccCoreTransactionErrorRateAbove1Percent</i> is raised.<br>The threshold is configurable in the <i>alerts.yaml</i> file.<br>Steps: <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CnccCoreTransactionErrorRateAbove1Percent

**Table 8-23 CnccCoreTransactionErrorRateAbove1Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 1 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                       |
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Alert details provided  | <b>Description:</b> 'CNCC Core transaction Error rate is above 1 Percent of Total Transactions (current value is {{ \$value }})'<br><b>Summary:</b> 'CNCC Core transaction Error Rate detected above 1 Percent of Total Transactions'                                                                                                                                                                                                                                                 |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8003                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Resolution              | <p>The alert is cleared when the number of failed transactions are below 1% of the total transactions or when the number of failed transactions crosses the 10% threshold in which case the <i>CnccCoreTransactionErrorRateAbove10Percent</i> is raised.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CnccCoreTransactionErrorRateAbove10Percent

**Table 8-24 CnccCoreTransactionErrorRateAbove10Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 10 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                       |
| Severity                | Minor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alert details provided  | <b>Description:</b> 'CNCC Core transaction Error rate is above 10 Percent of Total Transactions (current value is {{ \$value }})'<br><b>summary:</b> 'CNCC Core transaction Error Rate detected above 10 Percent of Total Transactions'                                                                                                                                                                                                                                                |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8003                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Resolution              | <p>The alert is cleared when the number of failed transactions are below 10% of the total transactions or when the number of failed transactions crosses the 25% threshold in which case the <i>CnccCoreTransactionErrorRateAbove25Percent</i> is raised.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CnccCoreTransactionErrorRateAbove25Percent

**Table 8-25 CnccCoreTransactionErrorRateAbove25Percent**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 25 percent of the total transactions.                                                                                                                                                                                                                                                                                                                                                                                                       |
| Severity                | Major                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Alert details provided  | <b>Description:</b> 'CNCC Core transaction Error Rate detected above 25 Percent of Total Transactions (current value is {{ \$value }})'<br><b>Summary:</b> 'CNCC Core transaction Error Rate detected above 25 Percent of Total Transactions'                                                                                                                                                                                                                                          |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8003                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Resolution              | <p>The alert is cleared when the number of failed transactions are below 25% of the total transactions or when the number of failed transactions crosses the 50% threshold in which case the <i>CnccCoreTransactionErrorRateAbove50Percent</i> is raised.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CnccCoreTransactionErrorRateAbove50Percent

**Table 8-26 CnccCoreTransactionErrorRateAbove50Percent**

|                         |                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The number of failed transactions is above 50 percent of the total transactions.                                                                                                                                                                                                                                                           |
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                   |
| Alert details provided  | <b>Description:</b> 'CNCC Core transaction Error Rate detected above 50 Percent of Total Transactions (current value is {{ \$value }})'<br><b>Summary:</b> 'CNCC Core transaction Error Rate detected above 50 Percent of Total Transactions'                                                                                              |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8003                                                                                                                                                                                                                                                                                                            |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                     |
| Resolution              | <p>The alert is cleared when the number of failed transactions are below 50 percent of the total transactions</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the Service specific metrics to understand the specific service request errors.</li> <li>2. If guidance is required, contact My Oracle Support.</li> </ol> |

## CnccCoreIngressGatewayServiceDown

**Table 8-27 CnccCoreIngressGatewayServiceDown**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | Cncc Core Ingress Gateway service is down                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Severity                | Critical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Alert details provided  | <p><b>Description:</b> 'CNCC Core Ingress-Gateway service InstanceIdentifier=~".*core_ingressgateway" is down'</p> <p><b>For CNE 1.9.0 or later versions:</b></p> <p><b>summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.pod}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Ingress-gateway service down'</p> <p><b>For CNE 1.8.x or previous versions:</b></p> <p><b>summary:</b> 'namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{{ .   first   value   humanizeTimestamp }}{{ end }} : Ingress-gateway service down'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Metric Used             | <p>'up'</p> <p>Note: 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>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Resolution              | <p>The alert is cleared when the cncc-core_ingressgateway service is available.</p> <p>Steps:</p> <ol style="list-style-type: none"> <li>1. Check the orchestration logs of cncc-core_ingressgateway service and check for liveness or readiness probe failures.</li> <li>2. Refer the application logs on Kibana and filter based on cncc-core_ingressgateway service names. Check for ERROR WARNING logs related to thread exceptions.</li> <li>3. Depending on the failure reason, take the resolution steps.</li> <li>4. In case the issue persists, contact My Oracle Support.</li> </ol>                                                                               |

## CnccCoreFailedLogin

**Table 8-28 CnccCoreFailedLogin**

|                   |                                                                          |
|-------------------|--------------------------------------------------------------------------|
| Trigger Condition | The count of failed login attempts in CNCC-Core by a user goes above '3' |
| Severity          | Warning                                                                  |



**Table 8-28 (Cont.) CnccCoreFailedLogin**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alert details provided  | <p><b>Description:</b> '{{ \$value }} failed Login attempts have been detected in CNCC Core for user {{ \$labels.UserName }}, the configured threshold value is 3 failed login attempts for every 5 min'</p> <p><b>For CNE 1.9.0 or later versions:</b><br/> <b>summary:</b> 'namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}: failed login attempts are more than the configured threshold value'</p> <p><b>For CNE 1.8.x or previous versions:</b><br/> <b>summary:</b> 'namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}: failed login attempts are more than the configured threshold value'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8005                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Resolution              | <p>The alert gets cleared when the total failed login attempts for a particular user go below the threshold value (default value is '3') in the last 5 min (default value is 5 m)</p> <p><b>Note:</b> The threshold and time is configurable in the <i>alerts.yaml</i> file.</p> <p>If guidance is required, contact My Oracle Support.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## CnccCoreUnauthorizedAccess

**Table 8-29 CnccCoreUnauthorizedAccess**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | The count of failed login attempts in CNCC-Core by a user goes above '3'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Alert details provided  | <p><b>Description:</b> '{{ \$value }} Unauthorized Accesses have been detected in CNCC-Core for {{ \$labels.ResourceType }} for {{ \$labels.Method }} request. The configured threshold value is 3 for every 5 min'</p> <p><b>For CNE 1.9.0 or later versions:</b><br/> <b>summary:</b> 'namespace: {{ \$labels.namespace }}, podname: {{ \$labels.pod }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}: Unauthorized Access for CNCC-Core are more than threshold value'</p> <p><b>For CNE 1.8.x or previous versions:</b><br/> <b>summary:</b> 'namespace: {{ \$labels.kubernetes_namespace }}, podname: {{ \$labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{{ end }}: Unauthorized Access for CNCC-Core are more than threshold value'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

**Table 8-29 (Cont.) CnccCoreUnauthorizedAccess**

|            |                                                                                                                                                                                                                                                                                                                             |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resolution | <p>The alert gets cleared when the total failed login attempts for a particular user go below the threshold value (default value is '3') in the last 5 min (default value is 5 m)</p> <p><b>Note:</b> The threshold and time is configurable in the alerts.yaml<br/>If guidance is required, contact My Oracle Support.</p> |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CnccCoreAccessTokenFailure

**Table 8-30 CnccCoreAccessTokenFailure**

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trigger Condition       | If the count of failed token for CNCC-Core goes above configured value of '3'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Severity                | Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Alert details provided  | <p><b>Description:</b> 'CNCC Core Access Token Failure count is above the configured value i.e. 3 for every 5 min. Failed access token request count per second is (current value is: {{ \$value }})'</p> <p><b>For CNE 1.8.x or previous versions:</b><br/> <b>summary:</b> 'namespace: {{\$labels.kubernetes_namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }}: Access Token Failure count is above the configured threshold value'</p> <p><b>For CNE 1.9.0 or later versions:</b><br/> <b>summary:</b> 'namespace: {{\$labels.namespace}}, podname: {{\$labels.kubernetes_pod_name}}, timestamp: {{ with query "time()" }}{ .   first   value   humanizeTimestamp }}{ end }}: Access Token Failure count is above the configured threshold value'</p> |
| OID used for SNMP Traps | 1.3.6.1.4.1.323.5.3.51.1.2.8007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Metric Used             | oc_ingressgateway_http_responses_total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Resolution              | <p>The alert gets cleared when the total failed tokens for a particular user go below the threshold value (default value is '3') in the last 5 min (default value is 5 m)</p> <p><b>Note:</b> The threshold and time is configurable in the alerts.yaml<br/>If guidance required, Contact My Oracle Support.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## CNCC Alert configuration in Prometheus

### CNE 1.8 or previous versions:

This section describes the measurement based Alert rules configuration for CNCC in Prometheus. Use the *ocncc\_alertrules\_<version>.yaml* file updated in CNCC Alert configuration section.

**\_NAME\_ :- Helm Release of Prometheus**

**\_Namespace\_ :- Kubernetes NameSpace in which Prometheus is installed**

## Configuration

1. Run the following command to take Backup of current config map of prometheus server:

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

where, <Namespace> is the prometheus server namespace used in helm install command.

For Example, assuming chart name is "prometheus-alert", so "\_NAME\_-server" becomes "prometheus-alert-server", run the following command to find the config map:

```
kubectl get configmaps prometheus-alert-server -o yaml -n prometheus-
alert2 > /tmp/tempConfig.yaml
```

2. Run the following command to check and Add CNCC Alert File name inside Prometheus config map:

- a. If alertscncc is present, delete the alertscncc entry from the t\_mapConfig.yaml file, by executing the following command:

```
sed -i '/etc/config/alertscncc/d' /tmp/mapConfig.yaml
```

- b. If alertscncc is not present, add the alertscncc entry in the t\_mapConfig.yaml file by executing the following command:

```
sed -i '/rule_files:/a\ \ \ - /etc/config/alertscncc' /tmp/mapConfig.yaml
```

3. Run the following command to update Config map with updated file name of CNCC:

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

4. Run the following command to add cnccAlertRules.yaml file into prometheus config map under filename of CNCC alert file:

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

5. Restart prometheus-server pod.
6. Verify the alerts in prometheus GUI.



### Note:

Prometheus server takes updated configmap reloaded after sometime automatically (~20 sec)

Example:

```
$ kubectl get configmaps occne-prometheus-server -o yaml -n occne-
infra > /tmp/tempConfig.yaml
$ sed -i '/etc\/config\/alertscncc/d' /tmp/tempConfig.yaml
$ sed -i '/rule_files:/a\ \- /etc/config/alertscncc' /tmp/
tempConfig.yaml
$ kubectl replace configmap occne-prometheus-server -f /tmp/
tempConfig.yaml
$ kubectl patch configmap occne-prometheus-server -n occne-infra --
type merge --patch "$(cat ~/occncc_alertrules_<version>.yaml) "
```



#### Note:

The Prometheus server takes an updated configuration map that is automatically reloaded after approximately 60 seconds. Refresh the Prometheus GUI to confirm that the CNCC Alerts have been reloaded.

### CNE supporting Prometheus HA (CNE 1.9)

This section describes the measurement based Alert rules configuration for CNCC in Prometheus. Use an updated *occncc\_alerting\_rules\_promha\_<version>.yaml* file.

The PrometheusRule resource specified in the alert YAML file can be created or updated by using following command:

```
$ kubectl apply -f occncc_alerting_rules_promha_<version>.yaml
```

## Validating Alerts

Configure and Validate Alerts in Prometheus Server. Refer to CNCC Alert Configuration section for procedure to configure the alerts.

After configuring the alerts in Prometheus server, a user can verify that by following steps:

1. Open the Prometheus server from your browser using the <IP>:<Port>
2. Navigate to Status and to Rules.
3. Search CNCC. CNCC Alerts list is displayed.



#### Note:

If you are unable to see the alerts, it means the alert file is not loaded in a proper format which the Prometheus server accepts. Modify the file and try again

## Disabling Alerts

This section explains how to disable the alerts in CNCC.

1. Edit `occncc_alerting_rules_promha_<version>.yaml` file to remove specific alert.
2. Remove complete content of the specific alert from the `occncc_alerting_rules_promha_<version>.yaml` file.

### **cncc\_alert\_rules\_<version>.yaml**

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

```
## ALERT SAMPLE START##
- alert: CnccIamTotalIngressTrafficRateAboveMinorThreshold
  annotations:
    description: 'CNCC IAM Ingress traffic Rate is above the configured
minor threshold i.e. 700 requests per second (current value is:
{{ $value }})'
    summary: 'namespace: {{ $labels.kubernetes_namespace }}, podname:
{{ $labels.kubernetes_pod_name }}, timestamp: {{ with query "time()" }}{{ .
| first | value | humanizeTimestamp }}{{ end }}: Traffic Rate is above 70
Percent of Max requests per second(1000) '
    expr:
sum(rate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*cncc
-iam_ingressgateway",kubernetes_namespace="cncc"}[2m])) > 0
    labels:
      severity: minor
      oid: "1.3.6.1.4.1.323.5.3.51.1.2.7001"
      namespace: ' {{ $labels.kubernetes_namespace }} '
      podname: ' {{ $labels.kubernetes_pod_name }} '
## ALERT SAMPLE END##
```

3. Perform Alert configuration. See [CNCC Alert Configuration](#) section for details.

## Configuring SNMP-Notifier

Configure the IP and port of the SNMP trap receiver in the SNMP Notifier using 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
```

2. Edit the destination as follows:

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

Example:

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

## MIB Files for CNCC

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.

### **occncc\_mib\_tc\_<version>.mib**

This file is considered as CNCC top level mib file, where the Objects and their data types are defined.

### **occncc\_mib\_<version>.mib**

This file fetches the Objects from the top level mib file and based on the Alert notification, these objects can be selected for display.



#### **Note:**

MIB files are packaged along with CNCC Custom Templates. Download the file from MOS. Refer to CNCC Installation guide for more details.

# 9

## CNC Console KPIs

This section provides the information about CNC Console KPIs:

### CNC Console IAM KPIs

This section provides the information about CNC Console IAM KPIs:

#### CNCC IAM Requests

**Table 9-1 CNCC IAM Requests**

| KPI Detail          | CNCC IAM Requests                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used for KPI | <b>For CNE 1.8.x or previous versions:</b> <ul style="list-style-type: none"><li>all:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*iam_ingressgateway",kubernetes_namespace="\$namespace"}[2m]))</li></ul> <b>For CNE 1.9.0 or later versions:</b> <ul style="list-style-type: none"><li>all:sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*iam_ingressgateway",namespace="\$namespace"}[2m]))</li></ul> |

#### CNCC IAM Responses

**Table 9-2 CNCC IAM Responses**

| KPI Detail | CNCC IAM Responses |
|------------|--------------------|
|------------|--------------------|

Table 9-2 (Cont.) CNCC IAM Responses

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used for KPI | <p><b>For CNE 1.8.x or previous versions:</b></p> <ul style="list-style-type: none"> <li>all:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"2.*",Route_path=~".*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>all_error:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"4.* 5.*",Route_path=~".*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>all_4xx:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"4.*",Route_path=~".*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>all_5xx:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"5.*",Route_path=~".*",kubernetes_namespace="\$namespace"}[5m]))</li> </ul> <p><b>For CNE 1.9.0 or later versions:</b></p> <ul style="list-style-type: none"> <li>all:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"2.*",Route_path=~".*",namespace="\$namespace"}[5m]))</li> <li>all_error:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"4.* 5.*",Route_path=~".*",namespace="\$namespace"}[5m]))</li> <li>all_4xx:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"4.*",Route_path=~".*",namespace="\$namespace"}[5m]))</li> <li>all_5xx:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*iam_ingressgateway",Status=~"5.*",Route_path=~".*",namespace="\$namespace"}[5m]))</li> </ul> |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CNCC IAM Success Rate

Table 9-3 CNCC IAM Success Rate

|            |                                                                  |
|------------|------------------------------------------------------------------|
| KPI Detail | CNCC IAM Success Rate (2xx responses divided by total responses) |
|------------|------------------------------------------------------------------|



**Table 9-3 (Cont.) CNCC IAM Success Rate**

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used for KPI | <p><b>For CNE 1.8.x or previous versions:</b></p> <ul style="list-style-type: none"> <li>all:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{iam\_ingressgateway}, \text{Status}=\sim\text{"2."}, \text{Route\_path}=\sim\text{.}^*, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{Route\_path}=\sim\text{.}^*, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> </ul> <p><b>For CNE 1.9.0 or later versions:</b></p> <ul style="list-style-type: none"> <li>all:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{iam\_ingressgateway}, \text{Status}=\sim\text{"2."}, \text{Route\_path}=\sim\text{.}^*, \text{namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{Route\_path}=\sim\text{.}^*, \text{namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> </ul> |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CNCC IAM Error Rate

**Table 9-4 CNCC IAM Error Rate**

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KPI Detail          | CNCC IAM Error Rate (4xx or 5xx responses divided by total responses) for all as well as specific NFs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Metric Used for KPI | <p><b>For CNE 1.8.0 or previous versions:</b></p> <ul style="list-style-type: none"> <li>all:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{iam\_ingressgateway}, \text{Status}=\sim\text{"4."}, \text{Route\_path}=\sim\text{.}^*, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{Route\_path}=\sim\text{.}^*, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> </ul> <p><b>For CNE 1.9.0 or later versions:</b></p> <ul style="list-style-type: none"> <li>all:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{iam\_ingressgateway}, \text{Status}=\sim\text{"4."}, \text{Route\_path}=\sim\text{.}^*, \text{namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{Route\_path}=\sim\text{.}^*, \text{namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> </ul> |

## CNC Console Core KPIs

This section provides the information about CNC Console Core KPIs:

## CNCC Core Requests

**Table 9-5 CNCC Core Requests**

| KPI Detail          | CNCC Core Requests for all as well as specific NFs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used for KPI | <p><b>For CNE 1.8.x or previous versions:</b></p> <ul style="list-style-type: none"> <li>all:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",kubernetes_namespace="\$namespace"}[2m]))</li> </ul> <p><b>For CNE 1.9.0 or later versions:</b></p> <ul style="list-style-type: none"> <li>all:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",namespace="\$namespace"}[2m]))</li> <li>scp:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/ocscp/.*" } [2m]))</li> <li>nrf:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nrf-configuration/v1.**/nrf-state-data/*.**/ocnrf-swagger/*.**/nrf-status-data/*.**/nrf/nf-common-component/*.*"} [2m]))</li> <li>udr:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nudr-dr-prov/*.**/nudr-dr-mgm/*.**/nudr-group-id-map-prov/*.**/slf-group-prov/*.**/nudr-config/*.**/udr/nf-common-component/*.**/n5g-eir-prov/*.*"} [2m]))</li> <li>policy:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/policyapi/*.**/oc-cnpolicy-configuration/*.**/pcf/*.*"} [2m]))</li> <li>bsf:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/bsfapi/*.**/oc-bsf-configuration/*.**/bsf/*.*"} [2m]))</li> <li>sepp:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/sepp-configuration/*.**/sepp/*.*"} [2m]))</li> <li>nssf:<br/>sum(irate(oc_ingressgateway_http_requests_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nssf-configuration/*.**/nssf/*.*"} [2m]))</li> </ul> |

## CNCC Core Responses

**Table 9-6 CNCC Core Responses**

| KPI Detail | CNCC Core Responses for all as well as specific NFs |
|------------|-----------------------------------------------------|
|------------|-----------------------------------------------------|

Table 9-6 (Cont.) CNCC Core Responses

| Metric Used for KPI | <p><b>For CNE 1.8.x or previous versions:</b></p> <ul style="list-style-type: none"> <li>all_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>all_error:sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"4.* 5.*",Route_path=~".*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>all_4xx:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"4.*",Route_path=~".*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>all_5xx:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"5.*",Route_path=~".*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>scp_success:sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/ocscp/.*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>nrf_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/nrf-configuration/v1.*"/nrf-state-data/.*/ocnrf-swagger/.*/nrf-status-data/.*/nrf/nf-common-component/.*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>udr_success:sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/nudr-dr-prov/.*/nudr-dr-mgm/.*/nudr-group-id-map-prov/.*/slf-group-prov/.*/nudr-config/.*/udr/nf-common-component/.*/n5g-eir-prov/.*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>policy_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/policyapi/.*/oc-cnpolicy-configuration/.*/pcf/.*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>bsf_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/bsfapi/.*/oc-bsf-configuration/.*/bsf/.*",kubernetes_namespace="\$namespace"}[5m]))</li> <li>sepp_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",</li> </ul> |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Table 9-6 (Cont.) CNCC Core Responses

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>Route_path=~".*/sepp-configuration/.*/sepp/.*",kubernetes_namespace="\$namespace"}[5m]))</pre> <ul style="list-style-type: none"> <li>nssf_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/nssf-configuration/.*/nssf/.*",kubernetes_namespace="\$namespace"}[5m]))</li> </ul> <p><b>For CNE 1.9.0 and later versions:</b></p> <ul style="list-style-type: none"> <li>all_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*",namespace="\$namespace"}[5m]))</li> <li>all_error:sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"4.* 5.*",Route_path=~".*",namespace="\$namespace"}[5m]))</li> <li>all_4xx:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"4.*",Route_path=~".*",namespace="\$namespace"}[5m]))</li> <li>all_5xx:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"5.*",Route_path=~".*",namespace="\$namespace"}[5m]))</li> <li>scp_success:sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/ocscp/.*",namespace="\$namespace"}[5m]))</li> <li>nrf_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/nrf-configuration/v1.**/nrf-state-data/.*/ocnrf-swagger/.*/nrf-status-data/.*/nrf/nf-common-component/.*",namespace="\$namespace"}[5m]))</li> <li>udr_success:sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/nudr-dr-prov.**/nudr-dr-mgm/.*/nudr-group-id-map-prov.**/slf-group-prov.**/nudr-config.**/udr/nf-common-component/.*/n5g-eir-prov/.*",namespace="\$namespace"}[5m]))</li> <li>policy_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/policyapi.**/oc-cnpolicy-configuration/.*/pcf.*",namespace="\$namespace"}[5m]))</li> <li>bsf_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/bsfapi.**/oc-bsf-configuration/.*/bsf.*",namespace="\$namespace"}[5m]))</li> <li>sepp_success:<br/>sum(irate(oc_ingressgateway_http_responses_total{InstancelIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/sepp.*",kubernetes_namespace="\$namespace"}[5m]))</li> </ul> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Table 9-6 (Cont.) CNCC Core Responses

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>anceIdentifier=~".*- core_ingressgateway",Status=~"2.*",Route_path=~".*/ sepp-configuration/.*/.*/ sepp/.*",namespace="\$namespace"){5m}))</pre> <ul style="list-style-type: none"><li>• <code>nssf_success:</code><br/><code>sum(irate(oc_ingressgateway_http_responses_total{Inst</code><br/><code>anceIdentifier=~".*core_ingressgateway",Status=~"2.*",</code><br/><code>Route_path=~".*/nssf-configuration/.*/.*/</code><br/><code>nssf/.*",namespace="\$namespace"){5m}))</code></li></ul> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

CNCC Core Success Rate

Table 9-7 CNCC Core Success Rate

|            |                                                                                                   |
|------------|---------------------------------------------------------------------------------------------------|
| KPI Detail | CNCC Core Success Rate (2xx responses divided by total responses) for all as well as specific NFs |
|------------|---------------------------------------------------------------------------------------------------|

Table 9-7 (Cont.) CNCC Core Success Rate

| Metric Used for KPI | For CNE 1.8.x or previous versions:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ul style="list-style-type: none"> <li>all:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Status}=\sim\text{"2.*"}, \text{Route\_path}=\sim\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{Route\_path}=\sim\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))} * 100</math> </li> <li>scp:<br/> <math display="block">\frac{\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Status}=\sim\text{"2.*"}, \text{Route\_path}=\sim\text{.*}/\text{ocscp}/\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))}{\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Route\_path}=\sim\text{.*}/\text{ocscp}/\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))} * 100</math> </li> <li>nrf:<br/> <math display="block">\frac{\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Status}=\sim\text{"2.*"}, \text{Route\_path}=\sim\text{.*}/\text{nrf-configuration/v1}/\text{.*}/\text{nrf-state-data}/\text{.*}/\text{ocnrf-swagger}/\text{.*}/\text{nrf-status-data}/\text{.*}/\text{nrf/nf-common-component}/\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))}{\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Route\_path}=\sim\text{.*}/\text{nrf-configuration/v1}/\text{.*}/\text{nrf-state-data}/\text{.*}/\text{ocnrf-swagger}/\text{.*}/\text{nrf-status-data}/\text{.*}/\text{nrf/nf-common-component}/\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))} * 100</math> </li> <li>udr:<br/> <math display="block">\frac{\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Status}=\sim\text{"2.*"}, \text{Route\_path}=\sim\text{.*}/\text{nudr-dr-prov}/\text{.*}/\text{nudr-dr-mgm}/\text{.*}/\text{nudr-group-id-map-prov}/\text{.*}/\text{slf-group-prov}/\text{.*}/\text{nudr-config}/\text{.*}/\text{udr/nf-common-component}/\text{.*}/\text{n5g-eir-prov}/\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))}{\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Route\_path}=\sim\text{.*}/\text{nudr-dr-prov}/\text{.*}/\text{nudr-dr-mgm}/\text{.*}/\text{nudr-group-id-map-prov}/\text{.*}/\text{slf-group-prov}/\text{.*}/\text{nudr-config}/\text{.*}/\text{udr/nf-common-component}/\text{.*}/\text{n5g-eir-prov}/\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))} * 100</math> </li> <li>policy:<br/> <math display="block">\frac{\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Status}=\sim\text{"2.*"}, \text{Route\_path}=\sim\text{.*}/\text{policyapi}/\text{.*}/\text{oc-cnppolicy-configuration}/\text{.*}/\text{pcf}/\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))}{\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Route\_path}=\sim\text{.*}/\text{policyapi}/\text{.*}/\text{oc-cnppolicy-configuration}/\text{.*}/\text{pcf}/\text{.*}, \text{kubernetes\_namespace}=\text{"\$namespace"}\}[5m]))} * 100</math> </li> <li>bsf:<br/> <math display="block">\text{sum}(\text{rate}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.*core\_ingressgateway}, \text{Status}=\sim\text{"2.*"}, \text{Route\_path}=\sim\text{.*}/\text{bsfapi}/\text{.*}/\text{oc-bsf-}</math> </li> </ul> |

Table 9-7 (Cont.) CNCC Core Success Rate

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>configuration/.*/bsf/.*/kubernetes_namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/bsfapi.*/oc-bsf-configuration/.*/bsf/.*/kubernetes_namespace="\$namespace"}[5m]))*100</pre> <ul style="list-style-type: none"> <li>sepp: <pre>sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/sepp-configuration/.*/sepp/.*/kubernetes_namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/sepp-configuration/.*/sepp/.*/kubernetes_namespace="\$namespace"}[5m]))*100</pre> </li> <li>nssf: <pre>sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/nssf-configuration/.*/nssf/.*/kubernetes_namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nssf-configuration/.*/nssf/.*/kubernetes_namespace="\$namespace"}[5m]))*100</pre> </li> </ul> <p><b>For CNE 1.9.0 and later versions:</b></p> <ul style="list-style-type: none"> <li>all: <pre>sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*",namespace="\$namespace"}[5m]))/ sum(increase(oc_ingressgateway_http_responses_total{Route_path=~".*",namespace="\$namespace"}[5m]))*100</pre> </li> <li>scp: <pre>sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/ocscp/.*/ocscp/.*/kubernetes_namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/ocscp/.*/ocscp/.*/kubernetes_namespace="\$namespace"}[5m]))*100</pre> </li> <li>nrf: <pre>sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/nrf-configuration/v1/.*/nrf-state-data/.*/ocnrf-swagger/.*/nrf-status-data/.*/nrf/nf-common-component/.*/nrf/.*/kubernetes_namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nrf-configuration/v1/.*/nrf-state-data/.*/ocnrf-swagger/.*/nrf-status-data/.*/nrf/nf-common-component/.*/nrf/.*/kubernetes_namespace="\$namespace"}[5m]))*100</pre> </li> <li>udr: <pre>sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"2.*",Route_path=~".*/nudr-dr-prov/.*/nudr-dr-mgm/.*/nudr-group-id-map-prov/.*/slf-group-prov/.*/nudr-config/.*/udr/nf-common-component/.*/n5g-eir-prov/.*/kubernetes_namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nudr-dr-prov/.*/nudr-dr-mgm/.*/nudr-group-id-map-prov/.*/slf-group-prov/.*/nudr-config/.*/udr/nf-common-component/.*/n5g-eir-prov/.*/kubernetes_namespace="\$namespace"}[5m]))*100</pre> </li> </ul> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Table 9-7 (Cont.) CNCC Core Success Rate

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Route_path=~"/nldr-dr- prov/.*/nldr-dr-mgm/.*/nldr-group-id-map-prov/.*/slf- group-prov/.*/nldr-config/.*/udr/nf-common- component/.*/n5g-eir-prov/.*",namespace="\$namespace"} [5m]))*100</pre> <ul style="list-style-type: none"> <li> <pre>policy: sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Status=~"2.*",Route_path =~"/policyapi/.*/oc-cnpolicy- configuration/.*/pcf/.*",namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Route_path=~"/ policyapi/.*/oc-cnpolicy- configuration/.*/pcf/.*",namespace="\$namespace"} [5m]))*100</pre> </li> <li> <pre>bsf: sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Status=~"2.*",Route_path =~"/bsfapi/.*/oc-bsf- configuration/.*/bsf/.*",namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Route_path=~"/ bsfapi/.*/oc-bsf- configuration/.*/bsf/.*",namespace="\$namespace"} [5m]))*100</pre> </li> <li> <pre>sepp: sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Status=~"2.*",Route_path =~"/sepp-configuration/.*/ sepp/.*",namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Route_path=~"/sepp- configuration/.*/sepp/.*",namespace="\$namespace"} [5m]))*100</pre> </li> <li> <pre>nssf: sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Status=~"2.*",Route_path =~"/nssf-configuration/.*/ nssf/.*",namespace="\$namespace"}[5m]))/ sum(rate(oc_ingressgateway_http_responses_total{InstanceID dentifier=~".*core_ingressgateway",Route_path=~"/nssf- configuration/.*/nssf/.*",namespace="\$namespace"} [5m]))*100</pre> </li> </ul> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CNCC Core Error Rate

Table 9-8 CNCC Core Error Rate

|            |                                                                                                        |
|------------|--------------------------------------------------------------------------------------------------------|
| KPI Detail | CNCC Core Error Rate (4xx or 5xx responses divided by total responses) for all as well as specific NFs |
|------------|--------------------------------------------------------------------------------------------------------|



Table 9-8 (Cont.) CNCC Core Error Rate

| Metric Used for KPI | For CNE 1.8.x or previous versions:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ul style="list-style-type: none"> <li>all:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Status}=\sim\text{4.}^* 5.^*\text{,Route\_path}=\sim\text{.}^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Route\_path}=\sim\text{.}^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> <li>scp:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Status}=\sim\text{4.}^* 5.^*\text{,Route\_path}=\sim\text{.}^*/\text{ocscp}/.^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Route\_path}=\sim\text{.}^*/\text{ocscp}/.^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> <li>nrf:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Status}=\sim\text{4.}^* 5.^*\text{,Route\_path}=\sim\text{.}^*/\text{nrf-configuration/v1}/.^*/\text{nrf-state-data}/.^*/\text{ocnrf-swagger}/.^*/\text{nrf-status-data}/.^*/\text{nrf/nf-common-component}/.^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Route\_path}=\sim\text{.}^*/\text{nrf-configuration/v1}/.^*/\text{nrf-state-data}/.^*/\text{ocnrf-swagger}/.^*/\text{nrf-status-data}/.^*/\text{nrf/nf-common-component}/.^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> <li>udr:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Status}=\sim\text{4.}^* 5.^*\text{,Route\_path}=\sim\text{.}^*/\text{nudr-dr-prov}/.^*/\text{nudr-dr-mgm}/.^*/\text{nudr-group-id-map-prov}/.^*/\text{slf-group-prov}/.^*/\text{nudr-config}/.^*/\text{udr/nf-common-component}/.^*/\text{n5g-eir-prov}/.^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Route\_path}=\sim\text{.}^*/\text{nudr-dr-prov}/.^*/\text{nudr-dr-mgm}/.^*/\text{nudr-group-id-map-prov}/.^*/\text{slf-group-prov}/.^*/\text{nudr-config}/.^*/\text{udr/nf-common-component}/.^*/\text{n5g-eir-prov}/.^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> <li>policy:<br/> <math display="block">\frac{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Status}=\sim\text{4.}^* 5.^*\text{,Route\_path}=\sim\text{.}^*/\text{policyapi}/.^*/\text{oc-cnpolicy-configuration}/.^*/\text{pcf}/.^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))}{\text{sum}(\text{increase}(\text{oc\_ingressgateway\_http\_responses\_total}\{\text{InstanceIdentifier}=\sim\text{.}^*\text{core\_ingressgateway}, \text{Status}=\sim\text{4.}^* 5.^*\text{,Route\_path}=\sim\text{.}^*/\text{policyapi}/.^*/\text{oc-cnpolicy-configuration}/.^*/\text{pcf}/.^*\text{,kubernetes\_namespace}=\text{"\$namespace"}\}[5\text{m}]))} * 100</math> </li> </ul> |

Table 9-8 (Cont.) CNCC Core Error Rate

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> InstanceIdentifier=~".*core_ingressgateway",InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/policyapi/.*/oc-cnpolicy-configuration/.*/pcf/.*",kubernetes_namespace="\$namespace"}[5m]))*100 </pre> <ul style="list-style-type: none"> <li>bsf: <pre> sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"4.*[5.*",Route_path=~".*/bsfapi/.*/oc-bsf-configuration/.*/bsf/.*",kubernetes_namespace="\$namespace"}[5m]))/ sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/bsfapi/.*/oc-bsf-configuration/.*/bsf/.*",kubernetes_namespace="\$namespace"}[5m]))*100 </pre> </li> <li>sepp: <pre> sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"4.*[5.*",Route_path=~".*/sepp-configuration/.*/sepp/.*",kubernetes_namespace="\$namespace"}[5m]))/ sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/sepp-configuration/.*/sepp/.*",kubernetes_namespace="\$namespace"}[5m]))*100 </pre> </li> <li>nssf: <pre> sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"4.*[5.*",Route_path=~".*/nssf-configuration/.*",kubernetes_namespace="\$namespace"}[5m]))/ sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*/nssf-configuration/.*",kubernetes_namespace="\$namespace"}[5m]))*100 </pre> </li> </ul> <p><b>For CNE 1.9.0 or later versions:</b></p> <ul style="list-style-type: none"> <li>all: <pre> sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"4.*[5.*",Route_path=~".*",namespace="\$namespace"}[5m]))/ sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Route_path=~".*",namespace="\$namespace"}[5m]))*100 </pre> </li> <li>scp: <pre> sum(increase(oc_ingressgateway_http_responses_total{InstanceIdentifier=~".*core_ingressgateway",Status=~"4.*[5.*",Route_path=~".*/soothsayer/v1/.*/ocscp/.*",namespace="\$namespace"}[5m]))/ sum(increase(oc_ingressgateway_http_responses_total{ </pre> </li> </ul> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Table 9-8 (Cont.) CNCC Core Error Rate

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre> InstancelIdentifier=~".*core_ingressgateway",Route_path =~".*/ocscp/.**",namespace="\$namespace"}[5m]))*100 </pre> <ul style="list-style-type: none"> <li> <pre> nrf: sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Status=~"4. *[5.**",Route_path=~".*/nrf-configuration/v1/.*/nrf-state- data/.*/ocnrf-swagger/.*/nrf-status-data/.*/nrf/nf- common-component/.**",namespace="\$namespace"} [5m]))/ sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Route_path =~".*/nrf-configuration/v1/.*/nrf-state-data/.*/ocnrf- swagger/.*/nrf-status-data/.*/nrf/nf-common- component/.**",namespace="\$namespace"}[5m]))*100 </pre> </li> <li> <pre> udr: sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Status=~"4. *[5.**",Route_path=~".*/nudr-dr-prov/.*/nudr-dr- mgm/.*/nudr-group-id-map-prov/.*/slf-group- prov/.*/nudr-config/.*/udr/nf-common- component/.*/n5g-eir- prov/.**",namespace="\$namespace"}[5m]))/ sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Route_path =~".*/nudr-dr-prov/.*/nudr-dr-mgm/.*/nudr-group-id- map-prov/.*/slf-group-prov/.*/nudr-config/.*/udr/nf- common-component/.*/n5g-eir- prov/.**",namespace="\$namespace"}[5m]))*100 </pre> </li> <li> <pre> policy: sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Status=~"4. *[5.**",Route_path=~".*/policyapi/.*/oc-cnpolicy- configuration/.*/pcf/.**",namespace="\$namespace"} [5m]))/ sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Instancelde ntifier=~".*core_ingressgateway",Route_path=~".*/ policyapi/.*/oc-cnpolicy- configuration/.*/pcf/.**",namespace="\$namespace"} [5m]))*100 </pre> </li> <li> <pre> bsf: sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Status=~"4. *[5.**",Route_path=~".*/bsfapi/.*/oc-bsf- configuration/.*/bsf/.**",namespace="\$namespace"} [5m]))/ sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Instancelde ntifier=~".*core_ingressgateway",Route_path=~".*/ bsfapi/.*/oc-bsf- configuration/.*/bsf/.**",namespace="\$namespace"} [5m]))*100 </pre> </li> <li> <pre> sepp: sum(increase(oc_ingressgateway_http_responses_total{ InstancelIdentifier=~".*core_ingressgateway",Status=~"4. *[5.**",Route_path=~".*/sepp-configuration/.*/.*/ sepp/.**",namespace="\$namespace"}[5m]))/ </pre> </li> </ul> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Table 9-8 (Cont.) CNCC Core Error Rate

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <pre>sum(increase(oc_ingressgateway_http_responses_total{ InstanceIdentifier=~".*core_ingressgateway",InstanceDe ntifier=~".*core_ingressgateway",Route_path=~".*/sepp- configuration/.*/sepp/.*",namespace="\$namespace"}) [5m]))*100</pre> <ul style="list-style-type: none"> <li>nssf: <pre>sum(increase(oc_ingressgateway_http_responses_total{ InstanceIdentifier=~".*core_ingressgateway",Status=~"4. * 5.*",Route_path=~".*/nssf-configuration/.*/ nssf/.*",namespace="\$namespace"})[5m]))/ sum(increase(oc_ingressgateway_http_responses_total{ InstanceIdentifier=~".*core_ingressgateway",InstanceDe ntifier=~".*core_ingressgateway",Route_path=~".*/nssf- configuration/.*/nssf/.*",namespace="\$namespace"}) [5m]))*100</pre> </li> </ul> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CNC Console Common KPIs

This section provides the information about CNC Console common KPIs:

### CPU Usage

Table 9-9 CPU Usage

| KPI Detail          | CPU usage by all as well as individual microservices in CNCC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used for KPI | <ul style="list-style-type: none"> <li>all: <pre>sum(rate(container_cpu_usage_seconds_total{pod=~".* ",namespace="\$namespace"}[2m]))</pre> </li> <li>cncc-core-cmservice: <pre>sum(rate(container_cpu_usage_seconds_total{pod=~".* cncc-core-cmservice.*",namespace="\$namespace"} [2m]))</pre> </li> <li>cncc-core-ingress: <pre>sum(rate(container_cpu_usage_seconds_total{pod=~".* core-ingress.*",namespace="\$namespace"}[2m]))</pre> </li> <li>cncc-iam-ingress: <pre>sum(rate(container_cpu_usage_seconds_total{pod=~".*i am-ingress.*",namespace="\$namespace"}[2m]))</pre> </li> <li>cncc-iam-kc: <pre>sum(rate(container_cpu_usage_seconds_total{pod=~".*i am-kc.*",namespace="\$namespace"}[2m]))</pre> </li> </ul> |

### Memory Usage

Table 9-10 Memory Usage

| KPI Detail | Memory usage by all as well as individual microservices in CNCC |
|------------|-----------------------------------------------------------------|
|------------|-----------------------------------------------------------------|

**Table 9-10 (Cont.) Memory Usage**

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric Used for KPI | <ul style="list-style-type: none"><li>• all: sum<br/>(container_memory_usage_bytes{pod=~".*",namespace="\$namespace"})</li><li>• cncc-core-cmservice: sum<br/>(container_memory_usage_bytes{pod=~".*core-cmservice.*",namespace="\$namespace"})</li><li>• cncc-core-ingress: sum<br/>(container_memory_usage_bytes{pod=~".*core-ingress.*",namespace="\$namespace"})</li><li>• cncc-iam-ingress: sum<br/>(container_memory_usage_bytes{pod=~".*-iam-ingress.*",namespace="\$namespace"})</li><li>• cncc-iam-kc: sum<br/>(container_memory_usage_bytes{pod=~".*iam-kc.*",namespace="\$namespace"})</li></ul> |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

# 10

## CNC Console Logs

This section describes about the cncc logs. It contains the following topics:

[Log Formats and Details](#)

[Types of Logs](#)

[Configuring the Logs](#)

[Examples of Logs](#)

[Accessing the Logs](#)

### Log Formats

This section provides information about the log formats.

[Log4j JSON Format](#)

[CNCC Message Format](#)

#### Log4j JSON Format

Following are the log format and fields. All logs are represented in JSON format.

```
{
  "thread": <threadName>,
  "level": <log_level>,
  "loggerName": <name_of_the_logging_class>,
  "message": <message>,
  "instant": <timestamp_in_miliseconds>,
  "logTimestamp": <timestamp_in_readable_format>,
  "threadId": <threadId>,
  "threadPriority": <threadPriority>,
  "pod": <name_of_the_pod>,
  "processId": <processId>,
  "contextMap": <context_map>,
  "ocLogId": <unique_trace_id_for_every_request>,
  "instanceType": <instanceType>,
  "ingressTxId": <IngressTransactionId>
}
```

**Table 10-1 Log Details**

| Name   | Description                                                       | Example                          |
|--------|-------------------------------------------------------------------|----------------------------------|
| thread | Name of the thread                                                | "thread": "reactor-http-epoll-1" |
| level  | Level of the log. It can be: Log level (INFO, WARN, DEBUG, TRACE) | "level": "INFO"                  |

Table 10-1 (Cont.) Log Details

| Name           | Description                                                                                                                                           | Example                                                                                                                                                                               |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| loggerName     | Name of the class that generated the log                                                                                                              | "loggerName":<br>"ocpm.cne.gateway.cncc.Gateway<br>Application"                                                                                                                       |
| logTimestamp   | Time represented in human readable format and in UTC. Format is <i>date:yyyy-MM-dd'T'HH:mm:ss.SSSZ</i> EFK friendly and also follows Oracle Standards | "logTimestamp":<br>2020-07-04'T'12:00:40.702Z                                                                                                                                         |
| message        | Information about the event                                                                                                                           | "message": "Started<br>Application....."<br>By default, all messages are in simple string except <b>Audit Log</b> , <b>Security Log</b> which are represented in CNCC Message Format. |
| instant        | The Date and Time the event occurred in epoch second and nano seconds                                                                                 | "instant": { "epochSecond":<br>1590045388, "nanoOfSecond":<br>339789000}                                                                                                              |
| processId      | Linux process Identifier (for a multi-process host)                                                                                                   | Linux process Identifier (for a multi-process host).                                                                                                                                  |
| threadId       | Id of the thread                                                                                                                                      | "threadId": "43"                                                                                                                                                                      |
| threadPriority | Priority assigned to the thread                                                                                                                       | "threadPriority": 5                                                                                                                                                                   |
| pod            | Name of the pods where the log is generated                                                                                                           | "cncc-mcore-ingress-<br>gateway-77df795fb5-wv2sb"                                                                                                                                     |
| contextMap     | It holds information added to threadContext.                                                                                                          | "contextMap": { "hostname": "cncc-<br>mcore-ingress-<br>gateway-77df795fb5-wv2sb",<br>"ingressTxId": "ingress-<br>tx-1460885598"}                                                     |
| ocLogId        | It contains the trace id that is uniquely generated for every request of the format "<timestamp(in milliseconds)>_<thread Id>_<POD name>"             | It contains the trace id that is uniquely generated for every request of the format "<timestamp (in milliseconds)>_<thread Id>_<POD name>"                                            |
| instanceType   | Static tag which implies that instance type is production                                                                                             | "instanceType": "prod"                                                                                                                                                                |
| ingressTxId    | It contains id of the format "ingress-tx-<Random no>" to track every transaction                                                                      | "ingressTxId": ingress-<br>tx-1904660570                                                                                                                                              |

## CNCC Message Format

Table 10-2 CNCC Message Format

| Name    | Description                                                     | Example       | Possible Values   |
|---------|-----------------------------------------------------------------|---------------|-------------------|
| logType | Indicates whether it is <b>Security Log</b> or <b>Audit Log</b> | logType=AUDIT | AUDIT<br>SECURITY |

**Table 10-2 (Cont.) CNCC Message Format**

| Name          | Description                                                                                                                                 | Example                                                                           | Possible Values                                                                                                          |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| type          | Indicates nature or action of the log                                                                                                       | type=REQUEST                                                                      | For Security Log: REQUEST, RESPONSE<br>For Audit Log: LOGIN, ACCESS_RESOURCE, ACCESS_RESOURCE_ERROR, LOGOUT              |
| resourceType  | Indicates what is the resource being requested for                                                                                          | resourceType=SCP                                                                  | CM_SERVICE (For default route)<br>CNCC (For User Login Activity)<br>SCP<br>UDR<br>NRF<br>PCF<br>(all CNCC supported NFs) |
| userId        | Id of the user who triggered request or action                                                                                              | userId=3314f54f-08bf-489d-b395-27bf56da1262                                       | NA                                                                                                                       |
| username      | Name of the user                                                                                                                            | username= "user1"                                                                 | NA                                                                                                                       |
| status        | HTTP status of the response.                                                                                                                | status=200 OK                                                                     | NA                                                                                                                       |
| operationType | HTTP method of the request                                                                                                                  | operationType=GET                                                                 | NA                                                                                                                       |
| scheme        | Indicates the scheme of the request                                                                                                         | scheme=http                                                                       | NA                                                                                                                       |
| remoteAddress | The remote address that is associated with the request. It also means the remote address to where this request is connected when available. | remoteAddress=/192.168.219.64:53587                                               | NA                                                                                                                       |
| localAddress  | The local address that is associated with the request. It also means the local address to where this request is connected when available.   | localAddress=cncc-mcore-ingress-gateway.cncc.svc.cluster.local/<unresolved>:30075 | NA                                                                                                                       |
| resourcePath  | Request uri                                                                                                                                 | resourcePath=/soothsayer/v1/canaryrelease/                                        | NA                                                                                                                       |
| queryParams   | Query parameters associated with request                                                                                                    | queryParams={form_id=9, page=1, view_id=78}                                       | NA                                                                                                                       |



Table 10-2 (Cont.) CNCC Message Format

| Name               | Description                                                                                                            | Example                                                                                                                                                                                                                                                                                                                                            | Possible Values                                                                                                                                             |
|--------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| headers            | Headers associated with request or response                                                                            | headers={Accept=*/, X-Requested-With=XMLHttpRequest, User-Agent=Mozilla/5.0 (Windows NT 10.0; WOW64; rv:68.0) Gecko/20100101 Firefox/68.0, Connection=keep-alive, Host=cncc-core-ingress-gateway.cncc.svc.cluster.local:30075, Accept-Language=en-US,en;q=0.5, Accept-Encoding=gzip, deflate, DNT=1, Content-Type=application/json; charset=utf-8} | NA                                                                                                                                                          |
| payload            | Payload or Data associated with request or response                                                                    | payload=[{"serviceName":"n5g-eir-eic","canaryReleaseFlag":true,"apiFullVersion":"2.0.0","canaryTraffic":5}]                                                                                                                                                                                                                                        | NA                                                                                                                                                          |
| authenticationType | This indicates whether user is requesting resource logged in using CNCC or directly accessing through postman or curl. | authenticationType=OAUTH                                                                                                                                                                                                                                                                                                                           | OAUTH -> User is logged in through CNC Console application and accessing resource<br><br>JWT -> User is accessing resource directly through postman or curl |

## Types of Logs

The CNC Console logs can be categorized into following types:

- [Regular logs](#)
- [Audit logs](#)
- [Security logs](#)

### Regular logs

These logs contain error messages, warnings, or other events written within the application that provide logical, high level information about the application and ongoing events.

Example:

```
{ "level": "INFO", "message": "Started GatewayApplication in 10.748 seconds (JVM running for 12.825)" }
{ "level": "INFO", "message": "Creating plain httpClient" }
{ "level": "INFO", "message": "Creating plain restTemplate" }
```

```
{"level": "ERROR", "message": "Can't get cfgs of topic  
public.dynamic.datamodel, exception is:\njavax.ws.rs.ProcessingException: java.net.ConnectException: Connection  
refused (Connection  
refused)"} }
```

### Audit Logs

These logs contain user related information and the activity within the system.

The following events are logged in CNC Console Core:

- **Log in:** A user has logged in.
- **Access Resource:** A user is accessing a particular NF resource.
- **Access Resource Error:** A user is denied from accessing a particular NF resource.
- **Logout:** A user has logged out.

 **Note:**

The user can find the CNCC Core User Activity logs as part of *cncc-core-ingress-gateway* and are represented in CNCC message format.

The following events are logged in CNCC IAM:

#### Login events

- **Log in:** An admin user has logged in.
- **Register:** An admin user has registered.
- **Logout:** An admin user has logged out.
- **Code to Token:** An application or a client has exchanged a code for a token.
- **Refresh Token:** An application or a client has refreshed a token.

#### Account events

- **Update Email:** The email address for an account has changed.
- **Update Profile:** The profile for an account has changed.
- **Send Password Reset:** A password reset email has been sent.
- **Update Password:** The password for an account has changed.

 **Note:**

The user can find the CNCC IAM User Activity logs as part of *cncc-iam-0*, represented in Keycloak format. These events are provided by keycloak and documented under [Keycloak Auditing End Events](#). Logging Error Logs are recorded by keycloak container as :

```
^[[0m^[[33m10:12:57,388 WARN [org.keycloak.events]
(default task-3) type=LOGIN_ERROR, realmId=master,
clientId=security-admin-console,
  userId=ef58d62e-a0a8-4f4e-bcc6-abccf917641c,
ipAddress=192.168.203.108, error=invalid_user_credentials,
auth_method=openid-connect, auth_type=code,
  redirect_uri=http://10.75.240.33:30085/cncc/auth/
admin/master/console/,
  code_id=3e6d822a-9e82-4660-bb01-a814f7ae8f97,
username=admin,
  authSessionParentId=3e6d822a-9e82-4660-bb01-
a814f7ae8f97,
  authSessionTabId=2ak6Xwal-28
```

## Security Logs

The security logs contain the header, payload, method, scheme, URI information for all the requests and corresponding responses.

## Disabling Security Logs

By default **Security Log** will be enabled for *M-CCNC IAM*, *M-CNCC Core* and *A-CNCC Core*. You can disable this by setting *securityLogEnabled* flag to **false** in *custom values.yaml* file.

```
# CNCC configuration
cncc:
  # Enable security logs for CNCC
  securityLogEnabled: false
```

## Header Information

At all the log levels, sensitive information like **Cookies** are masked.

**Note:**

The user can find the Security logs :

- For M-CNCC Core and A-CNCC Core, these are logged as part of *cncc-mcore-ingress-gateway* or *cncc-acore-ingress-gateway* and are represented in CNCC message format.
- For M-CNCC IAM, these are logged as part of *cncc-iam-ingress-gateway* and are represented in CNCC message format.

**Log Levels**

Default log levels set for M-CNCC Core and A-CNCC Core:

```
ingress-gateway:
  log:
    level:
      cncc:
        root: WARN
        audit: INFO
        security: INFO
```

Default log levels set for M-CNCC IAM:

```
ingress-gateway:
  log:
    level:
      cncc:
        root: WARN
        security: INFO
```

**Supported Headers for Logging**

| Header       | Header values (regex)                |
|--------------|--------------------------------------|
| Content-Type | ^application/x-www-form-urlencoded.* |
|              | ^application/json.*                  |
|              | ^application/problem+json.*          |
| Accept       | ^application/json.*                  |
|              | ^application/ld+json.*               |
|              | ^application/xml.*                   |
|              | ^multipart/form-data.*               |

Role of supporting headers in CNCC Audit and Security logs

- At INFO level, only those request and response that match the supporting headers and values are logged.
- At DEBUG level, no supporting headers used and all request and response are logged.

- At ERROR / WARN, no supporting headers used and only error or warnings are logged.

 **Note:**

Any failure in authorizing a request will always be logged irrespective of the supported header configuration.

## Examples of Logs

This section lists the examples of audit and security logs.

### Examples of Audit Logs

### Examples of Security Logs

#### Examples of Audit Logs

##### CNCC Core

Only message part of the JSON log is shown in the example.

- User successfully logging into CNCC Core

```
logType=AUDIT, type=LOGIN, resourceType=CNCC,
userId=186f6f2a-ba6a-4812-8a18-b906a5f9e3f6, username=shreb,
operationType=GET, remoteAddress=/192.168.219.64:53587,
localAddress=cncc-core-ingress-gateway.cncc.svc.cluster.local/
<unresolved>:30075,
resourcePath=/login/oauth2/code/cncc-iam,
authenticationType=OAUTH
```

- User accessing SCP resource having SCP\_READ role

```
logType=AUDIT, type=ACCESS_RESOURCE, resourceType=SCP,
userId=186f6f2a-ba6a-4812-8a18-b906a5f9e3f6, username=shreb,
operationType=GET, remoteAddress=/192.168.219.64:53587,
localAddress=cncc-core-ingress-gateway.cncc.svc.cluster.local/
<unresolved>:30075,
resourcePath=/soothsayer/v1/canaryrelease/,
authenticationType=OAUTH
```

- User updating(PATCH) SCP resource having SCP\_WRITE role

```
logType=AUDIT, type=ACCESS_RESOURCE, resourceType=SCP,
userId=186f6f2a-ba6a-4812-8a18-b906a5f9e3f6, username=shreb,
operationType=PATCH, remoteAddress=/192.168.219.64:53587,
localAddress=cncc-core-ingress-gateway.cncc.svc.cluster.local/
<unresolved>:30075,
```

```
resourcePath=/soothsayer/v1/canaryrelease/n5g-eir-eic,
authenticationType=OAUTH
```

- User accessing NRF resource without having NRF\_READ role

```
logType=AUDIT, type=ACCESS_RESOURCE_ERROR, resourceType=NRF,
  userId=186f6f2a-ba6a-4812-8a18-b906a5f9e3f6, username=shreb,
status=403 FORBIDDEN, operationType=GET,
remoteAddress=/192.168.219.64:53587,
localAddress=cncc-core-ingress-gateway.cncc.svc.cluster.local/
<unresolved>:30075,
resourcePath=/nrf-configuration/v1/system-options,
authenticationType=OAUTH
```

- User successful logout

```
logType=AUDIT, type=LOGOUT, resourceType=CNCC,
userId=186f6f2a-ba6a-4812-8a18-b906a5f9e3f6, username=shreb,
operationType=POST, remoteAddress=/192.168.219.64:53587,
localAddress=cncc-core-ingress-gateway.cncc.svc.cluster.local/
<unresolved>:30075,
resourcePath=/logout, authenticationType=OAUTH
```

### CNCC IAM:

- Login Error when password entered was wrong

```
04:56:35,890 WARN [org.keycloak.events] (default task-22)
                                     type=LOGIN_ERROR, realmId=master,
clientId=security-admin-console,
                                     userId=d7cde46f-15e1-4ff8-a2cb-
c5825e481438, ipAddress=192.168.219.64,
                                     error=invalid_user_credentials,
auth_method=openid-connect,
                                     auth_type=code, redirect_uri=http://
10.75.225.28:31373/cncc/auth/admin/master/console/, code_id=5aca4960-
eecf-406b-a7eb-92e249c2beeb,
                                     username=admin,
                                     authSessionParentId=5aca4960-eecf-406b-
a7eb-92e249c2beeb,
                                     authSessionTabId=8sruELA1WWs
```

- Login with correct credential

```
04:57:24,581 INFO [org.keycloak.events] (default task-22)
                                     type=LOGIN, realmId=master,
clientId=security-admin-console,
                                     userId=d7cde46f-15e1-4ff8-a2cb-
c5825e481438, ipAddress=192.168.219.64,
                                     auth_method=openid-connect, auth_type=code,
redirect_uri=http://10.75.225.28:31373/cncc/auth/admin/master/console/,
consent=no_consent_required,
                                     code_id=5aca4960-eecf-406b-
```

```
a7eb-92e249c2beeb, username=admin,  
                                authDomainParentId=5aca4960-  
eecf-406b-a7eb-92e249c2beeb,  
                                authDomainTabId=8sruELA1WWs
```

- **User created**

```
04:58:41,804 INFO [org.keycloak.events] (default task-22)  
                                operationType=CREATE, realmId=master,  
                                clientId=819ce4a5-ddbd-4717-908f-  
a204bdabc808,  
                                userId=d7cde46f-15e1-4ff8-a2cb-  
c5825e481438, ipAddress=192.168.219.64,  
                                resourceType=USER,  
                                resourcePath=users/070911f5-c397-42c1-  
b5a4-cd92fa435a33
```

- **Deleted user**

```
05:00:08,226 INFO [org.keycloak.events] (default task-22)  
                                operationType=DELETE, realmId=master,  
                                clientId=819ce4a5-ddbd-4717-908f-  
a204bdabc808,  
                                userId=d7cde46f-15e1-4ff8-a2cb-  
c5825e481438, ipAddress=192.168.219.64,  
                                resourceType=USER,  
                                resourcePath=users/  
2b931bbb-7f97-4f04-9f75-e0d0974ab73d
```

- **Admin Role removed for a user**

```
05:01:07,781 INFO [org.keycloak.events] (default task-22)  
                                operationType=DELETE, realmId=master,  
                                clientId=819ce4a5-ddbd-4717-908f-  
a204bdabc808,  
                                userId=d7cde46f-15e1-4ff8-a2cb-  
c5825e481438, ipAddress=192.168.219.64,  
                                resourceType=REALM_ROLE_MAPPING,  
                                resourcePath=users/  
08fc0058-133b-4288-9165-14c96c5dcd7a/role-mappings/realm
```

- **Admin Role added for a user**

```
05:01:33,664 INFO [org.keycloak.events] (default task-27)  
                                operationType=CREATE, realmId=master,  
                                clientId=819ce4a5-ddbd-4717-908f-  
a204bdabc808,  
                                userId=d7cde46f-15e1-4ff8-a2cb-  
c5825e481438, ipAddress=192.168.219.64,  
                                resourceType=REALM_ROLE_MAPPING,  
                                resourcePath=users/  
08fc0058-133b-4288-9165-14c96c5dcd7a/role-mappings/realm
```

- Realm setting update

```
05:02:29,222 INFO [org.keycloak.events] (default task-26)
                                operationType=UPDATE, realmId=master,
                                clientId=819ce4a5-ddbd-4717-908f-
a204bdabc808,
                                userId=d7cde46f-15e1-4ff8-a2cb-
c5825e481438, ipAddress=192.168.219.64,
                                resourceType=REALM, resourcePath=null
```

- Logout all session on keycloak

```
05:05:02,383 INFO [org.keycloak.events] (default task-29)
                                operationType=ACTION, realmId=master,
                                clientId=819ce4a5-ddbd-4717-908f-
a204bdabc808,
                                userId=d7cde46f-15e1-4ff8-a2cb-
c5825e481438, ipAddress=192.168.219.64,
                                resourceType=REALM, resourcePath=logout-all
```

## Examples of Security Logs

Representation for IAM and Core are same as these logs are part of ingress-gateway. Only message part of the JSON log is shown in the example.

### CNCC Core

- SCP request

```
logType=SECURITY, type=REQUEST, resourceType=SCP,
                                userId=3314f54f-08bf-489d-
b395-27bf56da1262, username=shreb,
                                operationType=GET, scheme=http,
                                remoteAddress=/192.168.219.64:53587,
                                localAddress=cncc-core-ingress-
gateway.cncc.svc.cluster.local/<unresolved>:30075,
                                resourcePath=/soothsayer/v1/
canaryrelease/, queryParams={},
                                headers={Accept=*/, X-Requested-
With=XMLHttpRequest,
                                User-Agent=Mozilla/5.0 (Windows NT
10.0; WOW64; rv:68.0)
                                Gecko/20100101 Firefox/68.0,
Connection=keep-alive,
                                Host=cncc-core-ingress-
gateway.cncc.svc.cluster.local:30075,
                                Accept-Language=en-US,en;q=0.5,
                                Accept-Encoding=gzip, deflate,
                                DNT=1, Content-Type=application/json;
charset=utf-8},
                                payload={}, authenticationType=OAUTH
```



- SCP response

```
logType=SECURITY, type=RESPONSE, resourceType=SCP,
                                userId=3314f54f-08bf-489d-
b395-27bf56da1262, username=shreb,
                                status=200 OK,
operationType=GET, scheme=http,
                                resourcePath=/soothsayer/v1/
canaryrelease/,
                                headers={transfer-
encoding=chunked, Connection=keep-alive,
                                Transfer-Encoding=chunked,
Content-Type=application/json,
                                Date=Sat, 04 Jul 2020 11:58:20
GMT},
                                payload=[{"serviceName":"n5g-
eir-
eic","canaryReleaseFlag":true,"apiFullVersion":"2.0.0","canaryTraffi
c":5}, {"serviceName":"namf-
comm","canaryReleaseFlag":true,"apiFullVersion":"2.0.0","canaryTraffi
c":5}, {"serviceName":"namf-
evts","canaryReleaseFlag":true,"apiFullVersion":"2.0.0","canaryTraffi
c":5}, {"serviceName":"namf-
loc","canaryReleaseFlag":true,"apiFullVersion":"2.0.0","canaryTraffi
c":5}, {"serviceName":"namf-
mt","canaryReleaseFlag":true,"apiFullVersion":"2.0.0","canaryTraffic
":5}, {"serviceName":"nausf-
auth","canaryReleaseFlag":true,"apiFullVersion":"2.0.0","canaryTraffi
c":5}, {"serviceName":"nausf-
sorprotection","canaryReleaseFlag":true,"apiFullVersion":"2.0.0","ca
naryTraffic":5}]],
                                authenticationType=OAUTH
```

## CNCC IAM

- Request

```
logType=SECURITY, type=REQUEST, operationType=GET, scheme=http,
                                remoteAddress=/
192.168.219.64:53587,
                                localAddress=cncc-iam-ingress-
gateway.cncc.svc.cluster.local/<unresolved>:30085,
                                resourcePath=/cncc/auth/admin/
master/console/config,
                                queryParams={},
headers={Accept=application/json,
                                User-Agent=Mozilla/5.0 (Windows
NT 10.0; WOW64; rv:68.0)
                                Gecko/20100101 Firefox/68.0,
Referer=http://cncc-iam-ingress-
gateway.cncc.svc.cluster.local:30085/cncc/auth/admin/master/
console/, Connection=keep-alive,
                                Host=cncc-iam-ingress-
gateway.cncc.svc.cluster.local:30085,
                                Accept-Language=en-US,en;q=0.5,
```

```
Accept-Encoding=gzip, deflate,
                                DNT=1}, payload={},
                                authenticationType=NONE
```

- **Response**

```
logType=SECURITY, type=RESPONSE, status=200 OK,
                                operationType=GET, scheme=http,
                                resourcePath=/cncc/auth/admin/master/
console/config,
                                headers={transfer-encoding=chunked,
Cache-Control=no-cache,
                                X-XSS-Protection=1; mode=block, X-
Frame-Options=SAMEORIGIN,
                                Date=Mon, 06 Jul 2020 10:54:16 GMT,
Connection=keep-alive,
                                Strict-Transport-Security=max-
age=31536000; includeSubDomains,
                                X-Content-Type-Options=nosniff,
Content-Type=application/json,
                                Content-Length=211},

payload={"realm\":\"master\", \"auth-server-url\":\"http://cncc-iam-
ingress-gateway.cncc.svc.cluster.local:30085/cncc/auth/\", \"ssl-
required\":\"none\", \"resource\":\"security-admin-console\", \"public-
client\":true, \"confidential-port\":0},
                                authenticationType=NONE
```

## Accessing logs

This section gives information about how to access the logs.

The CNCC application logs can be accessed in following ways:

1. Run the following command to view logs of a cncc application pod:

```
kubectl logs -f -n <cncc_namespace> <pod_name> -c <container_name>
```

**Example:**

**CNCC Core:**

```
$ kubectl logs -f -n cncc cncc-mcore-ingress-gateway-77df795fb5-wv2sb -c
ingress-gateway (Security & Audit Log)
```

**CNCC IAM:**

```
$ kubectl logs -f -n cncc cncc-iam-ingress-gateway-77df795fb5-wv2sb -c
ingress-gateway (Security Log)
```

```
$ kubectl logs -f -n cncc cncc-iam-0 (Audit Log)
```

## 2. CNCC uses cloud native supported logging framework to view the logs.

Example : Elasticsearch, Fluentd, and Kibana (EFK) can be used here with CNC Console to view the logs as follows:

**Figure 10-1 Log View**

