

Oracle® Communications

Cloud Native Core, Binding Support Function Troubleshooting Guide



Release 25.1.202

G29344-03

April 2026

The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

ORACLE®

Copyright © 2021, 2026, Oracle and/or its affiliates.

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

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

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

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

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

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

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

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

Contents

1	Introduction	
1.1	Overview	1
1.2	References	1
2	Logs	
2.1	Log Levels	1
2.2	Understanding Logs	2
3	Using Debug Tool	
3.1	Configurable Parameters for Debug Tool	14
4	Troubleshooting BSF	
4.1	Deployment Issues	1
4.1.1	Helm Install Failure	1
4.1.2	Loss of Session Binding data	2
4.2	Startup Probes	3
4.3	Upgrade or Rollback Failure	4
5	BSF Alerts	
5.1	Configuring BSF Alerts	1
5.2	List of Alerts	5
5.2.1	AAA_RX_FAIL_COUNT_EXCEEDS_CRITICAL_THRESHOLD	6
5.2.2	AAA_RX_FAIL_COUNT_EXCEEDS_MAJOR_THRESHOLD	6
5.2.3	AAA_RX_FAIL_COUNT_EXCEEDS_MINOR_THRESHOLD	7
5.2.4	SCP_PEER_UNAVAILABLE	7
5.2.5	SCP_PEER_SET_UNAVAILABLE	8
5.2.6	STALE_CONFIGURATION	8
5.2.7	BSF_SERVICES_DOWN	9
5.2.8	BSFTrafficRateAboveMinorThreshold	10
5.2.9	BSFTrafficRateAboveMajorThreshold	10

5.2.10	BSFTrafficRateAboveCriticalThreshold	11
5.2.11	BINDING_QUERY_RESPONSE_ERROR_MINOR	12
5.2.12	BINDING_QUERY_RESPONSE_ERROR_MAJOR	13
5.2.13	BINDING_QUERY_RESPONSE_ERROR_CRITICAL	13
5.2.14	DIAM_RESPONSE_NETWORK_ERROR_MINOR	14
5.2.15	DIAM_RESPONSE_NETWORK_ERROR_MAJOR	14
5.2.16	DIAM_RESPONSE_NETWORK_ERROR_CRITICAL	15
5.2.17	DUPLICATE_BINDING_REQUEST_ERROR_MINOR	15
5.2.18	DUPLICATE_BINDING_REQUEST_ERROR_MAJOR	16
5.2.19	DUPLICATE_BINDING_REQUEST_ERROR_CRITICAL	16
5.2.20	IngressTotalErrorRateAboveMinorThreshold	17
5.2.21	IngressTotalErrorRateAboveMajorThreshold	17
5.2.22	IngressTotalErrorRateAboveCriticalThreshold	17
5.2.23	PCFBindingErrorRateAboveMinorThreshold	18
5.2.24	PCFBindingErrorRateAboveMajorThreshold	18
5.2.25	PCFBindingErrorRateAboveCriticalThreshold	19
5.2.26	IngressCreateErrorRateAboveMinorThreshold	19
5.2.27	IngressCreateErrorRateAboveCriticalThreshold	20
5.2.28	IngressCreateErrorRateAboveMajorThreshold	20
5.2.29	IngressDeleteErrorRateAboveMinorThreshold	21
5.2.30	IngressDeleteErrorRateAboveMajorThreshold	21
5.2.31	IngressDeleteErrorRateAboveCriticalThreshold	22
5.2.32	DBTierDownAlert	22
5.2.33	CPUUsagePerServiceAboveMinorThreshold	23
5.2.34	CPUUsagePerServiceAboveMajorThreshold	23
5.2.35	CPUUsagePerServiceAboveCriticalThreshold	24
5.2.36	MemoryUsagePerServiceAboveMinorThreshold	24
5.2.37	MemoryUsagePerServiceAboveMajorThreshold	25
5.2.38	MemoryUsagePerServiceAboveCriticalThreshold	25
5.2.39	NRF_COMMUNICATION_FAILURE	26
5.2.40	NRF_SERVICE_REQUEST_FAILURE	26
5.2.41	PERF_INFO_ACTIVE_OVERLOAD_THRESHOLD_FETCH_FAILED	27
5.2.42	POD_DOC	27
5.2.43	POD_CONGESTED	28
5.2.44	POD_CONGESTION_L1	28
5.2.45	POD_CPU_CONGESTION_L1	29
5.2.46	POD_CONGESTION_L2	29
5.2.47	POD_CPU_CONGESTION_L2	30
5.2.48	PodPendingRequestDoC	30
5.2.49	PodPendingRequestCongested	31
5.2.50	POD_CPU_DOC	31
5.2.51	POD_CPU_CONGESTED	32

5.2.52	PodMemoryDoC	32
5.2.53	PodMemoryCongested	33
5.2.54	ServiceOverloaded	33
5.2.55	ServiceResourceOverloaded	34
5.2.56	SYSTEM_IMPAIRMENT_MAJOR	39
5.2.57	SYSTEM_IMPAIRMENT_CRITICAL	40
5.2.58	SYSTEM_OPERATIONAL_STATE_PARTIAL_SHUTDOWN	40
5.2.59	SYSTEM_OPERATIONAL_STATE_COMPLETE_SHUTDOWN	40
5.2.60	DIAM_CONN_PEER_DOWN	41
5.2.61	DIAM_CONN_NETWORK_DOWN	41
5.2.62	DIAM_RESPONSE_REALM_VALIDATION_ERROR_CRITICAL	41
5.2.63	DIAM_RESPONSE_REALM_VALIDATION_ERROR_MAJOR	42
5.2.64	DIAM_RESPONSE_REALM_VALIDATION_ERROR_MINOR	43
5.2.65	AUDIT_STALE_NOTIFY_ERROR_RESPONSE_MINOR	43
5.2.66	AUDIT_STALE_NOTIFY_ERROR_RESPONSE_MAJOR	44
5.2.67	AUDIT_STALE_NOTIFY_ERROR_RESPONSE_CRITICAL	44
5.2.68	CERTIFICATE_EXPIRY	45
5.2.69	BSF_CONNECTION_FAILURE	46
5.2.70	INGRESS_GATEWAY_DD_UNREACHABLE_MAJOR	47
5.2.71	EGRESS_GATEWAY_DD_UNREACHABLE_MAJOR	47
5.2.72	DIAM_GATEWAY_CERTIFICATE_EXPIRY_MINOR	48
5.2.73	DIAM_GATEWAY_CERTIFICATE_EXPIRY_MAJOR	48
5.2.74	DIAM_GATEWAY_CERTIFICATE_EXPIRY_CRITICAL	48
5.2.75	DGW_TLS_CONNECTION_FAILURE	49
5.2.76	BINDING_REVALIDATION_PCF_BINDING_MISSING_MINOR	49
5.2.77	BINDING_REVALIDATION_PCF_BINDING_MISSING_MAJOR	49
5.2.78	BINDING_REVALIDATION_PCF_BINDING_MISSING_CRITICAL	50
5.2.79	BSF_STATE_NON_FUNCTIONAL_CRITICAL	51

Preface

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

Documentation Accessibility

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

Access to Oracle Support

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

Diversity and Inclusion

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

Conventions

The following text conventions are used in this document:

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

My Oracle Support

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

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

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

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

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

Acronyms

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

Table Acronyms and Terminologies

Acronym	Definition
3GPP	3rd Generation Partnership Project
AF	Application Function
AMF	Access and Mobility Management Function
ASM	Aspen Service Mesh
BSF	Oracle Communications Cloud Native Core, Binding Support Function
CA	Certificate Authority
CHF	Charging Function
CM	Configuration Management
CNC	Cloud Native Core
CNC Console	Oracle Communications Cloud Native Configuration Console
CNE	Oracle Communication Cloud Native Core, Cloud Native Environment
CNPCRf	Oracle Communications Cloud Native Core, Policy and Charging Rules Function
CUSTOMER_REPO	Docker registry address including the port number, if the docker registry has an associated port.
cnDBTier	Oracle Communications Cloud Native Core, cnDBTier
GUAMI	Globally Unique AMF Identifier
IMAGE_TAG	Image tag from release tar file. You can use any tag number. However, make sure that you use that specific tag number while pushing docker image to the docker registry.
IMS	IP Multimedia Subsystem
HTTPS	Hypertext Transfer Protocol Secure
MCC	Mobile Country Code
MCPTT	Mission-critical push-to-talk
METALLB_ADDRESS_POOL	Address pool configured on metallb to provide external IPs
MNC	Mobile Network Code
NEF	Oracle Communications Cloud Native Core, Network Exposure Function
NPLI	Network Provided Location Information
NRF	Oracle Communications Cloud Native Core, Network Repository Function
PDB	Pod Disruption Budget
PCF	Oracle Communications Cloud Native Core, Policy Control Function
PCRf	Oracle Communications Cloud Native Core, Policy and Charging Rules Function
PCEF	Policy and Charging Enforcement Function
PDS	Policy Data Service
PRA	Presence Reporting Area
PRE	Policy Runtime Engine
PDU	Protocol Data Unit
Policy	Oracle Communications Cloud Native Core, Converged Policy

Table (Cont.) Acronyms and Terminologies

Acronym	Definition
QoS	Quality of Service
RAN	Radio Access Network
SAN	Subject Alternate Name
SMF	Session Management Function
UDR	Oracle Communications Cloud Native Core, Unified Data Repository
SRA	Successful Resource Allocation
STR	Session Termination Request (Rx)
UE	User Equipement
UPF	User Plane Function
UPSI	UE Policy Section Identifier
URSP	UE Route Selection Policies

What's New In This Guide

This section introduces the documentation updates for release 25.1.2xx.

Release 25.1.202 - G29344-03, April 2026

There is no change to this document in this release.

Release 25.1.201 - G29344-02, January 2026

There is no change to this document in this release.

Release 25.1.200 - G29344-01, July 2025

- Added the following alerts to [List of Alerts](#) to support BSF Management service Congestion Control feature:
 - [POD_CPU_DOC](#)
 - [POD_DOC](#)
 - [POD_CONGESTED](#)
 - [POD_CPU_CONGESTED](#)
 - [POD_CONGESTION_L1](#)
 - [POD_CPU_CONGESTION_L1](#)
 - [POD_CONGESTION_L2](#)
 - [POD_CPU_CONGESTION_L2](#)
- Added `BSF_STATE_NON_FUNCTIONAL_CRITICAL` alert to [BSF_STATE_NON_FUNCTIONAL_CRITICAL](#), which is used to trigger an alert when the `cnDBTier` cluster state is down.

1

Introduction

This document provides information about troubleshooting Oracle Communications Cloud Native Core, Binding Support Function (BSF) services and managed objects.

1.1 Overview

The Binding Support Function Troubleshooting Guide provides extensive information about resolving problems you might experience while installing and configuring the network function. This document also provides information about tools available to help you collect and analyze diagnostic data.

This Troubleshooting Guide describes in detail common problems that may arise while installing, configuring, and using BSF. After a user has identified the issue, perform the provided steps to resolve the issue.

1.2 References

Refer to the following documents while deploying BSF:

- *Oracle Communications Cloud Native Binding Support Function Installation, Upgrade, and Fault Recovery Guide*
- *Oracle Communications Cloud Native Core, Binding Support Function REST Specification Guide*
- *Oracle Communications Cloud Native Core, Binding Support Function Network Impact Report Guide*
- *Oracle Communications Cloud Native Core, Binding Support Function Troubleshooting Guide*
- *Oracle Communications Cloud Native Core, Cloud Native Environment Installation and Upgrade Guide*
- *Oracle Communications Cloud Native Core, cnDBTier User Guide*
- *Oracle Communications Cloud Native Core, Data Collector User Guide*
- *Oracle Communications Cloud Native Core Automated Test Suite Guide*
- *Oracle Communications Cloud Native Core Release Notes*
- *Oracle Communications Cloud Native Core Solution Upgrade Guide*

2 Logs

Log files are used to register system events, together with their date and time of occurrence. They can be valuable tools for troubleshooting. Not only do logs indicate that specific events occurred, they also provide important clues about a chain of events that led to an error or problem.

Collecting Logs

This section describes the steps to collect logs from PODs and containers. Perform the following steps:

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

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

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

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

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

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

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

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

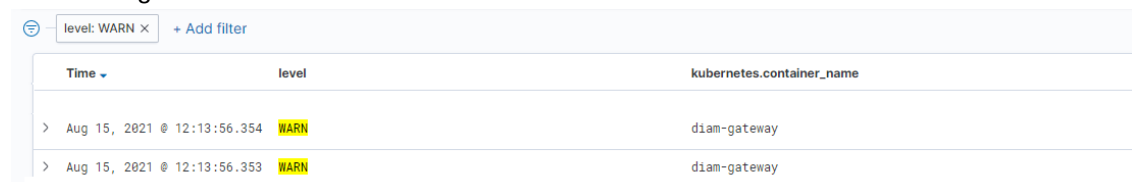
For more information on kubectl commands, see Kubernetes [website](#).

2.1 Log Levels

This section provides information on log levels supported by Oracle Communications Cloud Native Core, Binding Support Function (BSF).

A log level helps in defining the severity level of a log message. Using this information, the logs can be filtered based on the system requirements. For instance, if you want to filter the critical information about your system from the informational log messages, set a filter to view messages with only **WARN** log level in Kibana.

As shown in the following image, only log messages with level defined as WARN are shown, after adding filter:



Time	level	kubernetes.container_name
> Aug 15, 2021 @ 12:13:56.354	WARN	diam-gateway
> Aug 15, 2021 @ 12:13:56.353	WARN	diam-gateway

Supported Log Levels

For BSF, the log level for a micro-service can be set to any of the following valid values:

- **TRACE:** A log level describing events showing step by step execution of your code that can be ignored during the standard operation, but may be useful during extended debugging sessions.
- **DEBUG:** A log level used for events considered to be useful during software debugging when more granular information is needed.
- **INFO:** The standard log level indicating that something happened, the application entered a certain state, etc.
- **WARN:** Indicates that something unexpected happened in the application, a problem, or a situation that might disturb one of the processes. But that doesn't mean that the application failed. The WARN level should be used in situations that are unexpected, but the code can continue the work.
- **ERROR:** The log level that should be used when the application hits an issue preventing one or more functionalities from properly functioning.

Configuring Log Levels

To view logging configurations and update logging levels, use the Logging Level page under **Logging Configurations** on the CNC Console. For more information, see the section "Log Level" in *Oracle Communications Cloud Native Core, Binding Support Function User Guide*.

2.2 Understanding Logs

This section provides information on how to read logs for various services of BSF in Kibana.

Understanding Logs

The following is a sample log for BSF services:

```
{
  "instant": {
    "epochSecond": 1627016656,
    "nanoOfSecond": 137175036
  },
  "thread": "Thread-2",
  "level": "INFO",
  "loggerName": "ocbsf.framework.domain.orchestration.AbstractProcess",
  "marker": {
    "name": "ALWAYS"
  },
  "message": "Received RECONFIGURE request",
  "endOfBatch": false,
  "loggerFqcn": "org.apache.logging.slf4j.Log4jLogger",
  "threadId": 34,
  "threadPriority": 5,
  "messageTimestamp": "2021-07-23T05:04:16.137+0000"
}
```

The log message format is same for all the BSF services.

The following table describes key attributes of a log message:

Table 2-1 Log Attributes

Attribute	Description
level	Log level of the log printed
loggerName	Class/Module which printed the log
message	Message related to the log providing brief details
loggerFqcn	Log4j2 Internal, Fully Qualified class name of logger module
thread	Thread name
threadId	Thread ID generated internally by Log4j2
threadPriority	Thread priority generated internally by Log4j2
messageTimeStamp	Timestamp of log from application container
kubernetes.labels.application	NF Application Name
kubernetes.labels.engineeringVersion	Engineering version of software
kubernetes.labels.marketingVersion	Marketing version of software
kubernetes.labels.microservice	Name of the microservice
kubernetes.namespace_name	Namespace of BSF deployment
kubernetes.host	worker node name on which container is running
kubernetes.pod_name	Pod Name
kubernetes.container_name	Container Name
Docker.container_id	Process ID internally assigned
kubernetes.labels.vendor	Vendor of product

3

Using Debug Tool

Overview

The Debug Tool provides third-party troubleshooting tools for debugging the runtime issues in the lab environment.

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

Prerequisites

This section describes the prerequisites for using debug tool.

Note

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

1. Configuration in CNE

The following configurations must be performed in the Bastion Host.

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

Note

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

Adding a Namespace to an Empty Resource

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

Example:

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

Sample output:

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

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

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

Example:

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

Sample output:

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

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

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

Sample output:

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

```

...
...
spec:
  rules:
    -exclude:
      any:
        -resources: {}

```

Adding a Namespace to an Existing Namespace List

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

Example:

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

Sample output:

```

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

```

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

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

Example:

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

Example:

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

Sample output:

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

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

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

Example:

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

Sample output:

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

Note

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

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

The following configurations must be performed in the Bastion Host.

- i. Log in to the Bastion Host.
- ii. Create a new PSP by running the following command from the bastion host. The parameters **readOnlyRootFilesystem**, **allowPrivilegeEscalation**, **allowedCapabilities** are required by debug container.

Note

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

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

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

Role Creation

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

```
kubectl apply -f - <<EOF
apiVersion: rbac.authorization.k8s.io/v1
kind: Role
metadata:
  name: debug-tool-role
  namespace: ocbsf
rules:
- apiGroups:
```

```

- policy
resources:
- podsecuritypolicies
verbs:
- use
resourceNames:
- debug-tool-psp
EOF

```

RoleBinding Creation

Run the following command to attach the service account for your NF namespace with the role created for the tool PSP:

```

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

```

Refer to *Debug Tool Configuration Parameters* for parameter details.

2. Configuration in NF specific Helm

Following updates must be performed in `custom_values.yaml` file.

- a. Log in to the NF server.
- b. Open the `custom_values` file:

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

- c. Under global configuration, add the following:

```

global:
  extraContainers: ENABLED

```

Note

- Debug Tool Container comes up with the default user ID - 7000. If the operator wants to override this default value, it can be done using the `runAsUser` field, otherwise the field can be skipped.

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

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

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

It ensures that necessary values are added as prefix and suffix to the container name.

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

```
bsf-management-service:
  #extraContainers: DISABLED
  envMySQLDatabase: ocpm_bsf_1.7.0
  resources:
    limits:
      cpu: 1
      memory: 1Gi
    requests:
      cpu: 0.5
      memory: 1Gi
  minReplicas: 1
```

Note

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

Execution of Debug Tool

Following is the procedure to run Debug Tool.

Run the following command to enter Debug Tool Container:

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

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

Example:

```
$ kubectl get pods -n ocbsf
```

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

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

3. Run the debug tools:

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

Example:

```
bash -4.2$ tcpdump
```

4. Copy the output files from container to host:

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

Tools Tested in Debug Container

Following is the list of debug tools that are tested.

tcpdump

Table 3-1 tcpdump

Options Tested	Description	Output	Capabilities
-D	Print the list of the network interfaces available on the system and on which <i>tcpdump</i> can capture packets.	<pre>tcpdump -D</pre> <ol style="list-style-type: none"> 1. eth02. 2. nflog (Linux netfilter log (NFLOG) interface) 3. nfqueue (Linux netfilter queue (NFQUEUE) interface) 4. any (Pseudo-device that captures on all interfaces) 5. lo [Loopback] 	NET_ADMIN, NET_RAW

Table 3-1 (Cont.) tcpdump

Options Tested	Description	Output	Capabilities
-i	Listen on <i>interface</i> .	<pre>tcpdump -i eth0 tcpdump: verbose output suppressed, use -v or -vv for full protocol decodelistening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes12:10:37.381199 IP cncc-core-ingress-gateway-7ffc49bb7f-2kkhc.46519 > kubernetes.default.svc.cluster.local.https: Flags [P.], seq 1986927241:1986927276, ack 1334332290, win 626, options [nop,nop,TS val 849591834 ecr 849561833], length 3512:10:37.381952 IP cncc-core-ingress- gateway-7ffc49bb7f-2kkhc.45868 > kube-dns.kube- system.svc.cluster.local.domain: 62870+ PTR? 1.0.96.10.in- addr.arpa. (40)</pre>	NET_ADMIN, NET_RAW
-w	Write the raw packets to file rather than parsing and printing them out.	<pre>tcpdump -w capture.pcap -i eth0</pre>	NET_ADMIN, NET_RAW
-r	Read packets from <i>file</i> (which was created with the -w option).	<pre>tcpdump -r capture.pcap reading from file /tmp/capture.pcap, link-type EN10MB (Ethernet)12:13:07.381019 IP cncc-core-ingress- gateway-7ffc49bb7f-2kkhc.46519 > kubernetes.default.svc.cluster.local.https: Flags [P.], seq 1986927416:1986927451, ack 1334332445, win 626, options [nop,nop,TS val 849741834 ecr 849711834], length 3512:13:07.381194 IP kubernetes.default.svc.cluster.local.https > cncc-core- ingress-gateway-7ffc49bb7f-2kkhc.46519: Flags [P.], seq 1:32, ack 35, win 247, options [nop,nop,TS val 849741834 ecr 849741834], length 3112:13:07.381207 IP cncc-core- ingress-gateway-7ffc49bb7f-2kkhc.46519 > kubernetes.default.svc.cluster.local.https: Flags [.], ack 32, win 626, options [nop,nop,TS val 849741834 ecr 849741834], length 0</pre>	NET_ADMIN, NET_RAW

ip

Table 3-2 ip

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

Table 3-2 (Cont.) ip

Options Tested	Description	Output	Capabilities
route show	List routes.	ip route show default via 169.254.1.1 dev eth0 169.254.1.1 dev eth0 scope link	--
addrlabel list	List address labels	ip addrlabel list prefix ::1/128 label 0 prefix ::/96 label 3 prefix ::ffff:0.0.0.0/96 label 4 prefix 2001::/32 label 6 prefix 2001:10::/28 label 7 prefix 3ffe::/16 label 12 prefix 2002::/16 label 2 prefix fec0::/10 label 11 prefix fc00::/7 label 5 prefix ::/0 label 1	--

netstat

Table 3-3 netstat

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

Table 3-3 (Cont.) netstat

Options Tested	Description	Output	Capabilities
-i	Display a table of all network interfaces.	netstat -i Kernel Interface tablelface MTU RX-OK RX-ERR RX-DRP RX-OVR TX-OK TX-ERR TX-DRP TX-OVR Flgeth0 1440 4131 0 0 0 4355 0 0 0 BMRUlo 65536 0 0 0 0 0 0 LRU	--

jq

Table 3-4 jq

Options Tested	Description	Output	Capabilities
<jq filter> [file...]	Use it to slice and filter and map and transform structured data. Sample JSON file: <pre>{ "fruit": { "name": "apple", "color": "green", "price": 1.2 } }</pre>	jq '.fruit' sample.json <pre>{ "name": "apple", "color": "green", "price": 1.2 }</pre>	--
Sample Json	Sample JSON file: <pre>{ "fruit": { "name": "apple", "color": "green", "price": 1.2 } }</pre>	jq '.fruit.color,.fruit.price' sample.json "green" 1.2	--

curl

Table 3-5 curl

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

ping

Table 3-6 ping

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

nmap

Table 3-7 nmap

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

Table 3-7 (Cont.) nmap

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

Table 3-7 (Cont.) nmap

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

dig

Table 3-8 dig

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

3.1 Configurable Parameters for Debug Tool

This section describes the configurable parameters that users can customize to configure debug tool.

CNE Parameters

Table 3-9 CNE Parameters

Parameter	Description
apiVersion	APIVersion defines the version schema of this representation of an object.
kind	Kind is a string value representing the REST resource this object represents.
metadata	Standard object's metadata.
metadata.name	Name must be unique within a namespace.
spec	spec defines the policy enforced.
spec.readOnlyRootFilesystem	Controls whether the containers run with a read-only root filesystem (no writable layer).
spec.allowPrivilegeEscalation	Gates whether or not a user is allowed to set the security context of a container to allowPrivilegeEscalation=true.
spec.allowedCapabilities	Provides a list of capabilities that are allowed to be added to a container.
spec.fsGroup	Controls the supplemental group applied to some volumes. RunAsAny allows any fsGroup ID to be specified.
spec.runAsUser	Controls which user ID the containers are run with. RunAsAny allows any runAsUser to be specified.
spec.seLinux	RunAsAny allows any seLinuxOptions to be specified.
spec.supplementalGroups	Controls which group IDs containers add. RunAsAny allows any supplementalGroups to be specified.
spec.volumes	Provides a list of allowed volume types. The allowable values correspond to the volume sources that are defined when creating a volume.

Role Creation Parameters

Table 3-10 Role Creation

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

Table 3-11 Role Binding Creation

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

Debug Tool Configuration Parameters**Table 3-12 Debug Tool Configuration Parameters**

Parameter	Description
command	String array used for container command.
image	Docker image name
imagePullPolicy	Image Pull Policy
name	Name of the container
resources	Compute Resources required by this container
resources.limits	Limits describes the maximum amount of compute resources allowed
resources.requests	Requests describes the minimum amount of compute resources required
resources.limits.cpu	CPU limits
resources.limits.memory	Memory limits
resources.limits.ephemeral-storage	Ephemeral Storage limits
resources.requests.cpu	CPU requests
resources.requests.memory	Memory requests
resources.requests.ephemeral-storage	Ephemeral Storage requests
securityContext	Security options the container should run with.
securityContext.allowPrivilegeEscalation	AllowPrivilegeEscalation controls whether a process can gain more privileges than its parent process. This directly controls if the no_new_privs flag will be set on the container process
securityContext.readOnlyRootFilesystem	Whether this container has a read-only root filesystem. Default is false.

Table 3-12 (Cont.) Debug Tool Configuration Parameters

Parameter	Description
securityContext.capabilities	The capabilities to add/drop when running containers. Defaults to the default set of capabilities granted by the container runtime.
securityContext.capabilities.drop	Removed capabilities
securityContext.capabilities.add	Added capabilities
securityContext.runAsUser	The UID to run the entrypoint of the container process.
debugToolContainerMemoryLimit	Indicates the memory assigned for the debug tool container.
extraContainersVolumesTpl	Specifies the extra container template for the debug tool volume.
extraContainersVolumesTpl.name	Indicates the name of the volume for debug tool logs storage.
extraContainersVolumesTpl.emptyDir.medium	Indicates the location where <code>emptyDir</code> volume is stored.
extraContainersVolumesTpl.emptyDir.sizeLimit	Indicates the <code>emptyDir</code> volume size.
volumeMounts.mountPath	Indicates the path for volume mount.
volumeMounts.name	Indicates the name of the directory for debug tool logs storage.

4

Troubleshooting BSF

This section provides information on how to troubleshoot the common errors that may occur during the installation and upgrade of Oracle Communications Cloud Native Core, Binding Support Function.

4.1 Deployment Issues

This section provides information on how to troubleshoot deployment issues for BSF.

4.1.1 Helm Install Failure

If `helm install` command Fails

This section describes various scenarios and troubleshooting procedures if the `helm install` command fails.

Reasons for `helm install` failure:

- **Chart syntax issue**
Please resolve the chart specific things and rerun the `helm install` command, because in this case, no hooks should have begun.
- **Most Possible Reason [Timeout]**
If any job is stuck in a pending/error state and not able to execute, it will result in the timeout after 5 minutes as default timeout for helm command is "5 minutes". In this case, follow the below steps to troubleshoot.
- **`helm install` command failed in case of duplicated chart**

```
helm install /home/cloud-user/bsf_1.5.0/sprint3.1/ocbsf-1.5.0-  
sprint.3.1.tgz --name ocbsf2 --namespace ocbsf2 -f cust-ashish.yaml  
Error: release ocbsf2 failed: configmaps "perfinfo-config-ocbsf2" already  
exists
```

Here, configmap `perfinfo-config-ocbsf2` exists multiple times while creating the Kubernetes objects after the pre-upgrade hooks. This is a failure scenario. In this case, perform the following troubleshooting steps.

Troubleshooting steps:

1. Run the following command to cleanup the databases created by the `helm install` command :

```
DROP DATABASE IF EXISTS ocbsf_commonconfig;  
DROP DATABASE IF EXISTS ocbsf_config_server;  
DROP DATABASE IF EXISTS ocpm_bsf;  
DROP DATABASE IF EXISTS ocbsf_release;  
DROP DATABASE IF EXISTS ocbsf_audit_service;
```

2. Run the following command to get kubernetes objects:

```
kubectl get all -n <release_namespace>
```

This gives a detailed overview of which objects are stuck or in a failed state.

3. Run the following command to delete all kubernetes objects:

```
kubectl delete all --all -n <release_namespace>  
kubectl delete cm --all -n <release_namespace>
```

4. Run the following command to list all the kubernetes objects:

```
helm ls --all
```

If this is in a failed state, please purge the namespace using the command

```
helm delete --purge <release_namespace>
```

Note

If the execution of this command is taking more time, run the below command parallelly in another session to clear all the delete jobs.

```
while true; do kubectl delete jobs --all -n <release_namespace>;  
sleep 5;done
```

Monitor the below command:

```
helm delete --purge <release_namespace>
```

Once that is succeeded, press "ctrl+c" to stop the above script.

5. After the database cleanup, run the `helm install` command.

4.1.2 Loss of Session Binding data

Symptom

When the NDB Cluster goes down (due to node group being down), it results in loss of session binding data from `pcf_binding` table in BSF.

Problem

NOLOGGING is enabled for the `pcf_binding` table in the `ocpm_bsf` database which means there is non-persistent storage of session table in PV. Hence, when the NDB Cluster goes down there is loss of session binding data.

Resolution Steps

To resolve this issue, perform the following steps:

1. Monitor the alerts and the KPI to determine the status of the BSF cnDBTier and the NF.
2. If there is an issue due to cnDBTier cluster down, perform a controlled shutdown of the BSF in the affected site.
3. Perform a GRR procedure in the cnDBTier to recover the database and replication.
4. Start the BSF again using the controlled shutdown procedure to reinitiate the BSF to accept traffic.

4.2 Startup Probes

To increase the application's reliability and availability, startup probes are introduced in BSF. Consider a scenario where the configuration is not loaded or partially loaded but the service goes into a ready state. This may result in different pods showing different behaviour for the same service. With the introduction of startup probe, the readiness and liveness checks for a pod are not initiated until the configuration is loaded completely and startup probe is successful. However, if the startup probe fails, the container restarts.

To check the status of startup probe or investigate the reason of failing, perform the following steps:

1. Log in to a container by running the following command:

```
kubectl exec -it podname -n namespace -- bash
curl -kv http://localhost:<monitoring-port>/<startup-probe-url>
```

Example:

```
kubectl exec -it test-bsf-797cf5997-2zlgf -- curl -kv http://
localhost:9000/actuator/health/startup
```

The sample output can be as follow:

```
[cloud-user@bastion-1 ~]$
* Trying ::1...
* TCP_NODELAY set
* connect to ::1 port 9000 failed: Connection refused
* Trying 127.0.0.1...
* TCP_NODELAY set
* connect to 127.0.0.1 port 9000 failed: Connection refused
* Failed to connect to localhost port 9000: Connection refused
* Closing connection 0
curl: (7) Failed to connect to localhost port 9000: Connection refused
command terminated with exit code 7
[cloud-user@bastion-1 ~]$ k exec -it test-bsf-797cf5997-2zlgf -- curl -kv
http://localhost:9000/actuator/health/startup
* Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 9000 (#0)
> GET /actuator/health/startup HTTP/1.1
> Host: localhost:9000
> User-Agent: curl/7.61.1
> Accept: */*
>
< HTTP/1.1 503 Service Unavailable
```

```

< Date: Thu, 21 Apr 2022 11:18:03 GMT
< Content-Type: application/json;charset=utf-8
< Transfer-Encoding: chunked
< Server: Jetty(9.4.43.v20210629)
<
* Connection #0 to host localhost left intact
{"status":"DOWN"}[cloud-user@bastion-1 ~]$ k exec -it test-
bsf-797cf5997-2zlgf -- curl -kv http://localhost:9000/actuator/health/
startup
*   Trying ::1...
* TCP_NODELAY set
* Connected to localhost (::1) port 9000 (#0)
> GET /actuator/health/startup HTTP/1.1
> Host: localhost:9000
> User-Agent: curl/7.61.1
> Accept: */*
>
< HTTP/1.1 200 OK
< Date: Thu, 21 Apr 2022 11:18:04 GMT
< Content-Type: application/json;charset=utf-8
< Transfer-Encoding: chunked
< Server: Jetty(9.4.43.v20210629)
<
* Connection #0 to host localhost left intact
{"status":"UP"}[cloud-user@bastion-1 ~]$

```

2. To check why the startup probe failed, describe the output:

Describe output:

```

Warning Unhealthy <invalid> (x10 over 2m45s) kubelet
Startup probe failed: Get "http://10.233.81.231:9000/actuator/health/
startup": dial tcp 10.233.81.231:9000: connect: connection refused

```

The following could be the possible reasons for startup probe failure:

- Network connectivity issue
 - Database connection issue due to which server is not coming up
 - Due to any other exception
3. If the reason for startup probe failure is not clear, check the logs to determine if it is due to an issue with config-server connection or any issue with fetching configurations from the config-server.

4.3 Upgrade or Rollback Failure

When Oracle Communications Cloud Native Core, Binding Support Function (BSF) upgrade or rollback fails, perform the following procedure.

1. Check the pre or post upgrade or rollback hook logs in Kibana as applicable. Users can filter upgrade or rollback logs using the following filters:
 - For upgrade: lifeCycleEvent=9001 or 9011
 - For rollback: lifeCycleEvent=9002

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

5

BSF Alerts

This section provides information on Oracle Communications Cloud Native Core, Binding Support Function (BSF) alerts and their configuration.

Note

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

You can configure alerts in Prometheus and `Alertrules.yaml` file.

The following table describes the various severity types of alerts generated by Policy:

Table 5-1 Alerts Levels or Severity Types

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

5.1 Configuring BSF Alerts

This section describes how to configure alerts for Oracle Communications Cloud Native Core, Binding Support Function. The Alert Manager uses the Prometheus measurements values as reported by microservices in conditions under alert rules to trigger alerts.

Note

- The Alertmanager and Prometheus tools must run in CNE namespace, for example, `occne-infra`.
- Alert file is packaged with BSF Custom Templates. The **BSF Custom Templates.zip** file can be downloaded from MOS. Unzip the **BSF Custom Templates.zip** file to get **BSF_Alertrules.yaml** file. This file must be readily available before the user configures alerts in Prometheus.

Configuring Alerts for CNE versions prior to 1.5

To Configure BSF alerts in Prometheus:

1. Run the following command to find the configmap and configure alerts in the Prometheus server:

```
kubectl get configmap -n <Namespace>
```

Where:

<Namespace> is the prometheus server namespace used in Helm install command.

For Example, assuming Prometheus server is under **occne-infra** namespace, run the following command to find the configmap:

```
kubectl get configmaps -n occne-infra | grep Prometheus-server
```

Output: `occne-prometheus-server 4 46d`

2. Run the following command to take a backup of the current Prometheus server configmap:

```
kubectl get configmaps <Name> -o yaml -n <Namespace> > /tmp/  
t_mapConfig.yaml
```

where, <Name> is the Prometheus configmap name used in Helm install command.

3. Check if **alertsbsf** is present in the **t_mapConfig.yaml** file by running the following command:

```
cat /tmp/t_mapConfig.yaml | grep alertsbsf
```

Depending on the outcome of the previous step, perform any of the following:

- If **alertsbsf** is present, delete the **alertsbsf** entry from the **t_mapConfig.yaml** file, by running the following command:

```
sed -i '/etc\/config\/alertsbsf/d' /tmp/t_mapConfig.yaml
```

Note

Run this command only once.

- If **alertsbsf** is not present, add the **alertsbsf** entry in the **t_mapConfig.yaml** file by running the following command:

```
sed -i '/rule_files:/a\    \- /etc/config/alertsbsf' /tmp/  
t_mapConfig.yaml
```

Note

Run this command only once.

4. Run the following command to reload the configmap with the modified file:

```
kubectl replace configmap <Name> -f /tmp/t_mapConfig.yaml
```

Note

It is not required for AlertRules.

5. Add **BSF_Alertrules.yaml** file into Prometheus server configmap by running the following command :

```
kubectl patch configmap <Name> -n <Namespace> --type merge --patch  
"$(cat <PATH>/BSF_Alertrules.yaml)"
```

where, <PATH> is the location of the **BSF_Alertrules.yaml** file.

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

The following image shows the BSF Alerts:

```
/etc/config/alerts/BSF_Alertrules.yaml > BSF_ALERTS
```

```
BSF_SERVICES_DOWN (2 active)
```

```
IngressCreateErrorRateAbove1Percent (2 active)
```

```
IngressTotalErrorRateAbove10Percent (1 active)
```

```
PCFBindingErrorRateAbove1Percent (3 active)
```

```
BSFTrafficRateAboveThreshold (0 active)
```

```
IngressDeleteErrorRateAbove1Percent (0 active)
```

Configuring Alerts for CNE version from 1.5.0 up to 1.8.x

To Configure BSF alerts in Prometheus:

1. Copy the **BSF_Alertrules.yaml** file to the Bastion Host. Place this file in the `/var/occne/cluster/<cluster-name>/artifacts/alerts` directory on the OCCNE Bastion Host.

```
$ pwd /var/occne/cluster/stark/artifacts/alerts
$ ls
occne_alerts.yaml
$ vi BSF_Alertrules.yaml
$ ls BSF_Alertrules.yaml occne_alerts.yaml
```

2. To set the correct file permissions, run the following command:

```
$ chmod 644 BSF_Alertrules.yaml
```

3. To load the updated rules from the Bastion host in the file to the existing `occne-prometheus-alerts` configmap, run the following command:

```
$ kubectl create configmap occne-prometheus-alerts --from-file=/var/occne/cluster/<cluster-name>/artifacts/alerts -o yaml --dry-run -n occne-infra |
kubectl replace -f -
$ kubectl get configmap -n occne-infra
```

4. To verify the alerts in the Prometheus GUI, select the Alerts tab and view alert details by selecting any individual rule from the list of configured rules.

Configuring Alerts for CNE 1.9.0 and later versions

To configure BSF alerts in Prometheus for CNE 1.9.0, perform the following steps:

1. Copy the **BSF_Alertrules.yaml** file to the Bastion Host.
2. To create or replace the PrometheusRule CRD, run the following command:

```
$ kubectl apply -f ocbsf-alerting-rules.yaml -n <namespace>
```

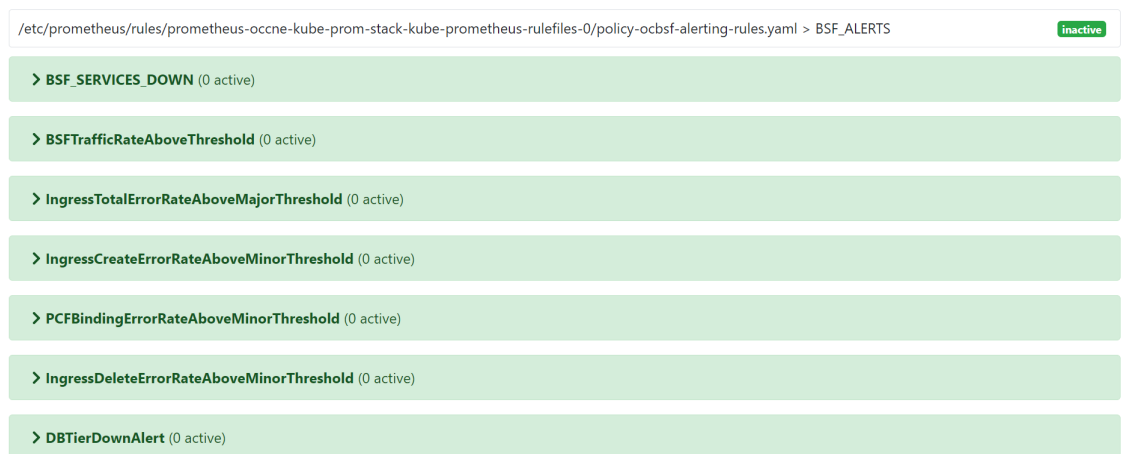
To verify if the CRD is created, run the following command:

```
kubectl get prometheusrule -n <namespace>
```

3. To verify the alerts in the Prometheus GUI, select the Alerts tab and view alert details by selecting any individual rule from the list of configured alerts.

The following screen capture shows the Prometheus dashboard with BSF alerts configured for CNE 1.9.0:

Figure 5-1 BSF alerts on Prometheus Dashboard



Note

1. For upgrading to BSF 1.11.0 from a previous supported version on CNE 1.8.x, use the `BSF_Alertrules_cne1.5+.yaml` file. On the Prometheus dashboard, configure both old and new alert rules.
2. For installing BSF 1.11.0 on CNE 1.9.0 and later versions, use the `BSF_Alertrules_cne1.9+.yaml` file. On the Prometheus dashboard, configure only the new alert rules.

5.2 List of Alerts

This section lists the alerts available for Oracle Communications Cloud Native Core, Binding Support Function (BSF).

5.2.1 AAA_RX_FAIL_COUNT_EXCEEDS_CRITICAL_THRESHOLD

Table 5-2 AAA_RX_FAIL_COUNT_EXCEEDS_CRITICAL_THRESHOLD

Field	Details
Description	AAA Rx fail count exceeds the critical threshold limit.
Summary	AAA Rx fail count exceeds the critical threshold limit.
Severity	CRITICAL
Condition	sum by(namespace) (rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236", responseCode!~"2.*"}[5m]) / rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236"}[5m])) * 100 > 90
OID	1.3.6.1.4.1.323.5.3.37.1.2.40
Metric Used	ocbsf_diam_response_network_total
Recommended Actions	For any additional guidance, contact My Oracle Support.

5.2.2 AAA_RX_FAIL_COUNT_EXCEEDS_MAJOR_THRESHOLD

Table 5-3 AAA_RX_FAIL_COUNT_EXCEEDS_MAJOR_THRESHOLD

Field	Details
Description	AAA Rx fail count exceeds the major threshold limit
Summary	AAA Rx fail count exceeds the major threshold limit.
Severity	MAJOR
Condition	sum by(namespace) (rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236", responseCode!~"2.*"}[5m]) / rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236"}[5m])) * 100 <=90 and sum by(namespace) (rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236", responseCode!~"2.*"}[5m]) / rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236"}[5m])) * 100 > 80
OID	1.3.6.1.4.1.323.5.3.37.1.2.40
Metric Used	ocbsf_diam_response_network_total
Recommended Actions	For any additional guidance, contact My Oracle Support.

5.2.3 AAA_RX_FAIL_COUNT_EXCEEDS_MINOR_THRESHOLD

Table 5-4 AAA_RX_FAIL_COUNT_EXCEEDS_MINOR_THRESHOLD

Field	Details
Description	AAA Rx fail count exceeds the minor threshold limit.
Summary	AAA Rx fail count exceeds the minor threshold limit.
Severity	MINOR
Condition	<pre>sum by(namespace) (rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236", responseCode!~"2.*"}[5m]) / rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236"}[5m])) * 100 <=80 and sum by(namespace) (rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236", responseCode!~"2.*"}[5m]) / rate(ocbsf_diam_response_network_total{msgType="AAA", appld="16777236"}[5m])) * 100 > 60</pre>
OID	1.3.6.1.4.1.323.5.3.37.1.2.40
Metric Used	ocbsf_diam_response_network_total
Recommended Actions	For any additional guidance, contact My Oracle Support.

5.2.4 SCP_PEER_UNAVAILABLE

Table 5-5 SCP_PEER_UNAVAILABLE

Field	Details
Description	Configured SCP peer is unavailable.
Summary	Configured SCP peer is unavailable.
Severity	Major
Condition	ocbsf_oc_egressgateway_peer_health_status != 0. SCP peer [{{\$labels.peer}}] is unavailable.
OID	1.3.6.1.4.1.323.5.3.37.1.2.38
Metric Used	ocbsf_oc_egressgateway_peer_health_status
Recommended Actions	<p>This alert gets cleared when unavailable SCPs become available.</p> <p>For any additional guidance, contact My Oracle Support.</p>

5.2.5 SCP_PEER_SET_UNAVAILABLE

Table 5-6 SCP_PEER_SET_UNAVAILABLE

Field	Details
Description	None of the SCP peer available for configured peerset.
Summary	(ocbsf_oc_egressgateway_peer_count - ocbsf_oc_egressgateway_peer_available_count) != 0 and (ocbsf_oc_egressgateway_peer_count) > 0. {{ \$value }} SCP peers under peer set {{ \$labels.peerset }} are currently available.
Severity	Critical
Condition	One of the SCPs has been marked unhealthy.
OID	1.3.6.1.4.1.323.5.3.37.1.2.39
Metric Used	oc_egressgateway_peer_count and oc_egressgateway_peer_available_count
Recommended Actions	NF clears the critical alarm when atleast one SCP peer in a peerset becomes available such that all other SCP peers in the given peerset are still unavailable. For any additional guidance, contact My Oracle Support.

5.2.6 STALE_CONFIGURATION

Table 5-7 STALE_CONFIGURATION

Field	Details
Description	In last 10 minutes, the current service config_level does not match the config_level from the config-server.
Summary	In last 10 minutes, the current service config_level does not match the config_level from the config-server.
Severity	Major
Condition	(sum by(namespace) (topic_version{app_kubernetes_io_name="config-server",topicName="config.level"})) / (count by(namespace) (topic_version{app_kubernetes_io_name="config-server",topicName="config.level"})) != (sum by(namespace) (topic_version{app_kubernetes_io_name!="config-server",topicName="config.level"})) / (count by(namespace) (topic_version{app_kubernetes_io_name!="config-server",topicName="config.level"}))
OID	1.3.6.1.4.1.323.5.3.37.1.2.40
Metric Used	topic_version

Table 5-7 (Cont.) STALE_CONFIGURATION

Field	Details
Recommended Actions	For any additional guidance, contact My Oracle Support.

5.2.7 BSF_SERVICES_DOWN

Table 5-8 BSF_SERVICES_DOWN

Field	Details
Description	{{labels.microservice}} service is not running!
Summary	{{labels.microservice}} is not running!
Severity	Critical
Condition	None of the pods of the Binding Support Function (BSF) application is available.
OID	1.3.6.1.4.1.323.5.3.37.1.2.1
Metric Used	appinfo_service_running
Recommended Actions	<p>Perform the following steps:</p> <ul style="list-style-type: none"> Check for service specific alerts that may be causing the issues with service exposure. Verify if the POD is in a <i>Running</i> state by using the following command: <pre>kubectl -n <namespace> get pod</pre> <p>If the output shows any pod that is not running, copy the pod name and run the following command:</p> <pre>kubectl describe pod <podname> -n <namespace></pre> Check the application logs on Kibana and look for database related failures such as connectivity, invalid secrets, and so on. The logs can be easily filtered for different services. Check for Helm status to ensure no errors are present by using the following command: <pre>helm status <release-name> -n <namespace></pre> <p>If it is not in STATUS: DEPLOYED, capture the logs and events again.</p> <p>In case the issue persists, capture the outputs for the preceding steps and contact My Oracle Support.</p>

5.2.8 BSFTrafficRateAboveMinorThreshold

Table 5-9 BSFTrafficRateAboveMinorThreshold

Field	Details
Description	BSF service Ingress traffic Rate is above threshold of Max MPS(1000) (current value is: {{ \$value }})
Summary	Traffic Rate is above 70 Percent of Max requests per second(1000)
Severity	Minor
Condition	The total Binding Management service Ingress traffic rate has crossed the configured threshold of 700 TPS. The default value of this alert trigger point in the <code>BSF_Alertrules.yaml</code> file is when the Binding management service Ingress Rate crosses 70% of maximum ingress requests per second.
OID	1.3.6.1.4.1.323.5.3.37.1.2.2
Metric Used	ocbsf_ingress_request_total
Recommended Actions	The alert gets cleared when the Ingress traffic rate falls below the threshold. Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> file. It is recommended to assess the reason for additional traffic. Perform the following steps to analyze the cause of increased traffic: <ol style="list-style-type: none"> 1. Refer Ingress Gateway section in Grafana to determine an increase in 4xx and 5xx error response codes. 2. Check Ingress Gateway logs on Kibana to determine the reason for the errors. For any assistance, contact My Oracle Support .

5.2.9 BSFTrafficRateAboveMajorThreshold

Table 5-10 BSFTrafficRateAboveMajorThreshold

Field	Details
Description	BSF service Ingress traffic Rate is above threshold of Max MPS(1000) (current value is: {{ \$value }})
Summary	Traffic Rate is above 80 Percent of Max requests per second(1000)
Severity	Major
Condition	The total Binding Management service Ingress traffic rate has crossed the configured threshold of 800 TPS. The default value of this alert trigger point in the <code>BSF_Alertrules.yaml</code> file is when the Binding management service Ingress Rate crosses 80% of maximum ingress requests per second.

Table 5-10 (Cont.) BSFTrafficRateAboveMajorThreshold

Field	Details
OID	1.3.6.1.4.1.323.5.3.37.1.2.2
Metric Used	ocbsf_ingress_request_total
Recommended Actions	<p>The alert gets cleared when the Ingress traffic rate falls below the threshold.</p> <p>Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> file.</p> <p>It is recommended to assess the reason for additional traffic. Perform the following steps to analyze the cause of increased traffic:</p> <ol style="list-style-type: none"> 1. Refer Ingress Gateway section in Grafana to determine an increase in 4xx and 5xx error response codes. 2. Check Ingress Gateway logs on Kibana to determine the reason for the errors. <p>For any assistance, contact My Oracle Support.</p>

5.2.10 BSFTrafficRateAboveCriticalThreshold

Table 5-11 BSFTrafficRateAboveCriticalThreshold

Field	Details
Description	BSF service Ingress traffic Rate is above threshold of Max MPS(1000) (current value is: {{ \$value }})
Summary	Traffic Rate is above 90 Percent of Max requests per second(1000)
Severity	Critical
Condition	<p>The total Binding Management service Ingress traffic rate has crossed the configured threshold of 900 TPS.</p> <p>The default value of this alert trigger point in the <code>BSF_Alertrules.yaml</code> file is when the Binding management service Ingress Rate crosses 90% of maximum ingress requests per second.</p>
OID	1.3.6.1.4.1.323.5.3.37.1.2.2
Metric Used	ocbsf_ingress_request_total

Table 5-11 (Cont.) BSFTrafficRateAboveCriticalThreshold

Field	Details
Recommended Actions	<p>The alert gets cleared when the Ingress traffic rate falls below the threshold.</p> <p>Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> file.</p> <p>It is recommended to assess the reason for additional traffic. Perform the following steps to analyze the cause of increased traffic:</p> <ol style="list-style-type: none"> 1. Refer Ingress Gateway section in Grafana to determine an increase in 4xx and 5xx error response codes. 2. Check Ingress Gateway logs on Kibana to determine the reason for the errors. <p>For any assistance, contact My Oracle Support.</p>

5.2.11 BINDING_QUERY_RESPONSE_ERROR_MINOR

Table 5-12 BINDING_QUERY_RESPONSE_ERROR_MINOR

Field	Details
Description	At least 30% of the Binding Query connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Summary	At least 30% of the Binding Query connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Severity	Minor
Condition	BSF is able to raise threshold based alerts for duplicate Binding request received and handled at BSF. If 30% of the requests fails for 10 mins, BSF is able to raise Minor Alert indicating duplicate Binding request are being detected at BSF. (sum(rate(ocbsf_bindingQuery_response_total {response_code!~"2.*"} [10m]) or (appinfo_service_running * 0)) / sum(rate(ocbsf_bindingQuery_response_total[10m]))) * 100 >= 30
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Metric Used	ocbsf_bindingQuery_response_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.12 BINDING_QUERY_RESPONSE_ERROR_MAJOR

Table 5-13 BINDING_QUERY_RESPONSE_ERROR_MAJOR

Field	Details
Description	At least 50% of the Binding Query connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Summary	At least 50% of the Binding Query connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Severity	Major
Condition	BSF is able to raise threshold based alerts for duplicate Binding request received and handled at BSF. If 50% of the requests fails for 10 mins, BSF is able to raise Major Alert indicating duplicate Binding request are being detected at BSF. (sum(rate(ocbsf_bindingQuery_response_total {response_code!~"2.*"} [10m]) or (appinfo_service_running * 0)) / sum(rate(ocbsf_bindingQuery_response_total[10m]))) * 100 >= 50
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Metric Used	ocbsf_bindingQuery_response_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.13 BINDING_QUERY_RESPONSE_ERROR_CRITICAL

Table 5-14 BINDING_QUERY_RESPONSE_ERROR_CRITICAL

Field	Details
Description	At least 70% of the Binding Query connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Summary	At least 70% of the Binding Query connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Severity	Minor
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Condition	BSF is able to raise threshold based alerts for duplicate Binding request received and handled at BSF. If 70% of the requests fails for 10 mins, BSF is able to raise Critical Alert indicating duplicate Binding request are being detected at BSF. (sum(rate(ocbsf_bindingQuery_response_total {response_code!~"2.*"} [10m]) or (appinfo_service_running * 0)) / sum(rate(ocbsf_bindingQuery_response_total[10m]))) * 100 >= 70
Metric Used	ocbsf_bindingQuery_response_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.14 DIAM_RESPONSE_NETWORK_ERROR_MINOR

Table 5-15 DIAM_RESPONSE_NETWORK_ERROR_MINOR

Field	Details
Description	At least 20% of the Binding Registration requests failed were duplicate failures.
Summary	At least 20% of the Binding Registration requests failed were duplicate failures.
Severity	Minor
Condition	BSF is able to raise threshold based alerts for Message/Service Request Failure. When message failures like Binding Registration or deregistration request, Diameter Requests Failure with error "DIAMETER_UNABLE_TO_DELIVER" are observed, BSF is able to raise alerts. If 20% of the requests fails for 10 mins, BSF is able to raise Minor Alert indicating the procedure or service which is failing.
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Metric Used	ocbsf_diam_response_network_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.15 DIAM_RESPONSE_NETWORK_ERROR_MAJOR

Table 5-16 DIAM_RESPONSE_NETWORK_ERROR_MAJOR

Field	Details
Description	At least 50% of the Diam Response connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Summary	At least 50% of the Diam Response connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Severity	Major
Condition	BSF is able to raise threshold based alerts for Message/Service Request Failure. When message failures like Binding Registration or deregistration request, Diameter Requests Failure with error "DIAMETER_UNABLE_TO_DELIVER" are observed, BSF is able to raise alerts. If 50% of the requests fails for 10 mins, BSF is able to raise Major Alert indicating the procedure or service which is failing.
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Metric Used	ocbsf_diam_response_network_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.16 DIAM_RESPONSE_NETWORK_ERROR_CRITICAL

Table 5-17 DIAM_RESPONSE_NETWORK_ERROR_CRITICAL

Field	Details
Description	At least 70% of the Diam Response connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Summary	At least 70% of the Diam Response connection requests failed with error 'DIAMETER_UNABLE_TO_DELIVER'.
Severity	Critical
Condition	BSF is able to raise threshold based alerts for Message/Service Request Failure. When message failures like Binding Registration or deregistration request, Diameter Requests Failure with error "DIAMETER_UNABLE_TO_DELIVER" are observed, BSF is able to raise alerts. If 75% of the requests fails for 10 mins, BSF is able to raise Critical Alert indicating the procedure or service which is failing.
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Metric Used	ocbsf_diam_response_network_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.17 DUPLICATE_BINDING_REQUEST_ERROR_MINOR

Table 5-18 DUPLICATE_BINDING_REQUEST_ERROR_MINOR

Field	Details
Description	At least 30% of the Binding Registration requests failed were duplicate failures.
Summary	At least 30% of the Binding Registration requests failed were duplicate failures.
Severity	Minor
Condition	If 30% of the requests fails for 10 mins, BSF is able to raise Minor Alert indicating duplicate Binding request are being detected at BSF. $(\text{sum}(\text{rate}(\{_name_=\sim\text{"ocbsf_collision_detection.*"}\} [10m]) \text{ or } (\text{appinfo_service_running} * 0)) / \text{sum}(\text{rate}(\text{ocbsf_ingress_request_total} \{\text{operation_type}=\text{"register"}\} [10m]))) * 100 \geq 30$
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Metric Used	ocbsf_ingress_request_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.18 DUPLICATE_BINDING_REQUEST_ERROR_MAJOR

Table 5-19 DUPLICATE_BINDING_REQUEST_ERROR_MAJOR

Field	Details
Description	At least 50% of the Binding Registration requests failed were duplicate failures.
Summary	At least 50% of the Binding Registration requests failed were duplicate failures.
Severity	Major
Condition	If 50% of the requests fails for 10 mins, BSF is able to raise Major Alert indicating duplicate Binding request are being detected at BSF. (sum(rate({_name_ =~ "ocbsf_collision_detection.*"} [10m]) or (appinfo_service_running * 0)) / sum(rate(ocbsf_ingress_request_total {operation_type="register"} [10m]))) * 100 >= 50
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Metric Used	ocbsf_ingress_request_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.19 DUPLICATE_BINDING_REQUEST_ERROR_CRITICAL

Table 5-20 DUPLICATE_BINDING_REQUEST_ERROR_CRITICAL

Field	Details
Description	At least 70% of the Binding Registration requests failed were duplicate failures.
Summary	At least 70% of the Binding Registration requests failed were duplicate failures.
Severity	Critical
Condition	If 70% of the requests fails for 10 mins, BSF is able to raise Critical Alert indicating duplicate Binding request are being detected at BSF. (sum(rate({_name_ =~ "ocbsf_collision_detection.*"} [10m]) or (appinfo_service_running * 0)) / sum(rate(ocbsf_ingress_request_total {operation_type="register"} [10m]))) * 100 >= 70
OID	1.3.6.1.4.1.323.5.3.37.1.2.24
Metric Used	ocbsf_ingress_request_total
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.20 IngressTotalErrorRateAboveMinorThreshold

Table 5-21 IngressTotalErrorRateAboveMinorThreshold

Field	Details
Description	Transaction Error Rate detected above 1 Percent of Total on BSF service (current value is: {{ \$value }})
Summary	Transaction Error Rate detected above 1 Percent of Total Transactions
Severity	Minor
Condition	The total number of failed transactions for BSF service is above 1 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.3
Metric Used	ocbsf_ingress_response_total
Recommended Actions	The alert gets cleared when the number of failed transactions is below 1% of the total transactions. For any assistance, contact My Oracle Support .

5.2.21 IngressTotalErrorRateAboveMajorThreshold

Table 5-22 IngressTotalErrorRateAboveMajorThreshold

Field	Details
Description	Transaction Error Rate detected above 5 Percent of Total on BSF service (current value is: {{ \$value }})
Summary	Transaction Error Rate detected above 5 Percent of Total Transactions
Severity	Major
Condition	The total number of failed transactions for BSF service is above 5 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.3
Metric Used	ocbsf_ingress_response_total
Recommended Actions	The alert gets cleared when the number of failed transactions is below 5% of the total transactions. For any assistance, contact My Oracle Support .

5.2.22 IngressTotalErrorRateAboveCriticalThreshold

Table 5-23 IngressTotalErrorRateAboveCriticalThreshold

Field	Details
Description	Transaction Error Rate detected above 10 Percent of Total on BSF service (current value is: {{ \$value }})
Summary	Transaction Error Rate detected above 10 Percent of Total Transactions
Severity	Critical

Table 5-23 (Cont.) IngressTotalErrorRateAboveCriticalThreshold

Field	Details
Condition	The total number of failed transactions for BSF service is above 10 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.3
Metric Used	ocbsf_ingress_response_total
Recommended Actions	The alert gets cleared when the number of failed transactions is below 10% of the total transactions. For any assistance, contact My Oracle Support .

5.2.23 PCFBindingErrorRateAboveMinorThreshold

Table 5-24 PCFBindingErrorRateAboveMinorThreshold

Field	Details
Description	PCF Binding Error Rate above 1 Percent in <code>{{ \$labels.microservice }}</code> in <code>{{ \$labels.namespace }}</code>
Summary	PCF Binding Error Rate in <code>{{ \$labels.kubernetes_node }}</code> (current value is: <code>{{ \$value }}</code>)
Severity	Minor
Condition	The total number of failed transactions for retrieving PCF Bindings is above 1 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.5
Metric Used	http_server_requests_seconds_count
Recommended Actions	The alert gets cleared when the number of failed transactions is below 1% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the GET method. For any assistance, contact My Oracle Support .

5.2.24 PCFBindingErrorRateAboveMajorThreshold

Table 5-25 PCFBindingErrorRateAboveMajorThreshold

Field	Details
Description	PCF Binding Error Rate above 5 Percent in <code>{{ \$labels.microservice }}</code> in <code>{{ \$labels.namespace }}</code>
Summary	PCF Binding Error Rate in <code>{{ \$labels.kubernetes_node }}</code> (current value is: <code>{{ \$value }}</code>)
Severity	Major
Condition	The total number of failed transactions for retrieving PCF Bindings is above 5 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.5

Table 5-25 (Cont.) PCFBindingErrorRateAboveMajorThreshold

Field	Details
Metric Used	http_server_requests_seconds_count
Recommended Actions	The alert gets cleared when the number of failed transactions is below 5% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the GET method. For any assistance, contact My Oracle Support .

5.2.25 PCFBindingErrorRateAboveCriticalThreshold

Table 5-26 PCFBindingErrorRateAboveCriticalThreshold

Field	Details
Description	PCF Binding Error Rate above 10 Percent in <code>{{labels.microservice}}</code> in <code>{{labels.namespace}}</code>
Summary	PCF Binding Error Rate in <code>{{labels.kubernetes_node}}</code> (current value is: <code>{{ \$value }}</code>)
Severity	Critical
Condition	The total number of failed transactions for retrieving PCF Bindings is above 10 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.5
Metric Used	http_server_requests_seconds_count
Recommended Actions	The alert gets cleared when the number of failed transactions is below 10% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the GET method. For any assistance, contact My Oracle Support .

5.2.26 IngressCreateErrorRateAboveMinorThreshold

Table 5-27 IngressCreateErrorRateAboveMinorThreshold

Field	Details
Description	BSF Ingress Create Error Rate above 1 Percent in <code>{{labels.microservice}}</code> in <code>{{labels.namespace}}</code>
Summary	Transaction Create Error Rate in <code>{{labels.kubernetes_node}}</code> (current value is: <code>{{ \$value }}</code>)
Severity	Minor
Condition	The total number of failed transactions for creating requests (POST method of operation) for BSF service is above 1 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.4
Metric Used	http_server_requests_seconds_count

Table 5-27 (Cont.) IngressCreateErrorRateAboveMinorThreshold

Field	Details
Recommended Actions	The alert gets cleared when the number of failed transactions is below 1% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the POST method. For any assistance, contact My Oracle Support .

5.2.27 IngressCreateErrorRateAboveCriticalThreshold

Table 5-28 IngressCreateErrorRateAboveCriticalThreshold

Field	Details
Description	BSF Ingress Create Error Rate above 10 Percent in <code>{{\$labels.microservice}}</code> in <code>{{\$labels.namespace}}</code>
Summary	Transaction Create Error Rate in <code>{{\$labels.kubernetes_node}}</code> (current value is: <code>{{ \$value }}</code>)
Severity	Critical
Condition	The total number of failed transactions for creating requests (POST method of operation) for BSF service is above 10 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.4
Metric Used	<code>http_server_requests_seconds_count</code>
Recommended Actions	The alert gets cleared when the number of failed transactions is below 10% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the POST method. For any assistance, contact My Oracle Support .

5.2.28 IngressCreateErrorRateAboveMajorThreshold

Table 5-29 IngressCreateErrorRateAboveMajorThreshold

Field	Details
Description	BSF Ingress Create Error Rate above 5 Percent in <code>{{\$labels.microservice}}</code> in <code>{{\$labels.namespace}}</code>
Summary	Transaction Create Error Rate in <code>{{\$labels.kubernetes_node}}</code> (current value is: <code>{{ \$value }}</code>)
Severity	Major
Condition	The total number of failed transactions for creating requests (POST method of operation) for BSF service is above 5 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.4
Metric Used	<code>http_server_requests_seconds_count</code>

Table 5-29 (Cont.) IngressCreateErrorRateAboveMajorThreshold

Field	Details
Recommended Actions	The alert gets cleared when the number of failed transactions is below 5% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the POST method. For any assistance, contact My Oracle Support .

5.2.29 IngressDeleteErrorRateAboveMinorThreshold

Table 5-30 IngressDeleteErrorRateAboveMinorThreshold

Field	Details
Description	Ingress Delete Error Rate above 1 Percent in <code>{{ \$labels.microservice }}</code> in <code>{{ \$labels.namespace }}</code>
Summary	Ingress Delete Error Rate in <code>{{ \$labels.kubernetes_node }}</code> (current value is: <code>{{ \$value }}</code>)
Severity	Minor
Condition	The total number of failed transactions for delete requests (DELETE method of operation) for BSF service is above 1 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.6
Metric Used	<code>http_server_requests_seconds_count</code>
Recommended Actions	The alert gets cleared when the number of failed transactions is below 1% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the DELETE method. For any assistance, contact My Oracle Support .

5.2.30 IngressDeleteErrorRateAboveMajorThreshold

Table 5-31 IngressDeleteErrorRateAboveMajorThreshold

Field	Details
Description	Ingress Delete Error Rate above 5 Percent in <code>{{ \$labels.microservice }}</code> in <code>{{ \$labels.namespace }}</code>
Summary	Ingress Delete Error Rate in <code>{{ \$labels.kubernetes_node }}</code> (current value is: <code>{{ \$value }}</code>)
Severity	Major
Condition	The total number of failed transactions for delete requests (DELETE method of operation) for BSF service is above 5 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.6
Metric Used	<code>http_server_requests_seconds_count</code>

Table 5-31 (Cont.) IngressDeleteErrorRateAboveMajorThreshold

Field	Details
Recommended Actions	The alert gets cleared when the number of failed transactions is below 5% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the DELETE method. For any assistance, contact My Oracle Support .

5.2.31 IngressDeleteErrorRateAboveCriticalThreshold

Table 5-32 IngressDeleteErrorRateAboveCriticalThreshold

Field	Details
Description	Ingress Delete Error Rate above 10 Percent in {{ \$labels.microservice }} in {{ \$labels.namespace }}
Summary	Ingress Delete Error Rate in {{ \$labels.kubernetes_node }} (current value is: {{ \$value }})
Severity	Critical
Condition	The total number of failed transactions for delete requests (DELETE method of operation) for BSF service is above 10 percent of the total transactions.
OID	1.3.6.1.4.1.323.5.3.37.1.2.6
Metric Used	http_server_requests_seconds_count
Recommended Actions	The alert gets cleared when the number of failed transactions is below 10% of the total transactions. To assess the reason for failed transactions, check the service specific metrics for the DELETE method. For any assistance, contact My Oracle Support .

5.2.32 DBTierDownAlert

Table 5-33 DBTierDownAlert

Field	Details
Description	DB cannot be reachable!
Summary	DB cannot be reachable!
Severity	Critical
Condition	The database is not available.
OID	1.3.6.1.4.1.323.5.3.37.1.2.7
Metric Used	appinfo_category_running

Table 5-33 (Cont.) DBTierDownAlert

Field	Details
Recommended Actions	<p>Check whether the database service is up.</p> <p>Check the status or age of the MySQL pod by using the following command:</p> <pre>kubectl get pods -n <namespace></pre> <p>where <namespace> is the namespace used to deploy MySQL pod.</p> <p>This alert is cleared automatically when the DB service is up and running.</p>

5.2.33 CPUUsagePerServiceAboveMinorThreshold

Table 5-34 CPUUsagePerServiceAboveMinorThreshold

Field	Details
Description	CPU usage for <code>{{\$labels.microservice}}</code> service is above 60
Summary	CPU usage for <code>{{\$labels.microservice}}</code> service is above 60
Severity	Minor
Condition	A service pod has reached the configured minor threshold (60%) of its CPU usage limits.
OID	1.3.6.1.4.1.323.5.3.37.1.2.8
Metric Used	<code>cgroup_cpu_usage</code>
Recommended Actions	<p>The alert gets cleared when the CPU utilization falls below the minor threshold or crosses the major threshold, in which case <code>CPUUsagePerServiceAboveMajorThreshold</code> alert shall be raised.</p> <p>Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> file.</p> <p>For any assistance, contact My Oracle Support.</p>

5.2.34 CPUUsagePerServiceAboveMajorThreshold

Table 5-35 CPUUsagePerServiceAboveMajorThreshold

Field	Details
Description	CPU usage for <code>{{\$labels.microservice}}</code> service is above 80
Summary	CPU usage for <code>{{\$labels.microservice}}</code> service is above 80
Severity	Major

Table 5-35 (Cont.) CPUUsagePerServiceAboveMajorThreshold

Field	Details
Condition	A service pod has reached the configured major threshold (80%) of its CPU usage limits.
OID	1.3.6.1.4.1.323.5.3.37.1.2.9
Metric Used	cgroup_cpu_usage
Recommended Actions	The alert gets cleared when the CPU utilization falls below the major threshold or crosses the critical threshold, in which case CPUUsagePerServiceAboveCriticalThreshold alert shall be raised. Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> file. For any assistance, contact My Oracle Support .

5.2.35 CPUUsagePerServiceAboveCriticalThreshold

Table 5-36 CPUUsagePerServiceAboveCriticalThreshold

Field	Details
Description	CPU usage for <code>{{\$labels.microservice}}</code> service is above 90
Summary	CPU usage for <code>{{\$labels.microservice}}</code> service is above 90
Severity	Critical
Condition	A service pod has reached the configured critical threshold (90%) of its CPU usage limits.
OID	1.3.6.1.4.1.323.5.3.37.1.2.10
Metric Used	cgroup_cpu_usage
Recommended Actions	The alert gets cleared when the CPU utilization falls below the critical threshold. Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> file. For any assistance, contact My Oracle Support .

5.2.36 MemoryUsagePerServiceAboveMinorThreshold

Table 5-37 MemoryUsagePerServiceAboveMinorThreshold

Field	Details
Description	Memory usage for <code>{{\$labels.microservice}}</code> service is above 60
Summary	Memory usage for <code>{{\$labels.microservice}}</code> service is above 60
Severity	Minor
Condition	A service pod has reached the configured minor threshold (60%) of its memory usage limits.

Table 5-37 (Cont.) MemoryUsagePerServiceAboveMinorThreshold

Field	Details
OID	1.3.6.1.4.1.323.5.3.37.1.2.11
Metric Used	cgroup_memory_usage
Recommended Actions	The alert gets cleared when the memory utilization falls below the minor threshold or crosses the major threshold, in which case <code>MemoryUsagePerServiceAboveMajorThreshold</code> alert shall be raised. Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> file. For any assistance, contact My Oracle Support .

5.2.37 MemoryUsagePerServiceAboveMajorThreshold

Table 5-38 MemoryUsagePerServiceAboveMajorThreshold

Field	Details
Description	Memory usage for <code>{{\$labels.microservice}}</code> service is above 80
Summary	Memory usage for <code>{{\$labels.microservice}}</code> service is above 80
Severity	Major
Condition	A service pod has reached the configured major threshold (80%) of its memory usage limits.
OID	1.3.6.1.4.1.323.5.3.37.1.2.12
Metric Used	cgroup_memory_usage
Recommended Actions	The alert gets cleared when the memory utilization falls below the major threshold or crosses the critical threshold, in which case <code>MemoryUsagePerServiceAboveCriticalThreshold</code> alert shall be raised. Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> file. For any additional guidance, contact My Oracle Support .

5.2.38 MemoryUsagePerServiceAboveCriticalThreshold

Table 5-39 MemoryUsagePerServiceAboveCriticalThreshold

Field	Details
Description	Memory usage for <code>{{\$labels.microservice}}</code> service is above 90
Summary	Memory usage for <code>{{\$labels.microservice}}</code> service is above 90
Severity	Critical

Table 5-39 (Cont.) MemoryUsagePerServiceAboveCriticalThreshold

Field	Details
Condition	A service pod has reached the configured critical threshold (90%) of its memory usage limits.
OID	1.3.6.1.4.1.323.5.3.37.1.2.13
Metric Used	cgroup_memory_usage
Recommended Actions	The alert gets cleared when the memory utilization falls below the critical threshold. Note: Threshold levels can be configured using the <code>BSF_Alertrules.yaml</code> For any assistance, contact My Oracle Support .

5.2.39 NRF_COMMUNICATION_FAILURE

Table 5-40 NRF_COMMUNICATION_FAILURE

Field	Details
Description	There has been a external failure communication error with NRF.
Summary	There has been a external failure communication error with NRF.
Severity	Info
Condition	BSF is able to raise and clear alarms for the failure of external communication, that is in case of the unavailability of producer NRF. <ul style="list-style-type: none"> Raise alert if: ocbsf_nrfclient_nrf_operative_status == 0 Clear alert if: ocbsf_nrfclient_nrf_operative_status == 1
OID	1.3.6.1.4.1.323.5.3.37.1.2.18
Metric Used	ocbsf_nrfclient_nrf_operative_status
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.40 NRF_SERVICE_REQUEST_FAILURE

Table 5-41 NRF_SERVICE_REQUEST_FAILURE

Field	Details
Description	There has been a Service Request Failure with NRF, either due to Registration failure or Profile update failure.
Summary	There has been a Service Request Failure with NRF, either a Registration failure, Heartbeat failure, or Profile Update Failure.
Severity	Info

Table 5-41 (Cont.) NRF_SERVICE_REQUEST_FAILURE

Field	Details
Condition	BSF is able to raise and clear alarms in case of Service Request Failures with NRF like the Registration failure, Heartbeat failure, Profile Update Failure. <ul style="list-style-type: none"> raise alert if: <code>ocbsf_nrfclient_nfUpdate_status == 0</code> clear alert if: <code>ocbsf_nrfclient_nfUpdate_status == 1</code>
OID	1.3.6.1.4.1.323.5.3.37.1.2.19
Metric Used	<code>ocbsf_nrfclient_nfUpdate_status</code>
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.41 PERF_INFO_ACTIVE_OVERLOAD_THRESHOLD_FETCH_FAILED

Table 5-42 PERF_INFO_ACTIVE_OVERLOAD_THRESHOLD_FETCH_FAILED

Field	Details
Description	The application fails to get the current active overload level threshold data.
Summary	The application raises <code>PERF_INFO_ACTIVE_OVERLOAD_THRESHOLD_FETCH_FAILED</code> alert when it fails to fetch the current active overload level threshold data and <code>active_overload_threshold_fetch_failed == 1</code> .
Severity	Major
Condition	<code>active_overload_threshold_fetch_failed == 1</code>
OID	1.3.6.1.4.1.323.5.3.37.1.2.20
Metric Used	<code>active_overload_threshold_fetch_failed</code>
Recommended Actions	The alert gets cleared when the application fetches the current active overload level threshold data. For any additional guidance, contact My Oracle Support.

5.2.42 POD_DOC

Table 5-43 POD_DOC

Field	Details
Description	Pod Congestion status of <code>{{labels.microservice}}</code> service is DoC
Summary	Pod Congestion status of <code>{{labels.microservice}}</code> service is DoC
Severity	Major

Table 5-43 (Cont.) POD_DOC

Field	Details
Condition	The pod congestion status is set to Danger of Congestion. ocbsf_pod_congestion_state == 1
OID	1.3.6.1.4.1.323.5.3.37.1.2.25
Metric Used	ocbsf_pod_congestion_state
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.43 POD_CONGESTED

Table 5-44 POD_CONGESTED

Field	Details
Description	Pod Congestion status of {{\$labels.microservice}} service is congested
Summary	Pod Congestion status of {{\$labels.microservice}} service is congested
Severity	Critical
Condition	The pod congestion status is set to congested. ocbsf_pod_congestion_state == 4
OID	1.3.6.1.4.1.323.5.3.37.1.2.26
Metric Used	ocbsf_pod_congestion_state
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.44 POD_CONGESTION_L1

Table 5-45 POD_CONGESTION_L1

Field	Details
Description	Pod is in Congestion_L1.
Summary	Pod Congestion status of {{\$labels.microservice}} service is Congestion_L1.
Severity	Critical
Condition	The pod congestion status is set to congested. ocbsf_pod_congestion_state == 2
OID	1.3.6.1.4.1.323.5.3.37.1.2.52

Table 5-45 (Cont.) POD_CONGESTION_L1

Field	Details
Metric Used	ocbsf_pod_congestion_state
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.45 POD_CPU_CONGESTION_L1

Table 5-46 POD_CPU_CONGESTION_L1

Field	Details
Description	Pod resource is in Congestion_L1 for CPU type.
Summary	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is Congestion_L1 for CPU type.
Severity	Critical
Condition	The pod congestion status is set to Congestion_L1. <code>ocbsf_pod_resource_congestion_state{type="cpu"} == 2</code>
OID	1.3.6.1.4.1.323.5.3.37.1.2.54
Metric Used	ocbsf_pod_resource_congestion_state
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.46 POD_CONGESTION_L2

Table 5-47 POD_CONGESTION_L2

Field	Details
Description	Pod resource is in Congestion_L2.
Summary	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is Congestion_L2.
Severity	Critical
Condition	The pod congestion status is set to Congestion_L1. <code>ocbsf_pod_congestion_state == 3</code>
OID	1.3.6.1.4.1.323.5.3.37.1.2.53
Metric Used	ocbsf_pod_congestion_state

Table 5-47 (Cont.) POD_CONGESTION_L2

Field	Details
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.47 POD_CPU_CONGESTION_L2

Table 5-48 POD_CPU_CONGESTION_L2

Field	Details
Description	Pod resource is in Congestion_L2 for CPU type.
Summary	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is Congestion_L2 for CPU type.
Severity	Critical
Condition	The pod congestion status is set to Congestion_L1. <code>ocbsf_pod_resource_congestion_state{type="cpu"} == 2</code>
OID	1.3.6.1.4.1.323.5.3.37.1.2.55
Metric Used	<code>ocbsf_pod_resource_congestion_state</code>
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.48 PodPendingRequestDoC

Table 5-49 PodPendingRequestDoC

Field	Details
Description	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is DoC for PendingRequest type
Summary	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is DoC for PendingRequest type
Severity	Major
Condition	The pod congestion status is set to DoC for pending requests.
OID	1.3.6.1.4.1.323.5.3.37.1.2.27
Metric Used	<code>ocbsf_pod_resource_congestion_state{type="queue"}</code>

Table 5-49 (Cont.) PodPendingRequestDoC

Field	Details
Recommended Actions	The alert gets cleared when the pending requests in the queue comes below the configured threshold value. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.49 PodPendingRequestCongested

Table 5-50 PodPendingRequestCongested

Field	Details
Description	Pod Resource Congestion status of <code>{{\$labels.microservice}}</code> service is congested for PendingRequest type
Summary	Pod Resource Congestion status of <code>{{\$labels.microservice}}</code> service is congested for PendingRequest type
Severity	Critical
Condition	The pod congestion status is set to congested for PendingRequest.
OID	1.3.6.1.4.1.323.5.3.37.1.2.28
Metric Used	<code>ocbsf_pod_resource_congestion_state{type="queue"}</code>
Recommended Actions	The alert gets cleared when the pending requests in the queue comes below the configured threshold value. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.50 POD_CPU_DOC

Table 5-51 POD_CPU_DOC

Field	Details
Description	Pod Resource Congestion status of <code>{{\$labels.microservice}}</code> service is DoC for CPU type
Summary	Pod Resource Congestion status of <code>{{\$labels.microservice}}</code> service is DoC for CPU type
Severity	Major
Condition	The pod congestion status is set to DoC for CPU. <code>ocbsf_pod_resource_congestion_state{type="cpu"} == 1</code>
OID	1.3.6.1.4.1.323.5.3.37.1.2.29

Table 5-51 (Cont.) POD_CPU_DOC

Field	Details
Metric Used	ocbsf_pod_resource_congestion_state(type="cpu")
Recommended Actions	The alert gets cleared when the system CPU usage comes below the configured threshold value. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.51 POD_CPU_CONGESTED

Table 5-52 POD_CPU_CONGESTED

Field	Details
Description	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is congested for CPU type
Summary	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is congested for CPU type
Severity	Critical
Condition	The pod congestion status is set to congested for CPU. ocbsf_pod_resource_congestion_state(type="cpu")
OID	1.3.6.1.4.1.323.5.3.37.1.2.30
Metric Used	ocbsf_pod_resource_congestion_state
Recommended Actions	The alert gets cleared when the system CPU usage comes below the configured threshold value. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.52 PodMemoryDoC

Table 5-53 PodMemoryDoC

Field	Details
Description	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is DoC for Memory type
Summary	Pod Resource Congestion status of <code>{{labels.microservice}}</code> service is DoC for Memory type
Severity	Major
Condition	The pod congestion status is set to DoC for memory.

Table 5-53 (Cont.) PodMemoryDoC

Field	Details
OID	1.3.6.1.4.1.323.5.3.37.1.2.31
Metric Used	ocbsf_pod_resource_congestion_state(type="memory")
Recommended Actions	The alert gets cleared when the system memory comes below the configured threshold value. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.53 PodMemoryCongested

Table 5-54 PodMemoryCongested

Field	Details
Description	Pod Resource Congestion status of {{labels.microservice}} service is congested for Memory type
Summary	Pod Resource Congestion status of {{labels.microservice}} service is congested for Memory type
Severity	Critical
Condition	The pod congestion status is set to congested for memory.
OID	1.3.6.1.4.1.323.5.3.37.1.2.32
Metric Used	ocbsf_pod_resource_congestion_state(type="memory")
Recommended Actions	The alert gets cleared when the system memory comes below the configured threshold value. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.54 ServiceOverloaded

Table 5-55 ServiceOverloaded-Minor

Field	Details
Description	Overload Level of {{labels.microservice}} service is L1
Summary	Overload Level of {{labels.microservice}} service is L1
Severity	Minor
Condition	The overload level of the service is L1.
OID	1.3.6.1.4.1.323.5.3.37.1.2.14
Metric Used	load_level

Table 5-55 (Cont.) ServiceOverloaded-Minor

Field	Details
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-56 ServiceOverloaded-Major

Field	Details
Description	Overload Level of {{labels.microservice}} service is L2
Summary	Overload Level of {{labels.microservice}} service is L2
Severity	Major
Condition	The overload level of the service is L2.
OID	1.3.6.1.4.1.323.5.3.37.1.2.14
Metric Used	load_level
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-57 ServiceOverloaded-Critical

Field	Details
Description	Overload Level of {{labels.service}} service is L3
Summary	Overload Level of {{labels.service}} service is L3
Severity	Critical
Condition	The overload level of the service is L3.
OID	1.3.6.1.4.1.323.5.3.37.1.2.14
Metric Used	load_level
Recommended Actions	The alert gets cleared when the system is back to normal state. For any additional guidance, contact My Oracle Support.

5.2.55 ServiceResourceOverloaded

Alerts when service is in overload state due to memory usage

Table 5-58 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L1 for {{labels.type}} type

Table 5-58 (Cont.) ServiceResourceOverloaded

Field	Details
Summary	{{labels.microservice}} service is L1 for {{labels.type}} type
Severity	Minor
Condition	The overload level of the service is L1 due to memory usage.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="memory"}
Recommended Actions	The alert gets cleared when the memory usage of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-59 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L2 for {{labels.type}} type
Summary	{{labels.microservice}} service is L2 for {{labels.type}} type
Severity	Major
Condition	The overload level of the service is L2 due to memory usage.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="memory"}
Recommended Actions	The alert gets cleared when the memory usage of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-60 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L3 for {{labels.type}} type
Summary	{{labels.microservice}} service is L3 for {{labels.type}} type
Severity	Critical
Condition	The overload level of the service is L3 due to memory usage.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="memory"}
Recommended Actions	The alert gets cleared when the memory usage of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Alerts when service is in overload state due to CPU usage

Table 5-61 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L1 for {{labels.type}} type
Summary	{{labels.microservice}} service is L1 for {{labels.type}} type
Severity	Minor
Condition	The overload level of the service is L1 due to CPU usage.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="cpu"}
Recommended Actions	The alert gets cleared when the CPU usage of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-62 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L2 for {{labels.type}} type
Summary	{{labels.microservice}} service is L2 for {{labels.type}} type
Severity	Major
Condition	The overload level of the service is L2 due to CPU usage.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="cpu"}
Recommended Actions	The alert gets cleared when the CPU usage of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-63 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L3 for {{labels.type}} type
Summary	{{labels.microservice}} service is L3 for {{labels.type}} type
Severity	Critical
Condition	The overload level of the service is L3 due to CPU usage.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="cpu"}

Table 5-63 (Cont.) ServiceResourceOverloaded

Field	Details
Recommended Actions	The alert gets cleared when the CPU usage of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Alerts when service is in overload state due to number of pending messages**Table 5-64 ServiceResourceOverloaded**

Field	Details
Description	{{labels.microservice}} service is L1 for {{labels.type}} type
Summary	{{labels.microservice}} service is L1 for {{labels.type}} type
Severity	Minor
Condition	The overload level of the service is L1 due to number of pending messages.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="svc_pending_count"}
Recommended Actions	The alert gets cleared when the number of pending messages of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-65 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L2 for {{labels.type}} type
Summary	{{labels.microservice}} service is L2 for {{labels.type}} type
Severity	Major
Condition	The overload level of the service is L2 due to number of pending messages.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="svc_pending_count"}
Recommended Actions	The alert gets cleared when the number of pending messages of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-66 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L3 for {{labels.type}} type
Summary	{{labels.microservice}} service is L3 for {{labels.type}} type
Severity	Critical
Condition	The overload level of the service is L3 due to number of pending messages.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="svc_pending_count"}
Recommended Actions	The alert gets cleared when the number of pending messages of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Alerts when service is in overload state due to number of failed requests

Table 5-67 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L1 for {{labels.type}} type
Summary	{{labels.microservice}} service is L1 for {{labels.type}} type
Severity	Minor
Condition	The overload level of the service is L1 due to number of failed requests.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="svc_failure_count"}
Recommended Actions	The alert gets cleared when the number of failed messages of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-68 ServiceResourceOverloaded

Field	Details
Description	{{labels.microservice}} service is L2 for {{labels.type}} type
Summary	{{labels.microservice}} service is L2 for {{labels.type}} type
Severity	Major
Condition	The overload level of the service is L2 due to number of failed requests.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15

Table 5-68 (Cont.) ServiceResourceOverloaded

Field	Details
Metric Used	service_resource_overload_level{type="svc_failure_count"}
Recommended Actions	The alert gets cleared when the number of failed messages of the service is back to normal state. For any additional guidance, contact My Oracle Support.

Table 5-69 ServiceResourceOverloaded

Field	Details
Description	{{\$labels.microservice}} service is L3 for {{\$labels.type}} type
Summary	{{\$labels.microservice}} service is L3 for {{\$labels.type}} type
Severity	Critical
Condition	The overload level of the service is L3 due to number of failed requests.
OID	1.3.6.1.4.1.323.5.3.37.1.2.15
Metric Used	service_resource_overload_level{type="svc_failure_count"}
Recommended Actions	The alert gets cleared when the number of failed messages of the service is back to normal state. For any additional guidance, contact My Oracle Support.

5.2.56 SYSTEM_IMPAIRMENT_MAJOR

Table 5-70 SYSTEM_IMPAIRMENT_MAJOR

Field	Details
Description	Major impairment alert raised for REPLICATION_FAILED or REPLICATION_CHANNEL_DOWN or BINLOG_STORAGE usage
Summary	Major impairment alert raised for REPLICATION_FAILED or REPLICATION_CHANNEL_DOWN or BINLOG_STORAGE usage
Severity	Major
Condition	Major Impairment alert
OID	1.3.6.1.4.1.323.5.3.36.1.2.43
Metric Used	db_tier_replication_status
Recommended Actions	For any additional guidance, contact My Oracle Support.

5.2.57 SYSTEM_IMPAIRMENT_CRITICAL

Table 5-71 SYSTEM_IMPAIRMENT_CRITICAL

Field	Details
Description	Critical Impairment alert raised for REPLICATION_FAILED or REPLICATION_CHANNEL_DOWN or BINLOG_STORAGE usage
Summary	Critical Impairment alert raised for REPLICATION_FAILED or REPLICATION_CHANNEL_DOWN or BINLOG_STORAGE usage
Severity	Critical
Condition	Critical Impairment alert
OID	1.3.6.1.4.1.323.5.3.36.1.2.43
Metric Used	db_tier_replication_status
Recommended Actions	For any additional guidance, contact My Oracle Support.

5.2.58 SYSTEM_OPERATIONAL_STATE_PARTIAL_SHUTDOWN

Table 5-72 SYSTEM_OPERATIONAL_STATE_PARTIAL_SHUTDOWN

Field	Details
Description	System Operational State is now in partial shutdown state.
Summary	System Operational State is now in partial shutdown state.
Severity	Major
Condition	System Operational State is now in partial shutdown state
OID	1.3.6.1.4.1.323.5.3.36.1.2.44
Metric Used	system_operational_state == 2
Recommended Actions	For any additional guidance, contact My Oracle Support.

5.2.59 SYSTEM_OPERATIONAL_STATE_COMPLETE_SHUTDOWN

Table 5-73 SYSTEM_OPERATIONAL_STATE_COMPLETE_SHUTDOWN

Field	Details
Description	System Operational State is now in complete shutdown state
Summary	System Operational State is now in complete shutdown state
Severity	Critical
Condition	System Operational State is now in complete shutdown state
OID	1.3.6.1.4.1.323.5.3.36.1.2.44
Metric Used	system_operational_state == 3
Recommended Actions	For any additional guidance, contact My Oracle Support.

5.2.60 DIAM_CONN_PEER_DOWN

Table 5-74 DIAM_CONN_PEER_DOWN

Field	Details
Description	Diameter connection to peer {{ \$labels.origHost }} is down.
Summary	Diameter connection to peer down.
Severity	Major
Condition	Diameter connection to peer origHost in given namespace is down.
OID	1.3.6.1.4.1.323.5.3.37.1.2.18
Metric Used	ocbsf_diam_conn_network
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.61 DIAM_CONN_NETWORK_DOWN

Table 5-75 DIAM_CONN_NETWORK_DOWN

Field	Details
Description	All diameter network connections are down.
Summary	All diameter network connections are down.
Severity	Critical
Condition	All diameter networks in a kubernetes namespace are down.
OID	1.3.6.1.4.1.323.5.3.37.1.2.19
Metric Used	ocbsf_diam_conn_network
Recommended Actions	For any assistance, contact My Oracle Support .

5.2.62 DIAM_RESPONSE_REALM_VALIDATION_ERROR_CRITICAL

Table 5-76 DIAM_RESPONSE_REALM_VALIDATION_ERROR_CRITICAL

Field	Details
Description	At least 75% of the Diam Response failed with error 'DIAMETER_REALM_NOT_SERVED', either of BSF realm or PCF Realm doesn't match with received destination realm in diameter message.
Summary	{{ \$value }}% of the Diam Response failed with error 'DIAMETER_REALM_NOT_SERVED'.
Severity	CRITICAL
Condition	(sum(increase(ocbsf_diam_realm_validation_failed_total{responseCode="3003", appId="16777236"}[10m])) / sum(increase(ocbsf_diam_response_network_total{appId="16777236"}[10m]))) * 100 >= 75
OID	1.3.6.1.4.1.323.5.3.37.1.2.41

Table 5-76 (Cont.) DIAM_RESPONSE_REALM_VALIDATION_ERROR_CRITICAL

Field	Details
Metric Used	ocbsf_diam_realm_validation_failed_total
Recommended Actions	<ol style="list-style-type: none"> 1. Check if the value of the following keys under Advanced settings of diameter settings page are set to true: <ul style="list-style-type: none"> • DIAMETER.Enable.Validate.Realm • DIAMETER.BSF.Enable.Validate.Binding.Realm 2. Check the destination-realm in diameter request.

5.2.63 DIAM_RESPONSE_REALM_VALIDATION_ERROR_MAJOR

Table 5-77 DIAM_RESPONSE_REALM_VALIDATION_ERROR_MAJOR

Field	Details
Description	At least 50% of the Diam Response failed with error 'DIAMETER_REALM_NOT_SERVED', either of BSF realm or PCF Realm doesn't match with received destination realm in diameter message.
Summary	{{ \$value }}% of the Diam Response failed with error 'DIAMETER_REALM_NOT_SERVED'.
Severity	MAJOR
Condition	(sum(increase(ocbsf_diam_realm_validation_failed_total{responseCode="3003", appld="16777236"}[10m])) / sum(increase(ocbsf_diam_response_network_total{appld="16777236"}[10m]))) * 100 >= 50
OID	1.3.6.1.4.1.323.5.3.37.1.2.41
Metric Used	ocbsf_diam_realm_validation_failed_total
Recommended Actions	<ol style="list-style-type: none"> 1. Check if the value of the following keys under Advanced settings of diameter settings page are set to true: <ul style="list-style-type: none"> • DIAMETER.Enable.Validate.Realm • DIAMETER.BSF.Enable.Validate.Binding.Realm 2. Check the destination-realm coming in diameter request.

5.2.64 DIAM_RESPONSE_REALM_VALIDATION_ERROR_MINOR

Table 5-78 DIAM_RESPONSE_REALM_VALIDATION_ERROR_MINOR

Field	Details
Description	At least 20% of the Diam Response failed with error 'DIAMETER_REALM_NOT_SERVED', either of BSF realm or PCF Realm doesn't match with received destination realm in diameter message.
Summary	{{ \$value }}% of the Diam Response failed with error 'DIAMETER_REALM_NOT_SERVED'.
Severity	MINOR
Condition	$(\text{sum}(\text{increase}(\text{ocbsf_diam_realm_validation_failed_total}\{\text{responseCode}="3003", \text{appId}="16777236"}[10\text{m}])) / \text{sum}(\text{increase}(\text{ocbsf_diam_response_network_total}\{\text{appId}="16777236"}[10\text{m}])) * 100 \geq 20$
OID	1.3.6.1.4.1.323.5.3.37.1.2.41
Metric Used	ocbsf_diam_realm_validation_failed_total
Recommended Actions	<ol style="list-style-type: none"> Check if the value of the following keys under Advanced settings of diameter settings page are set to true: <ul style="list-style-type: none"> DIAMETER.Enable.Validate.Realm DIAMETER.BSF.Enable.Validate.Binding.Realm Check the destination-realm coming in diameter request.

5.2.65 AUDIT_STALE_NOTIFY_ERROR_RESPONSE_MINOR

Table 5-79 AUDIT_STALE_NOTIFY_ERROR_RESPONSE_MINOR

Field	Details
Description	At least 20% of the BSF Notification Request for Audit have responded with a 5xx or 4xx (not 404) Status in the last 24 hours.
Summary	At least 20% of the BSF Notification Request for Audit have responded with a 5xx or 4xx (not 404) Status in the last 24 hours.
Severity	MINOR
Condition	When 20%, or more, BSF Notification Requests for Audit to PCF (or its respective NF) fail, the alert is triggered. The threshold default value is defined at <code>BSF_Alertrules.yaml</code> .
Expression	$(\text{sum}(\text{increase}(\text{ocbsf_query_response_count_total}\{\text{response_code}=\sim"5.. 4..", \text{response_code}!="404"}[24\text{h}])) / \text{sum}(\text{increase}(\text{ocbsf_query_response_count_total}[24\text{h}])) * 100 \geq 20$

Table 5-79 (Cont.) AUDIT_STALE_NOTIFY_ERROR_RESPONSE_MINOR

Field	Details
OID	1.3.6.1.4.1.323.5.3.37.1.2.42
Metric Used	ocbsf_query_response_count_total
Recommended Actions	Determine the reason why these notification requests are failing. This alert indicates that there is a potential issue either with the network communications, or the NF where the audit notifications point to.

5.2.66 AUDIT_STALE_NOTIFY_ERROR_RESPONSE_MAJOR

Table 5-80 AUDIT_STALE_NOTIFY_ERROR_RESPONSE_MAJOR

Field	Details
Description	At least 40% of the BSF Notification Request for Audit have responded with a 5xx or 4xx (not 404) Status in the last 24 hours.
Summary	At least 40% of the BSF Notification Request for Audit have responded with a 5xx or 4xx (not 404) Status in the last 24 hours.
Severity	MAJOR
Condition	When 40%, or more, BSF Notification Requests for Audit to PCF (or its respective NF) fail, the alert is triggered. The threshold default value is defined at <code>BSF_Alertrules.yaml</code> .
Expression	$\frac{\text{sum}(\text{increase}(\text{ocbsf_query_response_count_total}\{\text{response_code}=\sim"5.. 4..",\text{response_code}!\="404"}[24\text{h}]))}{\text{sum}(\text{increase}(\text{ocbsf_query_response_count_total}[24\text{h}]))} * 100 \geq 40$
OID	1.3.6.1.4.1.323.5.3.37.1.2.42
Metric Used	ocbsf_query_response_count_total
Recommended Actions	Determine the reason why these notification requests are failing. This alert indicates that there is an issue either with the network communications, or the NF where the audit notifications point to, that needs to be addressed as soon as possible.

5.2.67 AUDIT_STALE_NOTIFY_ERROR_RESPONSE_CRITICAL

Table 5-81 AUDIT_STALE_NOTIFY_ERROR_RESPONSE_CRITICAL

Field	Details
Description	At least 60% of the BSF Notification Request for Audit have responded with a 5xx or 4xx (not 404) Status in the last 24 hours.

Table 5-81 (Cont.) AUDIT_STALE_NOTIFY_ERROR_RESPONSE_CRITICAL

Field	Details
Summary	At least 60% of the BSF Notification Request for Audit have responded with a 5xx or 4xx (not 404) Status in the last 24 hours.
Severity	CRITICAL
Condition	When 60%, or more, BSF Notification Requests for Audit to PCF (or its respective NF) fail, the alert is triggered. The threshold default value is defined at <code>BSF_Alertrules.yaml</code> .
Expression	$(\text{sum}(\text{increase}(\text{ocbsf_query_response_count_total}\{\text{response_code}=\sim\text{"5..[4..}.\text{",response_code}!\text{"404"}\}\text{[24h]}) / \text{sum}(\text{increase}(\text{ocbsf_query_response_count_total}\text{[24h]}) * 100 \geq 60$
OID	1.3.6.1.4.1.323.5.3.37.1.2.42
Metric Used	ocbsf_query_response_count_total
Recommended Actions	Determine the reason why these notification requests are failing. This alert indicates that there is a critical issue either with the network communications, or the NF where the audit notifications point to, that needs to be addressed immediately.

5.2.68 CERTIFICATE_EXPIRY

Table 5-82 CERTIFICATE_EXPIRY

Field	Details
Description	TLS certificate to expire in 6 months.
Summary	<code>security_cert_x509_expiration_seconds - time() <= 15724800</code>
Severity	Minor
Condition	This alert is raised when the TLS certificate is about to expire in six months.
OID	1.3.6.1.4.1.323.5.3.37.1.2.44
Metric Used	security_cert_x509_expiration_seconds
Recommended Actions	For any additional guidance, contact My Oracle Support (https://support.oracle.com).

Table 5-83 CERTIFICATE_EXPIRY

Field	Details
Description	TLS certificate to expire in 3 months.
Summary	<code>security_cert_x509_expiration_seconds - time() <= 7862400</code>
Severity	Major

Table 5-83 (Cont.) CERTIFICATE_EXPIRY

Field	Details
Condition	This alert is raised when the TLS certificate is about to expire in three months.
OID	1.3.6.1.4.1.323.5.3.37.1.2.44
Metric Used	security_cert_x509_expiration_seconds
Recommended Actions	For any additional guidance, contact My Oracle Support (https://support.oracle.com).

Table 5-84 CERTIFICATE_EXPIRY

Field	Details
Description	TLS certificate to expire in 1 month.
Summary	security_cert_x509_expiration_seconds - time() <= 2592000
Severity	Critical
Condition	This alert is raised when the TLS certificate is about to expire in one month.
OID	1.3.6.1.4.1.323.5.3.37.1.2.44
Metric Used	security_cert_x509_expiration_seconds
Recommended Actions	For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.69 BSF_CONNECTION_FAILURE

Table 5-85 BSF_CONNECTION_FAILURE

Field	Details
Description	Connection failure on Egress and Ingress Gateways for incoming and outgoing connections.
Summary	sum(increase(ocbsf_oc_ingressgateway_connection_failure_total[5m]) >0 or (ocbsf_oc_ingressgateway_connection_failure_total unless ocbsf_oc_ingressgateway_connection_failure_total offset 5m)) by (namespace,app, error_reason) > 0 or sum(increase(ocbsf_oc_egressgateway_connection_failure_total[5m]) >0 or (ocbsf_oc_egressgateway_connection_failure_total unless ocbsf_oc_egressgateway_connection_failure_total offset 5m)) by (namespace,app, error_reason) > 0
Severity	Major
Condition	This alert is raised when the TLS certificate is about to expire in three months.
OID	1.3.6.1.4.1.323.5.3.37.1.2.43
Metric Used	ocbsf_oc_ingressgateway_connection_failure_total

Table 5-85 (Cont.) BSF_CONNECTION_FAILURE

Field	Details
Recommended Actions	For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.70 INGRESS_GATEWAY_DD_UNREACHABLE_MAJOR

Table 5-86 INGRESS_GATEWAY_DD_UNREACHABLE_MAJOR

Field	Details
Description	This alarm is raised when OCNADD is not reachable.
Summary	'kubernetes_namespace: <code>{{ \$labels.kubernetes_namespace }}</code> , timestamp: <code>{{ with query "time()" }}{ . first value humanizeTimestamp }}{ end }</code> BSF Ingress Gateway Data Director unreachable'
Severity	Major
Condition	This alarm is raised when data director is not reachable from Ingress Gateway.
OID	1.3.6.1.4.1.323.5.3.37.1.2.47
Metric Used	oc_ingressgateway_dd_unreachable
Recommended Actions	Alert gets cleared automatically when the connection with data director is established.

5.2.71 EGRESS_GATEWAY_DD_UNREACHABLE_MAJOR

Table 5-87 EGRESS_GATEWAY_DD_UNREACHABLE_MAJOR

Field	Details
Description	This alarm is raised when OCNADD is not reachable.
Summary	'kubernetes_namespace: <code>{{ \$labels.kubernetes_namespace }}</code> , timestamp: <code>{{ with query "time()" }}{ . first value humanizeTimestamp }}{ end }</code> BSF Egress Gateway Data Director unreachable'
Severity	Major
Condition	This alarm is raised when data director is not reachable from Egress Gateway.
OID	1.3.6.1.4.1.323.5.3.37.1.2.48
Metric Used	oc_egressgateway_dd_unreachable
Recommended Actions	Alert gets cleared automatically when the connection with data director is established.

5.2.72 DIAM_GATEWAY_CERTIFICATE_EXPIRY_MINOR

Table 5-88 DIAM_GATEWAY_CERTIFICATE_EXPIRY_MINOR

Field	Details
Description	Certificate expiry in less than 6 months.
Summary	Certificate expiry in less than 6 months.
Severity	Minor
Condition	dgw_tls_cert_expiration_seconds - time() <= 15724800
OID	1.3.6.1.4.1.323.5.3.37.1.2.75
Metric Used	dgw_tls_cert_expiration_seconds
Recommended Actions	For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.73 DIAM_GATEWAY_CERTIFICATE_EXPIRY_MAJOR

Table 5-89 DIAM_GATEWAY_CERTIFICATE_EXPIRY_MAJOR

Field	Details
Description	Certificate expiry in less than 3 months.
Summary	Certificate expiry in less than 3 months.
Severity	Major
Condition	dgw_tls_cert_expiration_seconds - time() <= 7862400
OID	1.3.6.1.4.1.323.5.3.37.1.2.75
Metric Used	dgw_tls_cert_expiration_seconds
Recommended Actions	For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.74 DIAM_GATEWAY_CERTIFICATE_EXPIRY_CRITICAL

Table 5-90 DIAM_GATEWAY_CERTIFICATE_EXPIRY_CRITICAL

Field	Details
Description	Certificate expiry in less than 1 month.
Summary	Certificate expiry in less than 1 month.
Severity	Critical
Condition	dgw_tls_cert_expiration_seconds - time() <= 2592000
OID	1.3.6.1.4.1.323.5.3.37.1.2.75
Metric Used	dgw_tls_cert_expiration_seconds
Recommended Actions	For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.75 DGW_TLS_CONNECTION_FAILURE

Table 5-91 DGW_TLS_CONNECTION_FAILURE

Field	Details
Description	Alert for TLS connection establishment.
Summary	TLS Connection failure when Diam gateway is an initiator.
Severity	Major
Condition	sum by (namespace,reason) (ocbsf_diam_failed_conn_network) > 0
OID	1.3.6.1.4.1.323.5.3.37.1.2.81
Metric Used	ocbsf_diam_failed_conn_network
Recommended Actions	For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.76 BINDING_REVALIDATION_PCF_BINDING_MISSING_MINOR

Table 5-92 BINDING_REVALIDATION_PCF_BINDING_MISSING_MINOR

Field	Details
Description	At least 30% but less than 50% of the PCF BINDING missing among all binding revalidation records in the last 5 minutes.
Summary	At least 30% but less than 50% of the PCF BINDING missing among all Binding Revalidation records in the last 5 minutes.
Severity	Minor
Condition	(sum by (namespace) (rate(ocbsf_binding_revalidation_pcfBinding_missing_total[5m])) / sum by (namespace) (rate(ocbsf_binding_revalidation_response_total[5m]))) * 100 >= 30 < 50
OID	1.3.6.1.4.1.323.5.3.37.1.2.51
Metric Used	
Recommended Actions	Check BSF Management service health history. Increase binding audit frequency. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.77 BINDING_REVALIDATION_PCF_BINDING_MISSING_MAJOR

Table 5-93 BINDING_REVALIDATION_PCF_BINDING_MISSING_MAJOR

Field	Details
Description	At least 50% but less than 70% of the PCF BINDING missing among all binding revalidation records in the last 5 minutes.

Table 5-93 (Cont.) BINDING_REVALIDATION_PCF_BINDING_MISSING_MAJOR

Field	Details
Summary	At least 50% but less than 70% of the PCF BINDING missing among all binding revalidation records in the last 5 minutes.
Severity	Major
Condition	(sum by (namespace) (rate(ocbsf_binding_revalidation_pcfBinding_missing_total[5m])) / sum by (namespace) (rate(ocbsf_binding_revalidation_response_total[5m]))) * 100 >= 50 < 70
OID	1.3.6.1.4.1.323.5.3.37.1.2.51
Metric Used	
Recommended Actions	Check BSF Management service health history. Increase binding audit frequency. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.78 BINDING_REVALIDATION_PCF_BINDING_MISSING_CRITICAL

Table 5-94 BINDING_REVALIDATION_PCF_BINDING_MISSING_CRITICAL

Field	Details
Description	At least 70% of the PCF BINDING missing among all binding revalidation records in the last 5 minutes.
Summary	At least 70% of the PCF BINDING missing among all binding revalidation records in the last 5 minutes.
Severity	Critical
Condition	(sum by (namespace) (rate(ocbsf_binding_revalidation_pcfBinding_missing_total[5m])) / sum by (namespace) (rate(ocbsf_binding_revalidation_response_total[5m]))) * 100 >= 70
OID	1.3.6.1.4.1.323.5.3.37.1.2.51
Metric Used	
Recommended Actions	Check BSF Management service health history. Increase binding audit frequency. For any additional guidance, contact My Oracle Support (https://support.oracle.com).

5.2.79 BSF_STATE_NON_FUNCTIONAL_CRITICAL

Table 5-95 BSF_STATE_NON_FUNCTIONAL_CRITICAL

Field	Details
Description	BSF is in non functional state due to DB Cluster state down
Summary	BSF is in non functional state due to DB Cluster state down
Severity	Critical
Condition	appinfo_nfDbFunctionalState_current{nfDbFunctionalState="Not_Running"} == 1
OID	1.3.6.1.4.1.323.5.3.37.1.2.56
Metric Used	appinfo_dbmonitorclusterDbState_current
Recommended Actions	Check BSF Management service health history. Increase binding audit frequency. For any additional guidance, contact My Oracle Support (https://support.oracle.com).