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Cloud Native Core, Operations Services Overlay Installation and Upgrade Guide

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Oracle Communications Cloud Native Core, Operations Services Overlay Installation and Upgrade Guide, Release 25.2.200

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Preface

- Documentation Accessibility
- Diversity and Inclusion
- Conventions

Documentation Accessibility

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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.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
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1. Select **2** for New Service Request.
2. Select **3** for Hardware, Networking and Solaris Operating System Support.
3. Select one of the following options:
   - For Technical issues such as creating a new Service Request (SR), select **1**.
   - For Non-technical issues such as registration or assistance with My Oracle Support, select **2**.

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Acronyms

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

Table Acronyms and Terminologies

Acronym	Description
alm	AlertManager
cm-r	Configmap-reload
CNC Console	Cloud Native Configuration Console
CNE	Oracle Communications Cloud Native Core, Cloud Native Environment
CSAR	Cloud Service Archive
GUI	Graphical User Interface
ONAP	Open Network Automation Platform
OSDC	Oracle Software Download Center
OSO	Operations Services Overlay
OSO_PROM_CONFIGMAP	Configmap name of OSO prometheus
OSO_ALERTRULE_CONFIG_FILE	Alert-rule file of NFs
OSO_ALR_CONFIG_CONFIGMAP	Configmap name of OSO-ALR-CONFIG feature
OSO_APM_SVC	Service to forward alerts to kafka cluster
prom	Prometheus
svr	Server
TSDB	Time Series Database

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What's New in This Guide

This section introduces the documentation updates for release 25.2.2xx.

Release 25.2.200- G45387-01, March 2026

General Updates

- Updated the release version to 25.2.200 in the entire document.
- Updated the release information in the Table 1-1 in the Oracle Error Correction Policy section.
- Added the OSO_APM_SVC in the Acronyms section.
- Updated the Key Information About OSO section to include `apm-svc` in the first step's sample output.
- Added a note related to the PVC sizing in the Creating Backup of Prometheus Time Series Database (TSDB) Using Snapshot Utility section.

Installation Updates

- Updated the versions for the following images in the Prerequisites section:
  - `OSO_PROMETHEUS_IMAGE=occne.io/oso/prometheus:v3.6.0`
  - `OSO_SNAPSHOT_IMAGE=occne.io/occne/oso_snapshot:25.2.200`
  - `OSO_APM_IMAGE=occne.io/occne/oso_apm_service:25.2.200`
  - `OSO_ALERT_CONFIG_IMAGE =occne.io/occne/oso_alert_config:25.2.200`
  - `OSO_HELM_TEST_IMAGE=occne.io/occne/oso_helm_test:25.2.200`
  - Helm version = 3.19.1
  - Kubernetes version = 1.34.1
- Added the `OSO_APM_IMAGE` image details in the Prerequisites section.
- Updated the Table 2-4 with the following details in the Resource Utilization section:
  - APM (Alert Processing Microservice)
  - Configmapreload Prometheus
  - Configmapreload Alertmanager
  - Helm test
  - Modified all the values for Prometheus except the CPU Initial Request (m) column.
- Updated the Installing OSO Using CSAR section with the `oso-apm-service` details.
- Removed content related to ClusterIP in the "To enable IPv6 DualStack in Prometheus" as it is not applicable for dual stack in the Installing OSO Using CSAR section.
- Added the Configuration of Alert Processing Microservice (APM) section with the procedure for installing and configuring the Alert Processing Microservice feature.
- Added the **Alert Processing Microservice Configuration Parameters** section to include the configuration parameters for APM service.
- Added all the parameters in the custom_values.yaml in the following sections:

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  - Prometheus Configuration Parameters
  - Alertmanager Configuration Parameters
  - Alert Config Configuration Parameters

Upgrade and Rollback Updates

- Updated the upgrade paths in the Supported Upgrade Paths section.
- Updated the current release and the previous release versions in the following sections:
  - Prerequisites
  - Rollback Tasks
- Added a note to clarify that OSO pods do not automatically restart when configmap changes are made during an upgrade, and providing manual steps to ensure the pods retrieve the latest data in the Upgrading OSO section.
- Enhanced the existing note with a cause for the service interruption in the Upgrading OSO section .
- Updated the rollback paths in the Supported Rollback Paths section.
- Updated the Rollback Tasks section with a step to detach the PVC from old Prometheus pod and attach to the new Prometheus pod.
- Added a command to check the installed Helm charts in Rollback Tasks section.

Uninstall Updates

Added the procedure for uninstalling OSO resources in the Uninstalling OSO section.

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1 Introduction

This guide describes how to install or upgrade Oracle Communications Cloud Native Core, Operations Services Overlay (OSO) in a cloud native environment.

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

1.1 Overview

Oracle Communications Cloud Native Core, Operations Services Overlay is a key component of the 5G Service Based Architecture (SBA).

Oracle Communications Cloud Native Core, Operations Services Overlay installs and configures common operation services. For example, you can install and configure Prometheus and its components like AlertManager in a previously installed Kubernetes cluster.

Oracle Communications Cloud Native Core, Operations Services Overlay is an independent deliverable distinct from Oracle Communications Cloud Native Core, Cloud Native Environment (CNE).

1.2 References

Following are the reference documents while deploying OSO:

- *Oracle Communications Cloud Native Core, Operations Services Overlay User Guide*
- *Oracle Communications Cloud Native Core, Operations Services Overlay Network Impact Report*
- *Oracle Communications Cloud Native Core Release Notes*
- *Oracle Communications Cloud Native Core Licensing Information User Guide*
- *Oracle Communications Cloud Native Core Solution Upgrade Guide*
- *Oracle Communications Cloud Native Core Security Guide*

1.3 Oracle Error Correction Policy

The table below outlines the key details for the current and past releases, their General Availability (GA) dates, the latest patch versions, and the end dates for the Error Correction Grace Period.

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Table 1-1 Error Correction Policy

Cloud Native Core Release Number	General Availability (GA) Date	Error Correction Grace Period End Date
3.25.2.200	March 2026	March 2027
3.25.2.100	November 2025	November 2026
3.25.1.200	July 2025	July 2026
3.25.1.100	April 2025	April 2026

> **Note**
>
> - For the latest patch releases, see their corresponding *Oracle Communications Cloud Native Core Release Notes*.
> - For a release, Sev1 and Critical Patch Unit (CPU) patches are supported for 12 months. For more information, see Oracle Communications Cloud Native Core and Network Analytics Error Correction Policy.

1.4 Oracle Open Source Support Policies

Oracle Communications Cloud Native Core uses open source technology governed by the Oracle Open Source Support Policies. For more information, see Oracle Open Source Support Policies.

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2 Installing OSO

This chapter provides information about installing Oracle Communications Cloud Native Core, Operations Services Overlay (OSO) in a cloud native environment.

> **Note**
>
> For release version 25.2.200, OSO supports both fresh installation and upgrade from 25.1.2xx and 25.2.1xx. For more information on how to upgrade OSO, see Upgrading OSO.

OSO, packaged as a Cloud Service Archive (CSAR) file, is a ZIP file that contains the following components:

- All the required OSO images, including opensource software as a tar file.
- All the required OSO Helm charts.
- The following custom values.yaml files:
  - `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` is used for configuring the Prometheus parameters.
  - `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml` is used for configuring the Alertmanager parameters.
  - `ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml` is used for configuring the Alert processing microservice parameters.
  - `ocoso_csar_25_2_200_0_0_0_alr_config_custom_values.yaml` is used for configuring the Alert configuration parameters.

> **Note**
>
> The README doc contains the details to populate mandatory values in the `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` and `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml` files. For more information about the configuration parameters, see OSO Configuration Parameters.

2.1 Prerequisites

Before installing and configuring OSO, ensure that the following prerequisites are met:

1. CSAR packages are downloaded.
2. Unzip and TAR utilities are installed.
3. Docker or Podman (v5.4.0) is installed, and you must be able to run the docker or podman commands.
4. Minimum supported Helm version (v3.19.1) is installed.

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5. kubectl is installed (1.34.1).
6. A central repository is made available for all images, binaries, helm charts, and so on, before running this procedure.
7. The following images are populated in the registry on the repository server:

Table 2-1 Images in the Registry on the Repository Server

Image Name	Path in Repository with version
OSO_ALERTMANAGER_IMAGE	`occne.io/oso/alertmanager:`v0.28.0
OSO_PROMETHEUS_IMAGE	`occne.io/oso/prometheus:`v3.6.0
OSO_CONFIGMAPRELOAD_IMAGE	`occne.io/oso/configmapreload:`v0.15.0
OSO_ALERT_CONFIG_IMAGE	`occne.io/occne/oso_alert_config:`25.2.200
OSO_HELM_TEST_IMAGE	`occne.io/occne/oso_helm_test:`25.2.200
OSO_SNAPSHOT_IMAGE	`occne.io/occne/oso_snapshot:`25.2.200
OSO_APM_IMAGE	`occne.io/occne/oso_apm_service:` 25.2.200

All above images are packed into tar format and will be present in OSO CSAR under (Artifacts/Images) folder except for `oso_alert_config` which is present in `ocoso_alr_config_csar_25_2_200.zip`. You can use the following commands to load these images into your cluster's registry.

```
$ docker/podman load -i <image-name>.tar
$ docker/podman tag <image-url> <registry-address>:<port>/image-url
$ docker/podman push <registry-address>:<port>/image-url
```

8. OSO can now be installed in one of the following ways:
   - without the snapshot utility feature (disabled): proceed as per existing procedure and resize the PVC storage.
   - with the snapshot utility feature (enabled): adjust the size of the PVC storage to fit the snapshot data. Otherwise, the Prometheus pod may crash. OSO recommends the users to configure thrice the existing storage capacity.
     If this feature is enabled, users experience variations in CPU and RAM usage. It is recommended that each NF should benchmark these figures and obtain them from the respective NFs.

     For example, if the PVC storage size required at user environment for OSO Prometheus is 50GB then in snapshot enabled OSO deployment, the storage configuration is given as 150GB (50GB*3). This value is defined in `PROM-PV-SIZE` for the required size.

```
persistentVolume:
enabled: true
...
...
mountPath: /data
size: PROM-PV-SIZE
storageClass: "PROM-STORAGE-CLASS"
```


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Use the `web.enable-admin-api` parameter to enable the snapshot utility feature. For more information about this parameter, see Prometheus Configuration Parameters.

> **Note**
>
> Tables Table 2-2 and Table 2-3 in this section offer a comprehensive list of software necessary for the proper functioning of during deployment. However, these tables are indicative, and the software used can vary based on the customer's specific requirements and solution.

The `Software Requirement` column in Table 2-2 and Table 2-3 tables indicates one of the following:

- Mandatory: Absolutely essential; the software cannot function without it.
- Recommended: Suggested for optimal performance or best practices but not strictly necessary.
- Conditional: Required only under specific conditions or configurations.
- Optional: Not essential; can be included based on specific use cases or preferences.

Table 2-2 Preinstalled Software Versions

Software	25.2.2.xx	25.2.1xx	25.1.2xx	Software Requirement	Usage Description
Helm	3.19.1	3.18.2	3.16.2	Mandatory	Helm, a package manager, simplifies deploying and managing NFs on Kubernetes with reusable, versioned charts for easy automation and scaling. **Impact**: Preinstallation is required. Without this capability, management of NF versions and configurations becomes time-consuming and error-prone, impacting deployment consistency.
Kubernetes	1.34.1	1.33.1	1.32.0	Mandatory	Kubernetes orchestrates scalable, automated NF deployments for high availability and efficient resource utilization. **Impact**: Preinstallation is required. Without orchestration capabilities, deploying and managing network functions (NFs) can become complex, leading to inefficient resource utilization and potential downtime.
Podman	5.4.0	5.4.0	5.4.0	Recommended	Podman is a part of Oracle Linux. It manages and runs containerized NFs without requiring a daemon, offering flexibility and compatibility with Kubernetes. **Impact**: Preinstallation is required. Without efficient container management, the development and deployment of NFs could become cumbersome, impacting agility.

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To check the versions for the preinstalled software in the cloud native environment, run the following commands:

```
kubectl version
```

```
helm version
```

```
podman version
```

If you are deploying in a cloud native environment, these following additional software are to be installed before installing .

Table 2-3 Additional Software Versions

Software	25.2.2xx	25.2.1xx	25.1.2xx	Software Requirement	Usage Description
AlertManager	0.28.0	0.28.0	0.28.0	Recommended	Alertmanager is a component that works in conjunction with Prometheus to manage and dispatch alerts. It handles the routing and notification of alerts to various receivers. **Impact:** Not implementing alerting mechanisms can lead to delayed responses to critical issues, potentially resulting in service outages or degraded performance.
Configmapreload	0.15.0	0.15.0	0.15.0	Mandatory	Configmapreload is a simple binary to trigger a reload when Kubernetes ConfigMaps or Secrets, mounted into pods, are updated. It watches mounted volume dirs and notifies the target process that the config map has been changed. **Impact:** Not employing this solution would impact downtime as pods would need to restart everytime a configmap is updated.
Prometheus	3.6.0	3.4.1	3.2.0	Mandatory	Prometheus is a popular open source monitoring and alerting toolkit. It collects and stores metrics from various sources and allows for alerting and querying. **Impact:** Not employing this monitoring solution could result in a lack of visibility into NF performance, making it difficult to troubleshoot issues and optimize resource usage.

2.2 Resource Utilization

The use of resources such as CPU and RAM by the OSO services are constrained to ensure that the CPU and RAM do not consume excess resources that could be used by other applications.

During the deployment of the services, each service gets an initial CPU and RAM allocation. Each service is allowed to consume the resources to a specified upper limit while it continues to run. The initial allocation limit and the upper limit are set to the same value for services where the resource consumption limit remains the same as the initial allocation or in a case where increasing the CPU or RAM limits underneath a running application can cause service disruption.

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> **Note**
>
> Each NF is supposed to benchmark their application against OSO services and set the RAM, CPU, and PVC values accordingly. These initial resource request is set by OSO team as a placeholder and it is not recommended for any NF.

The resource requests and limits are as follows:

Table 2-4 CPU, RAM, and Ephemeral Resource Requests and Limits

Service	CPU Initial Request (m)	CPU Limit (m)	RAM Initial Request (Mi)	RAM Limit (Mi)	PVC (Gb)	Ephemeral Storage Request (Gi)	Ephemeral Storage Limit (Gi)
Prometheus	2000	2000	4096 (4 Gb)	4096 (4 Gb)	8	8	12
Prometheus (with snapshot utility enabled)	4000	8000	32768 (32 Gb)	65536 (64 Gb)	150	8	12
AlertManager	100	500	32	200	2	1	1
AlertManager (with Alert Processing Microservice (APM) Service enabled)*	2000	2000	16384(16 gb)	16384(16 gb)	2	1	1
APM (Alert Processing Microservice)	2000	4000	2048 (2Gb)	4096 (4 Gb)	NA	1	2
Configmapreload Prometheus	10	10	32	32	NA	1	1
Configmapreload Alertmanager	400	400	124	124	NA	1	1
Helm test	10	10	32	32	NA	NA	NA

The overall observability services resource usage varies on each worker node. The observability services listed in the table are distributed evenly across all worker nodes in the Kubernetes cluster.

2.3 Downloading the OSO package

To download the OSO package from My Oracle Support, perform the following procedure:

1. Log in to My Oracle Support using your login credentials.
2. Click the **Patches & Updates** tab to locate the patch.
3. In the **Patch Search** console, click the **Product or Family (Advanced)** option.
4. In the **Product** field, enter `Oracle Communications Cloud Native Core - 5G` and select the product from the Product drop-down list.

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5. From the **Release** drop-down list, select **Oracle Communications Cloud Native Core Network Repository Function *<release_number>***.
   Where, *<release_number>* indicates the required release number of OSO.
6. Click **Search**.
   The Patch Advanced Search Results list appears.
7. Select the required patch from the list.
   The Patch Details window appears.
8. Click **Download**.
   The File Download window appears.
9. Click the `<p********_<release_number>_Tekelec>.zip` file to download the release package.
   Where, `<p********>` is the MOS patch number and `<release_number>` is the release number of OSO.

2.4 Installing OSO Using CSAR

Open Network Automation Platform (ONAP) compliant orchestrator uses CSAR format to onboard, validate, and install OSO. However, in the absence of an orchestrator, manual installation is possible using the CSAR file contents.

Perform the following steps to install OSO using CSAR artifacts:

1. Download the OSO CSAR zip files from My Oracle Support (MOS).
2. Extract the CSAR zip files:

```
$ unzip <OSO CSAR package>
$ unzip -d ./oso_csar/ ocoso_csar_<25.2.200 version>.zip
$ unzip -d ./oso_alert_config_csar/ ocoso_alr_config_csar_<25.2.200
version>.zip
```

3. Upload all the artifacts present in the `Artifacts/Images` folder to the configured repository.
   The following structure indicates the CSAR file containing the Prometheus, alertmanager,and alert processing microservice files.

```
├── Artifacts
│   ├── ChangeLog.txt
│   ├── Images
│   │   ├── alertmanager-0.28.0.tar
│   │   ├── configmapreload-0.15.0.tar
│   │   ├── oso-apm-service-25.2.200.tar
│   │   ├── oso-helm-test-25.2.200.tar
│   │   ├── oso-snapshot-25.2.200.tar
│   │   └── prometheus-3.6.0.tar
│   ├── Licenses
│   ├── Scripts
│   │   ├── alertmanager
│   │   ├── ocoso_csar_25_2_200_0_0_0_alertmanager_charts.tgz
│   │   ├── ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml
│   │   ├── ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
│   │   ├── ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml
│   │   ├── ocoso_csar_25_2_200_0_0_0_prometheus_charts.tgz
│   │   ├── ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml
```


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```
│   │   ├── oso_apm_svc
│   │   ├── OSO_README.md
│   │   └── prometheus
│   └── Tests
├── Definitions
│   ├── etsi_nfv_sol001_vnfd_2_5_1_types.yaml
│   ├── oso_vnfd.yml
│   └── helm_extensions_1_0.yaml
├── ocoso_csar_25_2_200_0_0_0.zip
├── oso_vnfd.mf
└── TOSCA-Metadata
    └── TOSCA.meta
```

The following structure indicates the CSAR file containing the alert configuration files.

```
.
├── Artifacts
│   ├── ChangeLog.txt
│   ├── Images
│   │   └── oso-alert-config-25.2.200.tar
│   ├── Licenses
│   ├── Scripts
│   │   ├── ocoso_alr_config_csar_25_2_200_0_0_0_alert_config_charts.tgz
│   │   ├──
ocoso_alr_config_csar_25_2_200_0_0_0_alert_config_custom_values.yaml
│   │   └── OSO_ALR_CONFIG_README.md
│   └── Tests
├── Definitions
│   ├── etsi_nfv_sol001_vnfd_2_5_1_types.yaml
│   ├── oso_alr_config_vnfd.yml
│   └── helm_extensions_1_0.yaml
├── ocoso_alr_config_csar_25_2_200_0_0_0.zip
├── oso_alr_config_vnfd.mf
└── TOSCA-Metadata
    └── TOSCA.meta
```

For more information about the artifacts, see the Prerequisites section.

4. From 25.2.200 onwards, the `custom_values.yaml` file is split into three different files:
   - `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` is used for configuring the Prometheus parameters
   - `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml` is used for configuring the Alertmanager parameters.
   - `ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml` is used for configuring the alert processing microservice.

   These files are required to be populated and installed separately. Update the respective `custom_values.yaml` files inside respective `Artifacts/Images` directory with the required values as mentioned in OSO Configuration Parameters.
5. Enable IPv6 Dualstack.
   a. **To enable IPv6 DualStack in Prometheus**
      - Enable IPv6 Dualstack in the `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` file. Search for the

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following comment in the yaml file and uncomment the following four lines after this comment.

```
# Custom section to enable IPV6, Uncomment below section in order
to enable Dualstack OSO
      having both Ipv4 and Ipv6 addresses
#ipFamilies:
#- IPv4
#- IPv6
#ipFamilyPolicy: PreferDualStack
```

- Save the file and proceed with the normal installation.

b. **To enable IPv6 DualStack in AlertManager** Replace "ENABLE_DUAL_STACK" with "true" in below section inside the `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml` file before installing alertmanager.

```
# ip dual stack
  ipDualStack:
    enabled: ENABLE_DUAL_STACK
    ipFamilies: ["IPv6", "IPv4"]
    ipFamilyPolicy: "PreferDualStack"
```

6. Save the file and proceed with the normal installation.
7. Install OSO using the following steps:

a. Extract the Helm charts tgz files which are available in the `Artifacts/Scripts` directory and populate the three `custom_values.yaml` files.

```
$ cd Artifacts/Scripts
$ tar -xvzf ocoso_csar_25_2_200_0_0_0_alertmanager_charts.tgz
$ tar -xvzf ocoso_csar_25_2_200_0_0_0_prometheus_charts.tgz
$ tar -xvzf ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
$ tar -xvzf ocoso_csar_25_2_200_0_0_0_alert_config_charts.tgz
```

b. Install Prometheus, Alertmanager, and Alert Processing Microservice (APM) using the Helm charts provided and update the `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml`, `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml`, and `ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml` files with the following commands. For more information about APM, see **Alert Processing Microservice Configuration Parameters**.To install alert-config feature, see Automated Configuration of NF Alerts.
Use the following command for installation using Helm, if custom labels are given:

```
$ kubectl create namespace <deployment-namespace-name>
$ helm --namespace=<deployment-namespace-name> install <oso-prom-
release-name> -f <ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml> ./
ocoso_csar_25_2_200_0_0_0_prometheus_charts.tgz
$ helm --namespace=<deployment-namespace-name> install <oso-
alertmanager-release-name> -f
<ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml> ./
ocoso_csar_25_2_200_0_0_0_alertmanager_charts.tgz
$ helm --namespace=<deployment-namespace-name> install <oso-apm-release-
```


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```
name> -f <ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml> ./
ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
```

For example:

```
$ kubectl create namespace <oso-namespace>
# Example for Prometheus:
$ helm --namespace=<oso-namespace> install <oso-prom-release-name> -f
ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml
        ./ocoso_csar_25_2_200_0_0_0_prometheus_charts.tgz
# Similarly for Alertmanager
$ helm --namespace=<oso-namespace> install <oso-alertmanager-release-
name> -f ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml
        ./ocoso_csar_25_2_200_0_0_0_alertmanager_charts.tgz
# For apm service, configure the values files before running helm
install
$ helm --namespace=<oso-namespace> install <oso-apm-release-name> -f
ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml ./
ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
```

```
$ kubectl create namespace ns1
## Prometheus
$helm install -f ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml --
namespace=ns1 --name-template=oso-p ./
ocoso_csar_25_2_200_0_0_0_prometheus_charts.tgz
##  Alertmanager
$ helm install -f ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml --
namespace=ns1 --name-template=oso-a ./
ocoso_csar_25_2_200_0_0_0_alertmanager_charts.tgz
# For apm service, configure the values files before running helm
install
$ helm install -f ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml ./
ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
```

c. Run the following command to perform a Helm test. Populate the values in the `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` and `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml` files to run the Helm test. Run the Helm test separately for each Alertmanager and Prometheus.

```
$ helm test <release-name> -n <oso-namespace>
```


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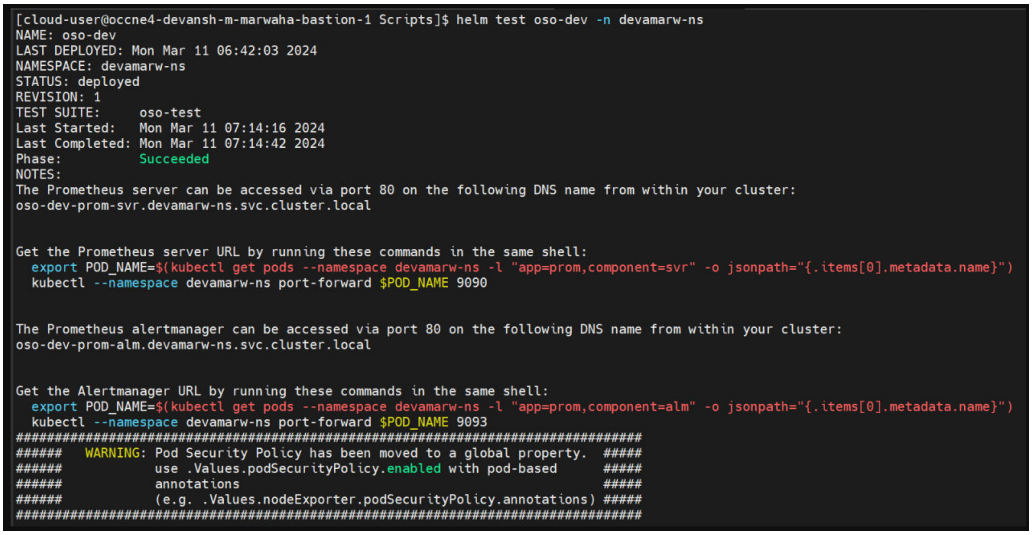
> **Note**
>
> Helm Test can be run for the first time smoothly, but if some issue occurs, and there's a need to re-run the helm test, first you will have to delete the existing test job and repeat the "helm test" command as shown above.
>
> ```
> $ kubectl get jobs.batch -n <namespace>
> ```
>
> ```
> $ kubectl delete jobs.batch oso-test -n <namespace>
> ```

Figure 2-1 Helm Test



2.4.1 Automated Configuration of NF Alerts

This section explains the process of automating the NF alerts configuration in OSO after deploying all the relevant NFs and OSO components. The process manages the alert rule definitions and dynamically updates the OSO Prometheus configmap as part of the Helm chart installation or upgrade.

1. **Prerequisites**
   a. Install the respective NF, CNC Console, cnDBTier, and OSO in their designated namespace.
   b. The existing structure of the `nf-alertrule.yaml` file remains unchanged. Operators must prepare the alert rule file(s) and place them in a directory on the server, which will be provided as input to the new Helm chart.
2. **Existing Functionality**
   NF Alerts are configured in Prometheus manually post OSO deployment by performing the following steps:

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

3. **Alert Automation**

   a. **Installing Alert Automation feature using Helm**

      i. Extract the Helm charts tgz file and available in the `Artifacts/Scripts` directory.

```
$ cd Artifacts/Scripts
$ tar -xvzf ocoso_csar_25_2_200_0_0_0_alert_config_charts.tgz
```

      The following structure indicates the CSAR file containing the alert configuration files.

```
.
├──── Artifacts
│     ├──── ChangeLog.txt
│     ├──── Images
│     │     └──── oso-alert-config-25.2.200.tar
│     ├──── Licenses
│     ├──── Scripts
│     │     ├────
ocoso_alr_config_csar_25_2_200_0_0_0_alert_config_charts.tgz
│     │     ├────
ocoso_alr_config_csar_25_2_200_0_0_0_alert_config_custom_values.yaml
│     │     └──── OSO_ALR_CONFIG_README.md
│     └──── Tests
├──── Definitions
│     ├──── etsi_nfv_sol001_vnfd_2_5_1_types.yaml
│     ├──── oso_alr_config_vnfd.yml
│     └──── helm_extensions_1_0.yaml
├──── ocoso_alr_config_csar_25_2_200_0_0_0.zip
├──── oso_alr_config_vnfd.mf
└──── TOSCA-Metadata
      └──── TOSCA.meta
```

> **Note**
>
> Deploy the `oso-alr-config` Helm chart after OSO Prometheus and Alertmanager are installed using the `helm install` command.

      ii. Provide the appropriate values in the `ocoso_csar_25_2_200_0_0_0_alert_config_custom_values.yaml` file for `oso-alr-config` configmap and proceed with the installation of the alert automation feature. The chart can accept one or more alert rule files during deployment.

      - Install the alert configuration feature by providing one alert-rule file:

```
helm -n <oso-namespace> install <oso-alr-config-feature-name> ./
oso-alr-config -f
```


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```
ocoso_csar_25_2_200_0_0_0_alert_config_custom_values.yaml -f
path/to/nf_alertrules.yaml
```

- Install the alert configuration feature by providing multiple alert-rule files:

```
helm -n <oso-namespace> install <oso-alr-config-feature-name> ./
oso-alr-config -f
ocoso_csar_25_2_200_0_0_0_alert_config_custom_values.yaml -f
path/to/nf1_alertrules.yaml -f path/to/nf2_alertrules.yaml
```

iii. Run the following command to verify if `oso-alr-config` configmap is created by Helm.

```
$ kubectl -n <oso-namespace> get configmap
```

Example:

```
kubectl -n oso get cm
```

Sample output

```
NAME DATA AGE
oso-alr-config-cm 2 2d21h
oso-prom-svr 8 2d21h
```

iv. Verify if the alerts are successfully loaded in the Prometheus GUI. For more information, see Verifying Installation section to understand how to access OSO Prometheus GUI and how to verify alerts.

v. If no alert rule file is provided during installation, the script will not perform any actions, but the `oso-alr-config` Helm chart will still be installed. It is strongly recommended to supply at least one alert rule file, as it is required for configuration.

> **Note**
>
> The deployment fails in any of the following cases:
>
> - If `OSO-PROM-CONFIGMAP-NAME` does not exist (Helm deployment fails before triggering script).
> - If there are validation errors.
> - If K8s API returns error.

b. **Adding more alerts using Helm Upgrade**

- Prepare the NF alert rule file and trigger a Helm upgrade for the `oso-alr-config` chart by providing the alert rule file as input.
- The deployment fails in any of the following cases:

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> **Note**
>
> – If `OSO-PROM-CONFIGMAP-NAME` or `oso-alr-config-cm` does not exist.
> – If there are validation errors.
> – If K8s API returns error.

- The chart can accept one or more alert rule files during deployment. Run the following command to provide multiple files:

```
Using Multiple -f Flags
helm upgrade oso-alr-config oso-alr-config/ -f
<ocoso_csar_25_2_200_0_0_0_alert_config_custom_values.yaml> -f
<path/to/nf1_alertrules.yaml> -f <path/to/nf2_alertrules.yaml> -n
<oso-namespace>
```

> **Note**
>
> It is recommended to provide all the alert files together like all NFs, cnDBTier, and CNC Console).

- `OSO_ALERTRULE_CONFIGMAP` will be created by Helm and will be accessible to user using the following command:

```
$ kubectl -n <oso-namespace> get configmap
```

For example, `kubectl -n oso get cm`

Sample output:

```
NAME DATA AGE
oso-alr-config-cm 2 2d21h
oso-prom-svr 8 2d21h
```

- After successfully verifying the upgrade, Route to the OSO Prometheus GUI to verify if the Alerts are successfully loaded, For more information about accessing Prometheus GUI and verifying the alerts, see Verifying Installation.

c. Unpatching or removing the alert automation feature

- Clear the alerts from the OSO Prometheus ConfigMap and Prometheus GUI by using an empty alert rule file will be provided during the Helm upgrade. However, the references are retained under `rule_files` "`/etc/config/alertscncc`" and alert rules will be empty "`alertscncc: { }`"

> **Note**
>
> It is recommended to unpatch all alerts together. This can be achieved by providing all the empty alert files at once, which restores the alerts section in the OSO deployment to its original state.

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- Prepare empty alert files (`empty_nf_alertrules.yaml`) for all the respective NFs that should be removed from the Prometheus GUI.
  For example, CNC Console alerts should not be listed under Prometheus GUI.

```
apiVersion: v1
data:
  alertscncc: |
    {}
```

- Run a helm upgrade (for more information, see step 3.b) and pass these empty files.
  The following example, indicates when only 1 empty file of CNC Console is given to display the effect of this empty file.

  Updated Prometheus ConfigMap (`oso-prom-svr configMap` output):

```
kubectl get configmap/oso-prom-svr -n default -oyaml
apiVersion: v1
data:
  alerting_rules.yml: |
    {}
  alerts: |
    {}
  alertscncc: |
    {}
  alertsnrf: |
    groups:
    - name: OcnrfAlerts
      rules:
      - alert: OcnrfTotalIngressTrafficRateAboveMinorThreshold
        annotations:
          description: 'Ingress traffic Rate is above the
configured minor threshold i.e. 800 requests per second (current
value is: {{ $value }})'
          summary: 'timestamp: {{ with query "time()" }}{{ . |
first | value | humanizeTimestamp }}{{ end }}: Traffic Rate is
above 80 Percent of Max requests per second(1000)'
        expr:
sum(rate(oc_ingressgateway_http_requests_total{app_kubernetes_io_nam
e="ingressgateway",kubernetes_namespace="ocnrf"}[2m])) by
(kubernetes_namespace) >= 800 < 900
        labels:
          severity: minor
          oid: "1.3.6.1.4.1.323.5.3.36.1.2.7001"
          kubernetes_namespace:
' {{ $labels.kubernetes_namespace }} '
      - alert: OcnrfTotalIngressTrafficRateAboveMajorThreshold
        annotations:
          description: 'Ingress traffic Rate is above the
configured major threshold i.e. 900 requests per second (current
value is: {{ $value }})'
          summary: 'timestamp: {{ with query "time()" }}{{ . |
first | value | humanizeTimestamp }}{{ end }}: Traffic Rate is
above 90 Percent of Max requests per second(1000)'
        expr:
```


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```
sum(rate(oc_ingressgateway_http_requests_total{app_kubernetes_io_nam
e="ingressgateway",kubernetes_namespace="ocnrf"}[2m])) by
(kubernetes_namespace) >= 900 < 950
        labels:
          severity: major
          oid: "1.3.6.1.4.1.323.5.3.36.1.2.7002"
          kubernetes_namespace:
' {{ $labels.kubernetes_namespace }} '
  alertsscp: |
    groups:
    - name: SCPAlerts
      rules:
      - alert: SCPIngressTrafficRateAboveMinorThreshold
        annotations:
          description: 'Ingress Traffic Rate at locality:
"{{$labels.ocscp_locality}}"  is above minor threshold (i.e. 2380
mps)'
          summary: 'namespace: {{$labels.kubernetes_namespace}},
podname: {{$labels.kubernetes_pod_name}},scpfqdn:
{{$labels.ocscp_fqdn}},scpauthority:{{$labels.ocscp_authority}},
timestamp: {{ with query "time()" }}{{ . | first | value |
humanizeTimestamp }}{{ end }}: Current Ingress Traffic Rate is
{{ $value | printf "%.2f" }} mps which is above 70 Percent of Max
MPS(3400)'
        expr:
sum(rate(ocscp_metric_http_rx_req_total{app_kubernetes_io_name="scp-
worker"}[2m])) by
(kubernetes_namespace,ocscp_locality,kubernetes_pod_name,ocscp_fqdn,
ocscp_authority) >= 2380 < 2720
        for: 1m
        labels:
          severity: minor
          alertname: "SCPIngressTrafficRateAboveMinorThreshold"
          oid: "1.3.6.1.4.1.323.5.3.35.1.2.7001"
          namespace: '{{$labels.kubernetes_namespace}}'
          podname: '{{$labels.kubernetes_pod_name}}'
          vendor: oracle
      - alert: SCPIngressTrafficRateAboveMajorThreshold
        annotations:
          timestamp: ' {{ with query "time()" }}{{ . | first |
value | humanizeTimestamp }}{{ end }} '
          description: 'Ingress Traffic Rate at locality:
{{$labels.ocscp_locality}} is above major threshold (i.e. 2720 mps)'
          summary: 'namespace: {{$labels.kubernetes_namespace}},
podname: {{$labels.kubernetes_pod_name}},scpfqdn:
{{$labels.ocscp_fqdn}},scpauthority:{{$labels.ocscp_authority}},
timestamp: {{ with query "time()" }}{{ . | first | value |
humanizeTimestamp }}{{ end }}: Current Ingress Traffic Rate is
{{ $value | printf "%.2f" }} mps which is above 80 Percent of Max
MPS(3400)'
        expr:
sum(rate(ocscp_metric_http_rx_req_total{app_kubernetes_io_name="scp-
worker"}[2m])) by
(kubernetes_namespace,ocscp_locality,kubernetes_pod_name,ocscp_fqdn,
ocscp_authority)  >= 2720 < 3230
        for: 1m
```


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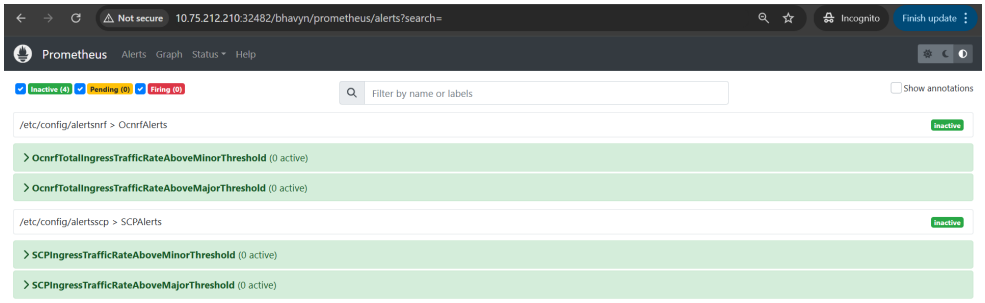
```
        labels:
          severity: major
          alertname: "SCPIngressTrafficRateAboveMajorThreshold"
          oid: "1.3.6.1.4.1.323.5.3.35.1.2.7001"
          namespace: '{{$labels.kubernetes_namespace}}'
          podname: '{{$labels.kubernetes_pod_name}}'
          vendor: oracle
  allow-snippet-annotations: "false"
  prometheus.yml: |
    global:
      evaluation_interval: 1m
      scrape_interval: 1m
      scrape_timeout: 30s
    rule_files:
    - /etc/config/alertsnrf
    - /etc/config/recording_rules.yml
    - /etc/config/alerts
    - /etc/config/alerting_rules.yml
    - /etc/config/alertsscp
    - /etc/config/alertscncc
    - /etc/config/rules
......
......
......
```

Screenshot of Prometheus GUI without CNC Console alerts:

Figure 2-2 Prometheus GUI with No CNC Console Alert Files



d. Helm Uninstall

i. Run the following command to uninstall `oso-alr-config` Helm chart.

```
helm uninstall oso-alr-config -n <oso-namespace>
```

During `oso-alr-config` Helm chart uninstallation, no hooks are executed. As a result, the OSO Prometheus configmapMap and its alert configurations remain intact, while all other `oso-alr-config` resources are deleted.

ii. In the event of a failure during an upgrade followed by an uninstall, the failed jobs may persist. In such cases, you must manually clear all jobs using the following command:

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- Run the following command to retrieve the jobs:

```
#Get the jobs
$ kubectl get jobs -n <oso-namespace>
```

Sample output:

```
NAME                                 COMPLETIONS   DURATION   AGE
oso-alr-config-hook-post-install   0/1           138m       138m
```

- Run the following command to delete the jobs:

```
# Delete the jobs
$ kubectl delete job oso-alr-config-hook-post-install
```

Sample output:

```
job.batch "oso-alr-config-hook-post-install" deleted
```

2.4.2 Configuration of Alert Processing Microservice (APM)

This section describes the steps required to install, configure, and enable the Alert Processing Microservice (APM) within the OSO environment.

> **Note**
>
> The APM service is optional and should be installed separately using a Helm chart only if alert forwarding from Alert Manager to Kafka is required.

Prerequisites

- A functional Kafka cluster is available and accessible from the OSO environment where the APM Service is deployed.
- All artifacts and images related to APM are pushed to the Bastion repo host.

Limitations

- APM deployment is configured to forward alerts to only one Kafka topic at a time.
- The APM service uses the confluent-kafka-python 2.11.0 client. It works with Apache Kafka brokers version 0.8 or higher, and Confluent Platform versions 7.5.x to 8.0.x. Full feature support is available when using Kafka versions 3.5.x to 4.0.x.

1. **Installing and Configuring APM feature using Helm**
   a. Install APM:
   Perform the following manual steps to install OSO using CSAR artifacts:
      i. Download the OSO CSAR zip files from My Oracle Support (MOS).

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ii. Extract the CSAR zip files:

```
$ unzip <OSO CSAR package>
$ unzip -d ./oso_csar/ ocoso_csar_<25.2.200 version>.zip
```

iii. Upload all the artifacts present in the `Artifacts/Images` folder to the configured repository.
The following structure indicates the CSAR file containing the Prometheus, alertmanager, and alert processing microservice files.

```
├─── Artifacts
│    ├─── ChangeLog.txt
│    ├─── Images
│    │    ├─── alertmanager-0.28.0.tar
│    │    ├─── configmapreload-0.15.0.tar
│    │    ├─── oso-apm-service-25.2.200.tar
│    │    ├─── oso-helm-test-25.2.200.tar
│    │    ├─── oso-snapshot-25.2.200.tar
│    │    └─── prometheus-3.6.0.tar
│    ├─── Licenses
│    ├─── Scripts
│    │    ├─── alertmanager
│    │    ├─── ocoso_csar_25_2_200_0_0_0_alertmanager_charts.tgz
│    │    ├─── ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml
│    │    ├─── ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
│    │    ├─── ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml
│    │    ├─── ocoso_csar_25_2_200_0_0_0_prometheus_charts.tgz
│    │    ├─── ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml
│    │    ├─── oso_apm_svc
│    │    ├─── OSO_README.md
│    │    └─── prometheus
│    └─── Tests
├─── Definitions
│    ├─── etsi_nfv_sol001_vnfd_2_5_1_types.yaml
│    ├─── oso_vnfd.yml
│    └─── helm_extensions_1_0.yaml
├─── ocoso_csar_25_2_200_0_0_0.zip
├─── oso_vnfd.mf
└─── TOSCA-Metadata
     └─── TOSCA.meta
```

b. Configure the APM parameters
Provide the appropriate values in the `ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml` file for `oso-apm-service` configmap and proceed with the installation of the APM. For more information, see **Alert Processing Microservice Configuration Parameters**.

c. Install APM
Run the following command to install APM in the created OSO namespace.

```
$ helm --namespace=<deployment-namespace-name> install <oso-apm-release-name> -f <ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml> ./ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
```


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For example:

```
# For apm service, configure the values files before running helm
install
$ helm --namespace=<oso-namespace> install <oso-apm-release-name> -f
ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml ./
ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
```

d. Verify post installation
After deploying the APM Service, verify that all related Kubernetes resources are running as expected.

i. Check the resource status
Run the following command to display the status of all APM-related resources (pods, services, deployments, and replica sets) in the specified namespace:

```
$ kubectl get all -n <namespace> | grep apm
```

Sample command:

```
[cloud-user@occne-bastion-1 ~]$ kubectl get all -n <namespace> | grep
apm
```

Sample output:

```
pod/apm-svc-66b696f5c9-vdnhs 1/1 Running 0 3m45s service/apm-svc
ClusterIP 10.233.31.4 <none> 80/TCP 3m44s deployment.apps/apm-svc
1/1 1 1 3m44s replicaset.apps/apm-svc-66b696f5c9 1 1 1 3m45s
```

Ensure that the following are verified post installation:

- All APM pods show a `Running` status.
- APM services are listed with assigned cluster IPs or ports as configured.
- APM deployments and replica sets show the correct number of available and ready pods.

> **Note**
>
> If any APM resource is not in the expected state, use the following commands for more detailed troubleshooting:
>
> ```
> kubectl describe <apm-pod-name> -n <namespace>
> kubectl logs <apm-pod-name> -n <namespace>
> ```

ii. Check the service health endpoints
To validate the liveness and readiness of the APM service, access the health endpoints (`/healthz` and `/readyz`) using port forwarding:

- **Terminal 1:** Set up port forwarding from bastion to the APM service:

```
kubectl port-forward svc/apm-svc 5000:80 -n <namespace>
```


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Sample output

```
Forwarding from [::1]:5000 -> 5000
Handling connection for 5000
Handling connection for 5000
```

- **Terminal 2:** In a new terminal window, query the health endpoints through the forwarded ports:

```
$ curl http://localhost:5000/healthz
```

Sample output

```
Healthy
```

```
$ curl http://localhost:5000/readyz
```

Sample output

```
Ready
```

Ensure that you receive the expected responses indicating the service is healthy and ready.

2. **Configure APM Post Installation**
   Once the APM Service is deployed, you can modify configuration parameters as needed to optimize performance or update integration settings. To make these changes, edit the deployment directly in Kubernetes using the following command:

```
kubectl edit deployment <apm-deployment-name> -n <namespace>
```

3. **Enabling APM Service Post Installation**

   a. Navigate to the custom values.yaml file
   Change directory to the `oso-apm` scripts location: `cd oso_<zip_version>/Artifacts/Scripts`

   b. Edit the custom values file
   Open the custom values.yaml file inside the APM tarball:

```
vi ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml
```

   c. Enable APM and set required variables
   Locate the `apmEnabled` parameter and set its value to true:

```
apmEnabled: true
```

   Ensure valid values are provided for the following essential parameters for providing proper APM functionality and seamless integration with the Kafka messaging infrastructure:

   - `severityList`
   - `kafkaIp`
   - `kafkaPort`

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- `kafkaTopic`
- `kafkaGroupId`

d. Apply the changes with Helm upgrade
Run the following Helm upgrade command to apply the new configuration:

```
helm --namespace=<OSO_NAMESPACE> upgrade <OSO_APM_RELEASE_NAME> -f
ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml ./
ocoso_csar_25_2_200_0_0_0_apm_charts.tgz
```

e. Verify the deployment
Confirm the APM deployment and related resources are updated and running as expected:

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

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

For more information, see Post-Install Verification.

> **Note**
>
> To enable ALM to forward alerts to APM, the receiver plugin must include the `webhook_configs` protocol, and the APM service details must be specified in the URL.
>
> Here is an example of how to configure the `webhook_configs` protocol in the receiver plugin for alert forwarding:
>
> - apm-svc: Service name of APM (must match the `fullnameOverride` specified in the APM custom-values file)
> - oso: Namespace where OSO is deployed
> - 80: Service port of APM (corresponds to `service.port` in the APM custom-values file)
>
> ```
> receivers:
>   - name: default-receiver
>     webhook_configs:
>       - url: 'http://apm-svc-name.osons.svc:80/webhook'
>         send_resolved: true
> ```

2.5 Postinstallation Tasks

This section explains the postinstallation tasks for OSO.

2.5.1 Verifying Installation

To verify if OSO is installed:

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1. Run the following command to verify the OSO version.

   ```
   helm ls -n <oso-namespace>
   ```

   For example:

   ```
   helm ls -n oso-name
   ```

   Sample output:

```
NAME    NAMESPACE       REVISION        UPDATED
STATUS          CHART                APP VERSION
oso     oso          3               2024-03-27 18:06:42.575679972 +0000 UTC
deployed        prometheus-15.16.1      24.1.0
```

2. Run the following commands to verify if pods are up and running:

   ```
   $ kubectl get pods --namespace <deployment-namespace-name>
   ```

   For example:

   ```
   $ kubectl get pods -n occne-infra
   ```

   Sample output:

```
NAME                            READY   STATUS    RESTARTS   AGE
oso-prom-alm-0                  2/2     Running   0          14h
oso-prom-alm-1                  2/2     Running   0          14h
oso-prom-svr-84c8c7d488-qsnvx   2/2     Running   0          14h
```

3. Run the following commands to verify if services are up and running and are assigned an EXTERNAL-IP (if LoadBalancer is being used):

   ```
   $ kubectl get service --namespace <deployment-namespace-name>
   ```

   For example:

   ```
   $ kubectl get service -n occne-infra
   ```

   Sample output:

```
NAME                                TYPE           CLUSTER-IP
EXTERNAL-IP     PORT(S)           AGE
oso-prom-alm                        ClusterIP      10.233.16.83
<none>          80/TCP      14h
oso-prom-alm-headless               ClusterIP      None
<none>          80/TCP,6783/TCP   14h
oso-prom-svr                        ClusterIP      10.233.46.136
<none>          80/TCP      14h
```

4. Verify that all the GUIs are accessible.

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> **Note**
>
> Prometheus and Alertmanager GUIs can be accessed only using the CNC Console. For more information about accessing Prometheus and Alertmanager GUIs using CNC Console, see *Oracle Communications Cloud Native Configuration Console User Guide*.

If the service is of type LoadBalancer, use EXTERNAL-IP to open the Prometheus GUI. Refer to Step 2 to get the services and their EXTERNAL-IPs.

Example to access service IP address with output:

```
# kubectl get nodes -o wide
NAME     STATUS   ROLES    AGE   VERSION   INTERNAL-IP     EXTERNAL-IP
OS-IMAGE                  KERNEL-VERSION                  CONTAINER-RUNTIME
master   Ready    master   87d   v1.17.1   10.75.226.13
&lt;none&gt;        Oracle Linux Server 7.5
4.1.12-112.16.4.el7uek.x86_64   docker://19.3.11
slave1   Ready    &lt;none&gt;   87d   v1.17.1   10.75.225.177
&lt;none&gt;        Oracle Linux Server 7.5
4.1.12-112.16.4.el7uek.x86_64   docker://19.3.11
slave2   Ready    &lt;none&gt;   87d   v1.17.1   10.75.225.47
&lt;none&gt;        Oracle Linux Server 7.5
4.1.12-112.16.4.el7uek.x86_64   docker://19.3.11



# kubectl get service -n ocnrf
NAME                                TYPE           CLUSTER-IP
EXTERNAL-IP     PORT(S)           AGE
oso-prom-alm                        ClusterIP      10.103.63.10
&lt;none&gt;         80/TCP            35m
oso-prom-alm-headless               ClusterIP      None
&lt;none&gt;         80/TCP            35m
oso-prom-svr                        ClusterIP      10.101.91.81
&lt;none&gt;         80/TCP            35m
```


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> **Note**
>
> In case Dualstack with IPv6 is enabled, change the service type to LoadBalancer in the custom values file. You can see both IPs when calling the `kubectl get service` command, and the output is as follows:

```
[root@master Scripts]# kubectl get service -n ocnrf
NAME                          TYPE           CLUSTER-IP
EXTERNAL-IP                           PORT(S)           AGE
oso-prom-alm                  LoadBalancer   10.103.63.10
10.75.202.205,2606:b400:605:b809::2  80/TCP            35m
oso-prom-alm-headless         ClusterIP      None
<none>                                80/TCP            35m
oso-prom-svr                  LoadBalancer   10.101.91.81
10.75.202.204,2606:b400:605:b809::1  80/TCP            35m
```

Figure 2-3 Prometheus GUI

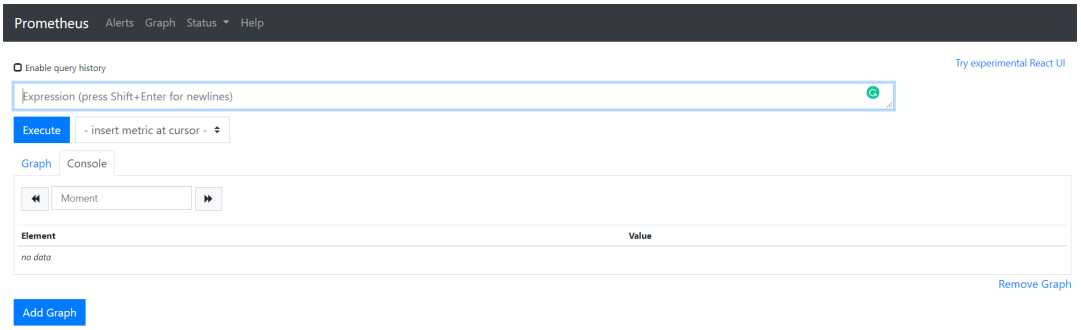
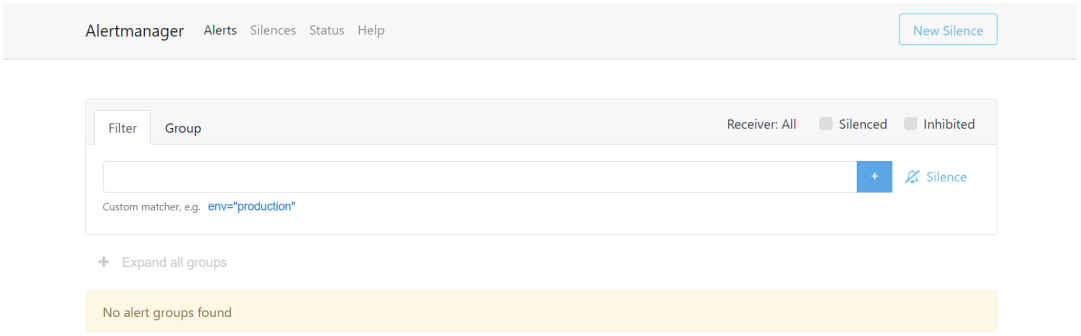


Figure 2-4 Alert Manager GUI



5. On the Prometheus GUI, click **Alerts** to verify that all the alerts (NF Alerts) are visible.

> **Note**
>
> OSO Prometheus doesn't have any alerts of its own, therefore the GUI must appear empty initially. You can patch any NF alert rules in this section.

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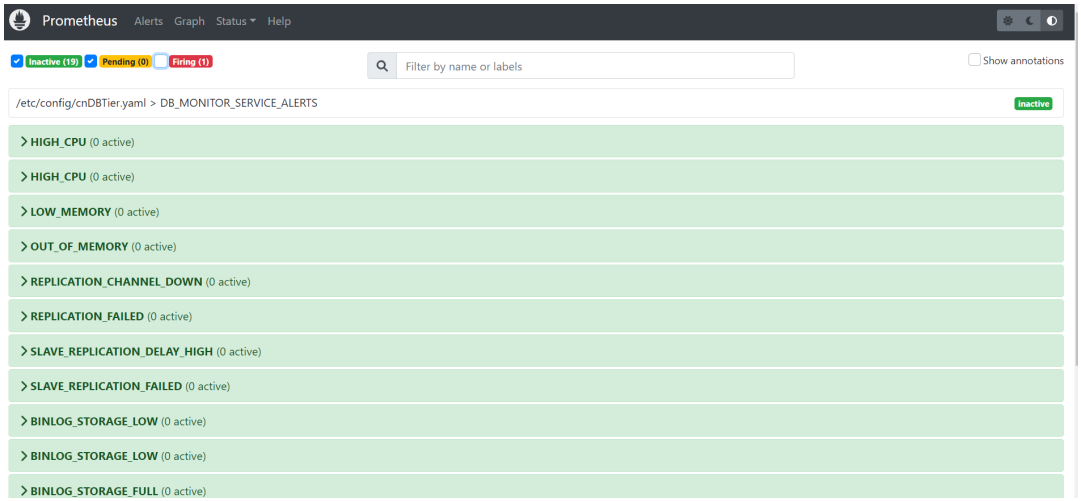
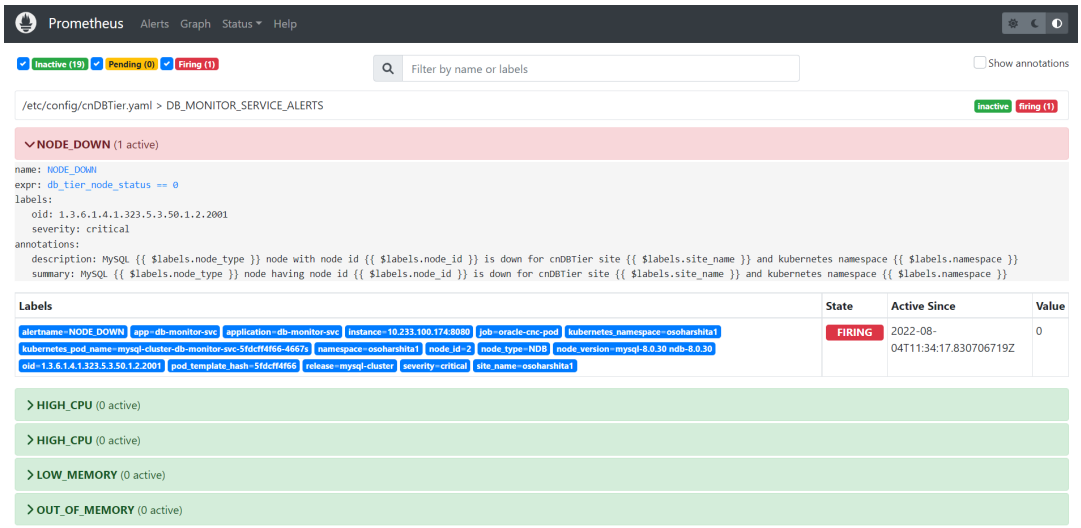
The following image displays the alerts for cnDBTier:

Figure 2-5 Prometheus GUI



After alerts are raised, the GUI must display the triggered alerts as shown in the following image:

Figure 2-6 Prometheus GUI - Alerts



6. Select **Alerts** tab on the Alertmanager GUI to view the triggered alerts as shown in the following image:

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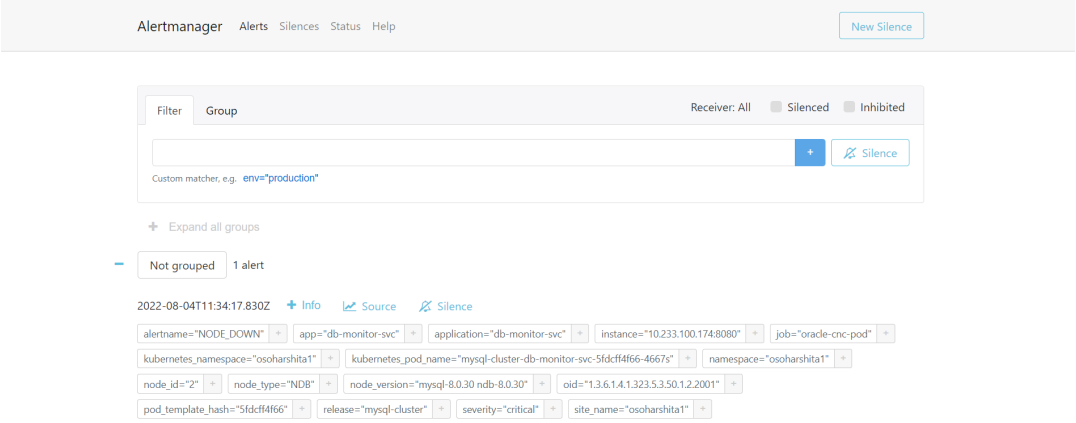
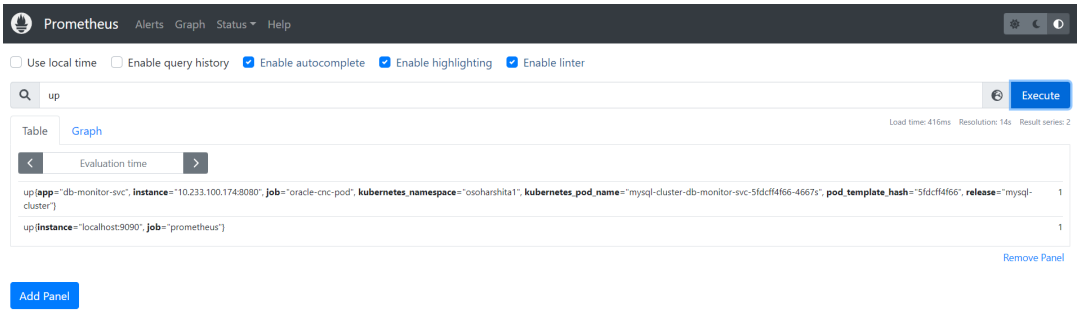
Figure 2-7 Alertmanager - Alerts



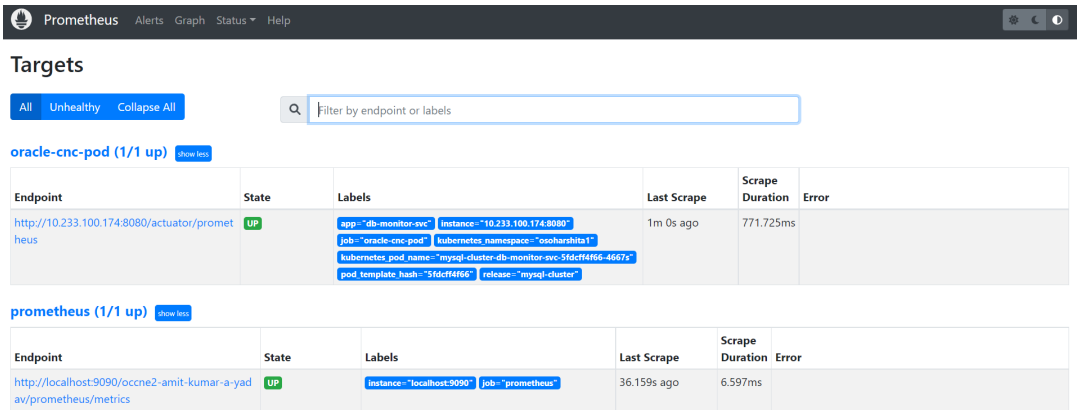
7. On the Prometheus GUI, click **Graph** to verify if the expected metrics (example, NF Metrics) are displayed. The following image displays a sample Prometheus Graph with metrics:

Figure 2-8 Prometheus Graph



8. On the Prometheus GUI, navigate to **Status** and then click **Target** to verify if the configured targets are displayed.
The following image shows Prometheus targets that are being extracted:

Figure 2-9 Prometheus Target



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> **Note**
>
> Post installation, Prometheus can be vertically scaled to add more resources to an existing Prometheus server for load balancing. For more information about, Prometheus vertical scaling, see Prometheus Vertical Scaling.

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3
Customizing OSO

This chapter provides information about customizing Oracle Communications Cloud Native Core, Operations Services Overlay (OSO) deployment in a cloud native environment.

The OSO deployment is customized by overriding the default values of various configurable parameters in the `<custom-value.yaml>` files.

3.1 Naming Conventions and Limits

This section provides the naming conventions and limits for OSO containers and labels.

Naming Conventions and Limits for Containers

OSO supports customization of container names using custom prefix and suffix. Currently, the name field supports up to 63 characters (including the custom prefix, custom suffix, and default fixed name).

> **Note**
>
> - The maximum length of default fixed names is 17.
> - To avoid name truncation, limit the number of characters in the custom prefix and suffix to match the defined limit.

The following table displays the default fixed names of containers without prefix and suffix:

Table 3-1 Default Fixed Names of Containers

POD Name	Fixed Container Name
Prometheus-server(prom-svr)	• prom-svr-cm-r • prom-svr
Alertmanager(prom-alm)	• prom-alm • prom-alm-cm-r
APM service(apm-svc)	apm-svc

You can use the following values in the `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml`, `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml`, and `ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml` files to add the custom prefix and suffix to container names:

```
global:
# provide the prefix and suffix to be added to k8Resources
  k8Resource:
    container:
```


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```
prefix:
suffix:
```

Naming Conventions and Limits for Labels

1. OSO supports custom labels for Kubernetes resources. It provides three types of label definitions that must be configured in the `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml`, `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml`, and `ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml` files:
   a. **Global Labels(allResources)**: These labels are attached to all the Kubernetes resources. This is depicted as TYPE1 in the following sample `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` file.
   b. **LB and NON-LB TYPE label**: These labels are attached to LoadBalancer and non-LoadBalancer type deployments, statefulsets, and services. This is depicted as TYPE2 in the following sample `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` file.
   c. **Service specific label**: These labels are attached to each service in their specific service-label metadata sections and can be used to uniquely label services, regardless of them being LoadBalancer or non-LoadBalancer.

   > **Note**
   >
   > Prometheus and Alertmanager have their own set of service-specific labels.

   You can use the following values in the `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` file to provide custom labels for Kubernetes resources:

```
customExtension:
# TYPE1 Label
    allResources:
      labels: {}
# TYPE2 Labels
    lbServices:
      labels: {}

    nonlbServices:
      labels: {}

    lbDeployments:
      labels: {}

    nonlbDeployments:
      labels: {}

    lbStatefulSets:
      labels: {}
..
```


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> **Note**
>
> You must be well aware of the naming guidelines while labeling the resources. For more information on Helm naming guidelines, see Helm Labels and Annotations.

3.2 OSO Configuration Parameters

Overview

This section provides the configuration parameters details that are used to install the OSO CSAR packages manually.

OSO CSAR is packaged with the following open source images:

```
OSO_ALERTMANAGER_IMAGE=occne.io/occne/alertmanager
OSO_PROMETHEUS_IMAGE=occne.io/occne/prometheus
OSO_CONFIGMAPRELOAD_IMAGE=occne.io/occne/configmapreload
OSO_HELM_TEST_IMAGE=occne.io/occne/oso_helm_test
OSO_ALERT_CONFIG_IMAGE=occne.io/occne/oso_alert_config
OSO_SNAPSHOT_IMAGE=occne.io/occne/oso_snapshot
OSO_APM_IMAGE=occne.io/occne/oso_apm_service
```

Prerequisites

- Docker or Podman must be installed.
- Helm repository must be set up and accessible.

3.2.1 Prometheus Configuration Parameters

This section provides the Prometheus configuration parameters details that are used to install the OSO CSAR packages manually.

Configure `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml` with the specific values.

Table 3-2 OSO Prometheus Configuration Parameter

Parameter	Description	Details
`nameOverride`	This is an optional parameter. Indicates the custom name override applied to all Kubernetes resources created by this Helm release.	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder:** prom
`helmtestimage`	This is an optional parameter. Indicates the repository URL of the Helm test image where it is located. Example: `occne.io/occne/oso_helm_test:25.2.200` **Note**: Configure this parameter only when Helm tests are required after installation or upgrade.	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder:** HELM-TEST-IMAGE-REPO-ADDRESS

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`useasm`	This is an optional parameter. Indicates if the Aspen Service Mesh (ASM) environment is used or not in OSO deployment. If this parameter is set as true, ASM is enabled for the OSO deployment. If this parameter is set as false, ASM is disabled for the OSO deployment. Example: `useasm: true`	**Data Type:** String **Default Value:** NA **Range:** true, false **Placeholder**: USEASM
`namespace`	This is an optional parameter. Indicates the namespace where OSO will be installed. This value is required in multiple places in the custom values.yaml file. Example: `namespace: ocnf`	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder:** NAMESPACE
`clustername`	This is an optional parameter. Specifies the cluster name prefix appended to Alertmanager GUI URLs. **Note**: • Comment out this parameter if cluster-specific URL prefixes are not required. • If you replace the cluster name, replace them in all the places where you have the placeholder as /CLUSTER-NAME.	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder:** /CLUSTER-NAME
`resources.limits.cpu`	This is an optional parameter. Specifies the maximum CPU resources allocated for Helm test operations.	**Data Type:** String **Default Value:** 10m **Range:** NA **Unit:** millicores
`resources.limits.memory`	This is an optional parameter. Specifies the maximum memory resources allocated for Helm test operations.	**Data Type:** String **Default Value:** 32Mi **Range:** NA **Unit:** Mebibytes
`resources.requests.cpu`	This is an optional parameter. Specifies the minimum CPU resources allocated for Helm test operations.	**Data Type:** String **Default Value:** 10m **Range:** NA **Unit:** millicores
`resources.requests.memory`	This is an optional parameter. Specifies the minimum memory resources allocated for Helm test operations.	**Data Type:** String **Default Value:** 32Mi **Range:** NA **Unit:** Mebibytes
`promsvcname`	This is a mandatory parameter. Specifies the Kubernetes Service name exposed for the Prometheus server.	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder**: OSO-RELEASE-NAME-prom-svr

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`prometheushealthyurl`	This is an optional parameter. Specifies the HTTP path used to perform Prometheus health checks.	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder**: /prometheus/-/healthy
`prometheusreadyurl`	This is an optional parameter. Specifies the HTTP path used to check Prometheus readiness.	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder**: /prometheus/-/ready
`global_oso.k8Resource.container.prefix`	This is an optional parameter. Specifies the value that is prefixed to all the container names of OSO. This value is used to prefix to all the container names of OSO.	**Data Type:** String **Default Value:** NA **Range:** NA
`global_oso.k8Resource.container.suffix`	This is an optional parameter. Specifies the value that is suffixed to all the container names of OSO. This value is used to suffix to all the container names of OSO.	**Data Type:** String **Default Value:** NA **Range:** NA
`global_oso.serviceAccountNamePromSvr`	This is an optional parameter. Specifies the Kubernetes service account name used by the OSO Prometheus server pod.	**Data Type:** String **Default Value:** "" **Range:** NA
`global_oso.customExtension.allResources.labels`	This is an optional parameter. Specifies the custom labels that should be added to all the OSO Kubernetes resources. This can be used to add custom label(s) to all Kubernetes resources that are created by OSO helm chart.	**Data Type:** String **Default Value:** {} **Range:** NA
`global_oso.customExtension.lbServices.labels`	This is an optional parameter. Specifies the custom labels required to be added to OSO services that are considered as load balancer type. This can be used to add custom label(s) to all load balancer type services that are created by OSO helm chart.	**Data Type:** String **Default Value:** {} **Range:** NA
`global_oso.customExtension.nonlbServices.labels`	This is an optional parameter. Specifies the custom labels to be added to OSO services that are considered as not load balancer type. This can be used to add custom label(s) to all non-load balancer type services that is created by OSO helm chart.	**Data Type:** String **Default Value:** {} **Range:** NA

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`global_oso.customExtension.lbDeployments.labels`	This is an optional parameter. Specifies the custom labels to be added to OSO deployments that are associated to a service which is of load balancer type. This can be used to add the custom label(s) to the deployments that will be created by OSO helm chart that are associated to a load balancer type service.	**Data Type:** String **Default Value:** {} **Range:** NA
`global_oso.customExtension.nonlbDeployments.labels`	This is an optional parameter. Specifies the custom labels to be added to OSO deployments that are associated to a service which is not of load balancer type. This can be used to add custom label(s) to all deployments that is created by OSO helm chart which are associated to a service which is not of load balancer type.	**Data Type:** String **Default Value:** {} **Range:** NA
`global_oso.customExtension.lbStatefulSets.labels`	This is an optional parameter. Specifies custom labels applied to be added to StatefulSets that are exposed through load-balanced services.	**Data Type:** String **Default Value:** {} **Range:** NA

`annotations`	This is an optional parameter.
	Specifies the custom annotations that should be added to all the OSO Kubernetes resources.
	This can be used to add custom annotation(s) to all Kubernetes resources that are created by OSO helm chart.
	
	`annotations:`
	`#  - sidecar.istio.io/inject: "false"`
		Data Type: String
		Default Value: {}
		Range: NA

`rbac.create`	This is a mandatory parameter. Specifies if the default RBAC roles and role bindings are created for Prometheus in OSO deployments.	**Data Type:** String **Default Value:** CREATE_DEFAULT_RBAC **Range:** NA
`podSecurityPolicy.enabled`	This is an optional parameter. Specifies if the pod security is enabled or not for Prometheus server in OSO deployments. If the value is set as true, pod security is enabled. If the value is set as false, pod security is disabled.	**Data Type:** Booelan **Default Value:** false **Range:** true, false
`imagePullSecrets`	This is an optional parameter. Specifies the list of image pull secrets needed to pull the image from the repository. Example: - name: "image-pull-secret"	**Data Type:** List **Default Value:** [] **Range:** NA

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`serviceAccounts.server.create`	This is an optional parameter. Specifies whether a service account will be created for the Prometheus server. Enabling this provides a dedicated identity for Prometheus pods. If the value is set as true, a service account is created for Prometheus server. If the value is set as false, a service account is not created for Prometheus server.	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder:** USE-DEFAULT-SVCACCOUNT-PROM
`serviceAccounts.server.name`	This is an optional parameter. Specifies the service account name of the Prometheus server.	**Data Type:** String **Default Value:** "" **Range:** NA
`serviceAccounts.server.annotations`	This is an optional parameter. Specifies the service account annotations that should be added to the Prometheus server.	**Data Type:** String **Default Value:** {} **Range:** NA
`commonMetaLabels`	This is an optional parameter. Specifies all the additional labels that should be attached to all the resources.	**Data Type:** String **Default Value:** {} **Range:** NA
`configmapReload.reloadUrl`	This is an optional parameter. Specifies the HTTP endpoint invoked by the `configmapReload` container to initiate a Prometheus configuration reload. If this parameter is not configured, the default Prometheus reload endpoint is applied.	**Data Type:** String **Default Value:** "" **Range:** NA
`configmapReload.prometheus.enabled`	This is an optional parameter. Specifies if the configmap-reload container is deployed or not. If the value is true, configmap-reload container is deployed. If the value is false, configmap-reload container is not deployed. **Note**: Recommended value is true, as OSO can be installed even if the parameter is not configured.	**Data Type:** Boolean **Default Value:** true **Range:** true, false
`configmapReload.prometheus.name`	This is an optional parameter. Specifies the configmap-reload container name.	**Data Type:** String **Default Value:** NA **Range:** NA **Placeholder**: configmap-reload
`configmapReload.prometheus.image.repository`	This is an optional parameter. Specifies the container image repository address for configmap-reload.	**Data Type**: String **Default Value**: CONFIGMAP-RELOAD-REPO-ADDRESS **Range**: NA
`configmapReload.prometheus.image.tag`	This is an optional parameter. Specifies the tag of the configmap-reload image to be deployed.	**Data Type**: String **Default Value**: 0.15.0 **Range**: NA

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`configmapReload.prometheus.image.digest`	This is an optional parameter. Specifies the image digest for pulling the configmap-reload container image. When a non-empty value is set, Kubernetes pulls the image by digest rather than by tag, overriding the tag value.	**Data Type**: String **Default Value**: "" **Range**: NA
`configmapReload.prometheus.image.pullPolicy`	This is an optional parameter. Indicates the image pull policy for the configmap-reload container. This controls when Kubernetes pulls the image from the repository. • IfNotPresent—Pulls the image only once, and it doesn't try again. • Always—always pulls the image when the deployment is created. • Never—it doesn't pull the image when the deployment is created.	**Data Type**: String **Default Value**: IfNotPresent **Range**: Always, IfNotPresent, Never
`configmapReload.prometheus.containerSecurityContext.capabilities.drop`	This is an optional parameter. Specifies the list of capabilities to be removed from the container to protect the system from having more privileges. **Note**: Do not change the default value.	**Data Type**: List of string **Default Value**: ["KILL", "MKNOD", "SETUID", "SETGID", "NET_RAW"] **Range**: NA
`configmapReload.prometheus.containerSecurityContext.runAsUser`	This is an optional parameter. Specifies the user ID under which the configmap-reload container runs. **Note**: Do not change the default value.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`configmapReload.prometheus.containerSecurityContext.runAsNonRoot`	This is an optional parameter. Specifies whether the container must run as a non-root user. If the value is set as true, the container runs as a non-root user. If the value is set as false, the container runs as a root user.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`configmapReload.prometheus.containerSecurityContext.runAsGroup`	This is an optional parameter. Specifies the group ID under which the container process runs. **Note**: Do not change the default value.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`configmapReload.prometheus.containerSecurityContext.allowPrivilegeEscalation`	This is an optional parameter. Indicates whether the container can gain more privileges than its parent process. If the value is set as true, it allows privilege escalation and does not provide an additional layer of security. If the value is set as false, it blocks privilege escalation and provides an additional layer of security.	**Data Type**: Boolean **Default Value**: false **Range**: true, false

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`configmapReload.prometheus.resources.limits.cpu`	This is an optional parameter. Specifies the maximum amount of CPU allocated to the configmap-reload container.	**Data Type**: String **Default Value**: 10m **Range**: NA **Unit:** millicores
`configmapReload.prometheus.resources.limits.memory`	This is an optional parameter. Specifies the maximum amount of memory allocated to the configmap-reload container.	**Data Type**: String **Default Value**: 32Mi **Range**: NA **Unit:** Mebibytes
`configmapReload.prometheus.resources.limits.ephemeral-storage`	This is an optional parameter. Specifies the maximum ephemeral storage allocation for the configmap-reload container.	**Data Type**: String **Default Value**: 1Gi **Range**: NA **Unit:** Gibibytes
`configmapReload.prometheus.resources.requests.cpu`	This is an optional parameter. Specifies the minimum CPU allocated to the configmap-reload container.	**Data Type**: String **Default Value**: 10m **Range**: NA **Unit:** millicores
`configmapReload.prometheus.resources.requests.memory`	This is an optional parameter. Specifies the minimum amount of memory allocated to the configmap-reload container.	**Data Type**: String **Default Value**: 32Mi **Range**: NA **Unit:** Mebibytes
`configmapReload.prometheus.resources.requests.ephemeral-storage`	This is an optional parameter. Specifies the minimum ephemeral storage allocation for the configmap-reload container.	**Data Type**: String **Default Value**: 1Gi **Range**: NA **Unit:** Gibibytes
`server.name`	This is an optional parameter. Specifies the name assigned to the Prometheus server instance.	**Data Type**: String **Default Value**: "svr" **Range**: NA
`server.releaseNamespace`	This is an optional parameter. Indicates whether release operations (like deletion or upgrades) will affect resources in the same namespace as the Helm release. If the value is set as true, it restricts actions to the release namespace for better isolation. If the value is set as false, it does not restrict actions to the release namespace for better isolation.	**Data Type**: Boolean **Default Value**: false **Range**: true, false
`server.image.repository`	This is an optional parameter. Specifies the repository URI to pull the Prometheus server container image from.	**Data Type**: String **Default Value**: "PROMETHEUS-REPO-ADDRESS" **Range**: NA
`server.image.tag`	This is an optional parameter. Indicates the specific image tag for the Prometheus server container.	**Data Type**: String **Default Value**: 3.6.0 **Range**: NA

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`server.image.digest`	This is an optional parameter. Specifies the image digest for pulling the server image. When a non-empty value is set, Kubernetes pulls the image by digest rather than by tag, overriding the tag value.	**Data Type**: String **Default Value**: "" **Range**: NA
`server.image.pullPolicy`	This is an optional parameter. Indicates the image pull policy for the Prometheus server. This controls when Kubernetes pulls the image from the repository. • IfNotPresent—Pulls the image only once, and it doesn't try again. • Always—always pulls the image when the deployment is created. • Never—it doesn't pull the image when the deployment is created.	**Data Type**: String **Default Value**: IfNotPresent **Range**: Always, IfNotPresent, Never
`server.prefixURL`	This is an optional parameter. Specifies the path prefix under which Prometheus's user interface and API are served.	**Data Type**: String **Default Value**: /CLUSTER-NAME/prometheus **Range**: NA
`server.baseURL`	This is an optional parameter. Indicates the externally accessible full base URL for Prometheus, ensuring generated links are accurate when accessed remotely.	**Data Type**: String **Default Value**: http://localhost/CLUSTER-NAME/prometheus **Range**: NA
`server.extraFlags`	This is a conditional parameter. Indicates that the `web.enable-admin-api` parameter controls access to the administrative HTTP API. This parameter is disabled by default. Uncomment the `web.enable-admin-api` parameter to enable it. If the parameter is enabled, it allows capturing snapshots in TSDB.	**Data Type**: String **Default Value**: disabled **Range**:disabled, enabled
`server.global.scrape_interval`	This is an optional parameter. Indicates how frequently Prometheus scrapes all targets. Use a longer interval to reduce load or a shorter interval for more granular metrics.	**Data Type**: String **Default Value**: 1m **Range**:NA **Unit**: minutes
`server.global.scrape_timeout`	This is an optional parameter. Specifies the maximum duration Prometheus allows for a single scrape before timing out.	**Data Type**: String **Default Value**: 10s **Range**:NA **Unit**: seconds
`server.global.evaluation_interval`	This is an optional parameter. Indicates how frequently Prometheus evaluates alerting and recording rules.	**Data Type**: String **Default Value**: 1m **Range**:NA **Unit**: minutes

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`server.remoteWrite[].url`	This is a conditional parameter. Indicates the remote write endpoint URL where Prometheus writes metrics for long-term storage or integration.	**Data Type**: String **Default Value**: OSO_CORTEX_URL **Range**:NA
`server.remoteWrite[].remote_timeout`	This is an optional parameter. Specifies the timeout for remote write requests to the external endpoint.	**Data Type**: String **Default Value**: OSO_REMOTE_WRITE_TIMEOUT **Range**:NA
`server.remoteWrite[].bearer_token`	This is an optional parameter. Specifies the authentication bearer token for secure communication with the remote write server.	**Data Type**: String **Default Value**: BEARER_TOKEN **Range**:NA
`server.tsdb`	This is an optional parameter. Indicates Prometheus time series database (TSDB) configuration for advanced storage settings, such as out-of-order time windows or block compaction.	**Data Type**: Object **Default Value**: {} **Range**:NA
`server.podDisruptionBudget.enabled`	This is an optional parameter. Specifies whether to create a PodDisruptionBudget for Prometheus server pods, which limits how many pods can be disrupted during maintenance or scaling. If the value is true, pod disruption budget is created for Prometheus server pods. If the value is false, pod disruption budget is not created for Prometheus server pods.	**Data Type**: Boolean **Default Value**: false **Range**:true, false
`server.podDisruptionBudget.maxUnavailable`	This is an optional parameter. Specifies the maximum number of pods allowed to be unavailable during voluntary disruptions (such as node drains).	**Data Type**: Integer **Default Value**: 1 **Range**:0, >0
`server.persistentVolume.enabled`	This is an optional parameter. Indicates whether persistent storage is enabled for Prometheus data, ensuring metrics persist across pod restarts.	**Data Type**: Boolean **Default Value**: true **Range**:true, false
`server.persistentVolume.accessModes`	This is an optional parameter. Specifies the access modes for the PersistentVolumeClaim (PVC).	**Data Type**: List **Default Value**: ["ReadWriteOnce"] **Range**:NA
`server.persistentVolume.labels`	This is an optional parameter. Specifies the labels to be applied to the PersistentVolumeClaim.	**Data Type**: String **Default Value**: {} **Range**:NA
`server.persistentVolume.annotations`	This is an optional parameter. Specifies the annotations to be added to the PersistentVolumeClaim.	**Data Type**: String **Default Value**: {} **Range**:NA
`server.persistentVolume.existingClaim`	This is a conditional parameter. Indicates the name of an existing PersistentVolumeClaim.	**Data Type**: String **Default Value**: "" **Range**:NA

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`server.persistentVolume.mountPath`	This is an optional parameter. Specifies the file system path where the persistent volume is mounted inside the Prometheus container.	**Data Type**: String **Default Value**: /data **Range**:NA
`server.persistentVolume.size`	This is an optional parameter. Indicates the storage size for the persistent volume claim, determining how much space is allocated for Prometheus data.	**Data Type**: String **Default Value**: PROM-PV-SIZE **Range**:NA
`server.persistentVolume.storageClass`	This is an optional parameter. Specifies the storage class for the persistent volume, allowing control over the underlying storage backend.	**Data Type**: String **Default Value**: PROM-STORAGE-CLASS **Range**:NA
`server.emptyDir.sizeLimit`	This is an optional parameter. Indicates the size limit for the ephemeral emptyDir storage if persistent volume is not used.	**Data Type**: String **Default Value**: "" **Range**:NA
`server.podAnnotations`	This is an optional parameter. Specifies key-value annotations to apply to the Prometheus server pod metadata.	**Data Type**: String **Default Value**: {} **Range**:NA
`server.podLabels`	This is an optional parameter. Specifies custom labels to apply to the Prometheus server pod.	**Data Type**: String **Default Value**: {} **Range**:NA
`server.alertmanagers`	This is an optional parameter. Indicates the list of Alertmanager configuration objects.	**Data Type**: List **Default Value**: [] **Range**:NA
`server.alertmanagers[].kubernetes_sd_configs`	This is an optional parameter. Indicates the list of Kubernetes service discovery configurations to locate Alertmanager endpoints.	**Data Type**: List **Default Value**: [] **Range**:NA
`server.alertmanagers[].kubernetes_sd_configs[].namespaces`	This is an optional parameter. Specifies one or more namespaces in which to search for Alertmanager pods or services.	**Data Type**: List **Default Value**: [] **Range**:NA
`server.alertmanagers[].kubernetes_sd_configs[].names`	This is an optional parameter. Specifies resource names for filtered Alertmanager discovery within the given namespaces.	**Data Type**: List **Default Value**: {} **Range**:NA
`server.alertmanagers[].kubernetes_sd_configs[].role`	This is an optional parameter. Indicates the Kubernetes resource type for discovery (for example, pod, service, endpoints).	**Data Type**: String **Default Value**: pod **Range**: pod, service, endpoints, node
`server.alertmanagers[].path_prefix`	This is an optional parameter. Specifies the HTTP path prefix for Alertmanager requests.	**Data Type**: String **Default Value**: CLUSTER-NAME/alertmanager **Range**: NA

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`server.alertmanagers[].relabel_configs`	This is an optional parameter. Specifies the relabeling rules for Alertmanager target selection or endpoint label manipulation.	**Data Type**: List **Default Value**: [] **Range**:NA
`server.alertmanagers[].relabel_configs[].source_labels`	This is an optional parameter. Specifies the label keys used for matching and relabeling Alertmanager endpoints.	**Data Type**: List **Default Value**: [] **Range**:NA
`server.alertmanagers[].relabel_configs[].regex`	This is an optional parameter. Specifies the regular expression used to evaluate source label values during relabeling.	**Data Type**: String **Default Value**: "" **Range**:NA
`server.alertmanagers[].relabel_configs[].action`	This is an optional parameter. Indicates the action taken by this relabeling rule (for example, keep, drop, replace, and so on).	**Data Type**: String **Default Value**: keep **Range**: keep, drop, replace, labelmap
`server.replicaCount`	This is an optional parameter. Specifies the number of Prometheus server replicas for high availability.	**Data Type**: Integer **Default Value**: 1 **Range**: 1 or >1
`server.deploymentAnnotations`	This is an optional parameter. Specifies the annotations to be applied to the Prometheus server deployment.	**Data Type**: String **Default Value**: {} **Range**: NA
`server.resources.limits.cpu`	This is an optional parameter. Specifies the maximum CPU the container can use, in Kubernetes resource format.	**Data Type**: String **Default Value**: 2 **Range**: NA
`server.resources.limits.memory`	This is an optional parameter. Specifies the maximum amount of memory the Prometheus server container can use.	**Data Type**: String **Default Value**: 4Gi **Range**: NA **Unit:** Gibibytes
`server.resources.limits.ephemeral-storage`	This is an optional parameter. Specifies the maximum amount of ephemeral storage for the Prometheus pod.	**Data Type**: String **Default Value**: 12Gi **Range**: NA **Unit:** Gibibytes
`server.resources.requests.cpu`	This is an optional parameter. Indicates the minimum CPU guaranteed to the Prometheus server pod.	**Data Type**: String **Default Value**: 2 **Range**: NA
`server.resources.requests.memory`	This is an optional parameter. Indicates the minimum memory reserved for the Prometheus server pod.	**Data Type**: String **Default Value**: 4Gi **Range**: NA **Unit:** Gibibytes
`server.resources.requests.ephemeral-storage`	This is an optional parameter. Specifies the minimum requested ephemeral storage for the Prometheus server pod.	**Data Type**: String **Default Value**: 8Gi **Range**: NA **Unit:** Gibibytes

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`server.securityContext.runAsUser`	This is an optional parameter. Indicates the user ID for running the Prometheus server container process.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`server.securityContext.runAsNonRoot`	This is an optional parameter. Specifies whether the Prometheus server container must run as a non-root user.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`server.securityContext.runAsGroup`	This is an optional parameter. Indicates the group ID for the container process.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`server.securityContext.fsGroup`	This is an optional parameter. Specifies a supplementary group ID for the volume mount.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`server.containerSecurityContext.capabilities.drop`	This is an optional parameter. Specifies the set of capabilities to drop from the server container for reducing its privileges.	**Data Type**: List **Default Value**: ["KILL", "MKNOD", "SETUID", "SETGID", "NET_RAW"] **Range**: NA
`server.containerSecurityContext.runAsUser`	This is an optional parameter. Indicates the user ID for the Prometheus container at runtime.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`server.containerSecurityContext.runAsNonRoot`	This is an optional parameter. Indicates whether the container must run as a non-root user. If the value is set as true, container runs as non-root user. If the value is set as false, container runs as a root user.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`server.containerSecurityContext.runAsGroup`	This is an optional parameter. Specifies the group ID for the container process at runtime.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`server.containerSecurityContext.allowPrivilegeEscalation`	This is an optional parameter. Indicates whether the container can gain more privileges than its parent process. If the value is set as true, container gains more privileges than its parent process. If the value is set as false, container does not gain more privileges than its parent process.	**Data Type**: Boolean **Default Value**: false **Range**: true, false

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`server.service.enabled`	This is an optional parameter. Specifies whether a Kubernetes service is created to expose Prometheus server for network access. If the value is set as true, Kubernetes service is created to expose Prometheus server for network access. If the value is set as false, Kubernetes service is not created to expose Prometheus server for network access..	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`server.service.annotations`	This is an optional parameter. Specifies key-value annotations added to the Kubernetes service resource.	**Data Type**: String **Default Value**: {} **Range**: NA
`server.service.labels`	This is an optional parameter. Specifies labels to be attached to the Kubernetes service resource.	**Data Type**: String **Default Value**: {} **Range**: NA
`server.service.clusterIP`	This is an optional parameter. Indicates the cluster-internal IP address for the Kubernetes service. If the value is set as empty, Kubernetes automatically assigns an IP address.	**Data Type**: String **Default Value**: "" **Range**: NA
`server.service.externalIPs`	This is an optional parameter. Specifies a list of external IP addresses for client access to Prometheus via the Kubernetes service.	**Data Type**: List **Default Value**: [] **Range**: NA
`server.service.loadBalancerIP`	This is an optional parameter. Indicates the static external IP to assign for LoadBalancer-type Services.	**Data Type**: String **Default Value**: "" **Range**: NA
`server.service.loadBalancerSourceRanges`	This is an optional parameter. Specifies allowed CIDR ranges for connections to the Prometheus LoadBalancer service for network-level access control.	**Data Type**: List **Default Value**: [] **Range**: NA
`server.service.servicePort`	This is an optional parameter. Specifies the Service port that Prometheus is reachable on.	**Data Type**: Integer **Default Value**: 80 **Range**: 1–65535
`server.service.sessionAffinity`	This is an optional parameter. Indicates the session affinity mode for the Service (for example, None, ClientIP).	**Data Type**: String **Default Value**: None **Range**: ClientIP, None
`server.service.type`	This is an optional parameter. Specifies the Kubernetes Service type (ClusterIP, NodePort, LoadBalancer) used to expose Prometheus server.	**Data Type**: String **Default Value**: ClusterIP **Range**: ClusterIP, NodePort, LoadBalancer

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`server.retention`	This is an optional parameter. Indicates the duration for which Prometheus retains metric data before deletion.	**Data Type**: String **Default Value**: PROM-DATA-RETENTION-DAYS **Range**: NA

`server.retentionSize`	This is a mandatory parameter.
	Indicates the retention size for Prometheus persistence volume.
	It should be 80% of the PV size (6.8GB).
	Retention size will remain the same percentage of storage size in both snapshot enabled or disabled cases.
	Example:
	
	`If PV = 8GB`
	`With Snapshot enabled:`
	`PV size: 24GB`
	`Without Snapshot enabled:`
	`PV size: 8GB`
	`Retention in both cases: 6.4GB`
	
	`extraArgs:`
	`storage.tsdb.retention.size: 6.4GB`
		Data Type: String
		Default Value: 7.3 GB
		Range: NA
		Placeholder: "STORAGE_RETENTION_SIZE_PROM"
		Unit: Gibibytes

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details

`serverFiles.prometheus.yml.rule_files`	This is a mandatory parameter.
	Specifies the list of Prometheus rule files to be loaded, including recording and alerting rules. All rule file names must be verified before upgrading to ensure consistency; they must match previous releases to guarantee rule preservation through upgrade.
	Example:
	`serverFiles:`
	`  prometheus.yml:`
	`  rule_files:`
	`  - /etc/config/recording_rules.yml`
	`  - /etc/config/alerting_rules.yml`
	`# All the Alert-rule names given below MUST be verified by the user before attempting UPGRADE.`
	`# The names has to match N-1 Alert-rule names in order to guarantee their preservation through Upgrade.`
	`  - /etc/config/alertscncc`
	`  - /etc/config/alertscndbtier`
	`  - /etc/config/alertsoccne-cndbtier`
	`  - /etc/config/alertsscp`
	`  - /etc/config/alertsnrf`
	`  - /etc/config/alertspcf`
	`  - /etc/config/alertsbsf`
	`  - /etc/config/alertsudr`
	`  - /etc/config/alertssepp`
	`  - /etc/config/alertsnssf`
		Data Type: List
		Default Value: See example.
		Range: NA

`serverFiles.prometheus.yml.scrape_configs[].job_name`	This is a mandatory parameter. Specifies the unique identifier for the scrape job.	**Data Type**: String **Default Value**: oracle-cnc-pod **Range**: NA
`serverFiles.prometheus.yml.scrape_configs[].fallback_scrape_protocol`	This is an optional parameter. Indicates the fallback protocol Prometheus should use if the primary scrape attempt fails.	**Data Type**: String **Default Value**: PrometheusText1.0.0 **Range**: NA
`serverFiles.prometheus.yml.scrape_configs[].kubernetes_sd_configs[].role`	This is a mandatory parameter. Indicates the type of Kubernetes resource to discover for this scrape job. Common values include pod, service, endpoints, or node.	**Data Type**: String **Default Value**: pod **Range**: pod, service, endpoints, node
`serverFiles.prometheus.yml.scrape_configs[].kubernetes_sd_configs[].namespaces`	This is an optional parameter. Specifies the namespaces that limit service discovery scope.	**Data Type**: Object **Default Value**: NA **Range**: NA

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`serverFiles.prometheus.yml.scrape_configs[].kubernetes_sd_configs[].namespaces.names`	This is an optional parameter. Specifies the list of namespace names where Prometheus should perform target discovery.	**Data Type**: List **Default Value**: [] **Range**: NA
`serverFiles.prometheus.yml.scrape_configs[].relabel_configs[].source_labels`	This is an optional parameter. Indicates the source label keys whose values will be used as input for the relabeling action.	**Data Type**: String **Default Value**: NA **Range**: NA
`serverFiles.prometheus.yml.scrape_configs[].relabel_configs[].regex`	This is an optional parameter. Specifies a regular expression to apply to the concatenated values of the source_labels.	**Data Type**: String **Default Value**: NA **Range**: NA
`serverFiles.prometheus.yml.scrape_configs[].relabel_configs[].action`	This is an optional parameter. Specifies the relabeling action (such as keep, drop, replace, labelmap).	**Data Type**: String **Default Value**: NA **Range**: keep, drop, replace, labelmap, labeldrop, labelkeep
`serverFiles.prometheus.yml.scrape_configs[].relabel_configs[].target_label`	This is a conditional parameter. Indicates the label that will be set or replaced during relabeling.	**Data Type**: String **Default Value**: NA **Range**: NA
`serverFiles.prometheus.yml.scrape_configs[].relabel_configs[].replacement`	This is a conditional parameter. Specifies the value to use as a replacement when the action is 'replace' for the `serverFiles.prometheus.yml.scrape_configs[].relabel_configs[].action` parameter.	**Data Type**: String **Default Value**: NA **Range**: NA
`extraScrapeConfigs[].job_name`	This is a mandatory parameter. Specifies the unique identifier for the scrape job. Use this to define and differentiate between metric scrape targets for service, endpoints, or ingress monitoring.	**Data Type**: String **Default Value**: NA **Range**: NA **Example**: oracle-cnc-service
`extraScrapeConfigs[].fallback_scrape_protocol`	This is an optional parameter. Indicates the protocol Prometheus should use if the primary scrape attempt fails. Use this to ensure compatibility with metric endpoints using non-default protocols.	**Data Type**: String **Default Value**: PrometheusText1.0.0 **Range**: NA
`extraScrapeConfigs[].kubernetes_sd_configs`	This is a mandatory parameter. Specifies the list of Kubernetes service discovery configurations. Each configuration defines the Kubernetes resource type (role) to search for dynamic metric target endpoints.	**Data Type**: List of object **Default Value**: NA **Range**: List of Kubernetes SD config objects
`extraScrapeConfigs[].kubernetes_sd_configs[].role`	This is a mandatory parameter. Indicates the Kubernetes resource type to discover for this scrape job. Accepted values are service, endpoints, or ingress as per your cluster monitoring needs.	**Data Type**: String **Default Value**: NA **Range**: service, endpoints, ingress, node, pod

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`extraScrapeConfigs[].kubernetes_sd_configs[].namespaces`	This is an optional parameter. Specifies the namespace limits for service discovery. Fill this object to restrict Prometheus scraping to specific namespaces and improve control, security, or scalability.	**Data Type**: Object **Default Value**: NA **Range**: NA
`extraScrapeConfigs[].kubernetes_sd_configs[].namespaces.names`	This is an optional parameter. Specifies the explicit list of namespace names for resource discovery. This limits scraping to selected namespaces for the given role.	**Data Type**: List of String **Default Value**: NA **Range**: NA
`extraScrapeConfigs[].relabel_configs[].source_labels`	This is an optional parameter. Indicates the Prometheus label keys, including standard and dynamically discovered Kubernetes annotations and labels, used as input to the relabeling action.	**Data Type**: List of String **Default Value**: As provided in each rule **Range**: NA
`extraScrapeConfigs[].relabel_configs[].regex`	This is an optional parameter. Specifies a regular expression for matching the combined values of source_labels, enabling advanced filtering or transformation logic during target relabeling.	**Data Type**: String **Default Value**: NA **Range**: NA
`extraScrapeConfigs[].relabel_configs[].action`	This is an optional parameter. Specifies the relabeling action to perform (such as keep, drop, replace, labelmap). Controls how discovered targets are processed or filtered according to matching conditions.	**Data Type**: String **Default Value**: NA **Range**: keep, drop, replace, labelmap, labeldrop, labelkeep, or any Prometheus-supported action
`extraScrapeConfigs[].relabel_configs[].target_label`	This is an optional parameter. Indicates the Prometheus label that will be set or replaced as a result of a relabeling rule, such as metrics_path, address, or scheme, to correctly direct metric collection. Required for actions like 'replace'.	**Data Type**: String **Default Value**: NA **Range**: NA
`extraScrapeConfigs[].relabel_configs[].replacement`	This is an optional parameter. Specifies the replacement value used during a 'replace' relabeling action. Enables transformation or normalization of target label values for consistent scraping.	**Data Type**: String **Default Value**: NA **Range**: NA **Example**: $1:$2
`alertmanager.enabled`	This is an optional parameter. Indicates whether the Alertmanager component is enabled and deployed as part of the monitoring stack. If this vaue is set to true, OSO deploys Alertmanager for managing Prometheus alerts. If the value is set as false, OSO does not deploy Alertmanager for managing Prometheus alerts.	**Data Type**: Boolean **Default Value**: false **Range**: true, false

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Table 3-2 (Cont.) OSO Prometheus Configuration Parameter

Parameter	Description	Details
`kube-state-metrics.enabled`	This is an optional parameter. Indicates whether the kube-state-metrics exporter is enabled for cluster state monitoring. Set to true to deploy the component and provide Kubernetes object metrics to Prometheus. If the value is set as true, kube-state-metrics exporter is enabled for cluster state monitoring. If the value is set as false, kube-state-metrics exporter is disabled for cluster state monitoring.	**Data Type**: Boolean **Default Value**: false **Range**: true, false
`prometheus-node-exporter.enabled`	This is an optional parameter. Indicates whether the Prometheus node exporter is enabled for collecting node-level hardware and OS metrics. Set to true to deploy it as a DaemonSet on all cluster nodes. If the value is set as true, Prometheus node exporter is enabled for collecting node-level hardware and OS metrics. If the value is set as false, Prometheus node exporter is disabled.	**Data Type**: Boolean **Default Value**: false **Range**: true, false
`prometheus-pushgateway.enabled`	This is an optional parameter. Specifies whether the Prometheus Pushgateway service is enabled. Use this to enable collection of ephemeral or batch job metrics via push functionality, or disable if not needed for your monitoring scenario. If the value is set as true, Prometheus Pushgateway service is enabled to collect the ephemeral or batch job metrics via push functionality. If the value is set as false, Prometheus Pushgateway service is disabled and not required for monitoring scenario.	**Data Type**: Boolean **Default Value**: false **Range**: true, false

3.2.2 Alertmanager Configuration Parameters

This section provides the alertmanager configuration parameters details that are used to install the OSO CSAR packages manually.

Configure the `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml` with the defined values.

Table 3-3 OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`helmtestimage`	This is an optional parameter. Indicates the repository URL of the Helm test image where it is located. Example: occne.io/occne/oso_helm_test:25.2.200	**Data Type**: String **Default Value**: NA **Range:** NA **Placeholder**: HELM-TEST-IMAGE-REPO-ADDRESS

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`useasm`	This is an optional parameter. Indicates if the Aspen Service Mesh (ASM) environment is used or not in OSO deployment. If this parameter is set as true, ASM is enabled for the OSO deployment. If this parameter is set as false, ASM is disabled for the OSO deployment. Example: useasm: true	**Data Type**: String **Default Value**: "false" **Range:** "true", "false" **Placeholder**: USEASM
`namespace`	This is an optional parameter. Indicates the namespace where OSO will be installed. This value is required in multiple places in the custom values.yaml file. Example: namespace: ocnf	**Data Type**: String **Default Value**: NA **Range:** NA **Placeholder**: NAMESPACE
`clustername`	This is an optional parameter. Specifies the prefix for GUI URLs and endpoints. **Note**: • Comment out this parameter if cluster-specific URL prefixes are not required. • If you replace the cluster name, replace them in all the places where you have the placeholder as /CLUSTER-NAME.	**Data Type**: String **Default Value**:NA **Range:** NA **Placeholder**: /CLUSTER-NAME
`test.resources.limits.cpu`	This is a conditional parameter. Specifies the maximum CPU resources allocated for Helm test operations. **Note**: If the `helmtestimage` is set, then set the following parameters: • `test.resources.limits.cpu` • `test.resources.limits.memory` • `test.resources.requests.cpu` • `test.resources.requests.cpu`	**Data Type**: String **Default Value**: 10m **Range**: NA **Unit**: millicores
`test.resources.limits.memory`	This is a conditional parameter. Specifies the maximum memory resources allocated for Helm test operations. **Note**: If the `helmtestimage` is set, then set the following parameters: • `test.resources.limits.cpu` • `test.resources.limits.memory` • `test.resources.requests.cpu` • `test.resources.requests.cpu`	**Data Type**: String **Default Value**: 32Mi **Range**: NA **Unit**: Mebibytes

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`test.resources.requests.cpu`	This is a conditional parameter. Specifies the minimum CPU resources allocated for Helm test operations. **Note**: If the `helmtestimage` is set, then set the following parameters: • `test.resources.limits.cpu` • `test.resources.limits.memory` • `test.resources.requests.cpu` • `test.resources.requests.cpu`	**Data Type**: String **Default Value**: 10m **Range**: NA **Unit**: millicores
`test.resources.requests.memory`	This is a conditional parameter. Specifies the minimum memory resources allocated for Helm test operations. **Note**: If the `helmtestimage` is set, then set the following parameters: • `test.resources.limits.cpu` • `test.resources.limits.memory` • `test.resources.requests.cpu` • `test.resources.requests.cpu`	**Data Type**: String **Default Value**: 32Mi **Range**: NA **Unit**: Mebibytes
`almsvcname`	This is a mandatory parameter. Specifies the name of the Alertmanager service resource.	**Data Type**: String **Default Value**: NA **Range:** NA **Placeholder**: OSO-ALM-RELEASE-NAME-alm
`global_oso.k8Resource.container.prefix`	This is an optional parameter. Specifies the value that is prefixed to all the container names of OSO. This value is used to prefix to all the container names of OSO.	**Data Type**: String **Default Value**: "" **Range:** NA
`global_oso.k8Resource.container.suffix`	This is an optional parameter. Specifies the value that is suffixed to all the container names of OSO. This value is used to suffixed to all the container names of OSO.	**Data Type**: String **Default Value**: "" **Range:** NA
`global_oso.serviceAccountNameAlertMgr`	This is an optional parameter. Specifies the ServiceAccount name to be used for Alertmanager.	**Data Type**: String **Default Value**: "" **Range:** NA
`global_oso.customExtension.allResources.labels`	This is an optional parameter. Specifies the custom labels that should be added to all the OSO Kubernetes resources. This can be used to add custom label(s) to all Kubernetes resources that are created by OSO helm chart.	**Data Type**: String **Default Value**: {} **Range:** NA

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`global_oso.customExtension.lbServices.labels`	This is an optional parameter. Specifies the custom labels required to be added to OSO services that are considered as load balancer type. This can be used to add custom label(s) to all load balancer type services that are created by OSO helm chart.	**Data Type**: String **Default Value**: {} **Range:** NA
`global_oso.customExtension.nonlbServices.labels`	This is an optional parameter. Specifies the custom labels to be added to OSO services that are considered as not load balancer type. This can be used to add custom label(s) to all non-load balancer type services that is created by OSO helm chart.	**Data Type**: String **Default Value**: {} **Range:** NA
`global_oso.customExtension.lbStatefulSets.labels`	This is an optional parameter. Specifies the custom labels to be added to OSO services that are considered as stateful sets with load balancers. This can be used to add custom label(s) to all stateful sets with load balancer services that is created by OSO helm chart.	**Data Type**: String **Default Value**: {} **Range:** NA
`annotations`	This is an optional parameter. Specifies the annotations that should be added to all the OSO Kubernetes resources.	**Data Type**: String **Default Value**: {} **Range:** NA
`replicaCount`	This is a mandatory parameter. Indicates the number of replica pods used for the OSO deployment.	**Data Type**: Integer **Default Value**: 2 **Range:** 1 or greater
`revisionHistoryLimit`	This is an optional parameter. Indicates the number of previous ReplicaSets to retain for rollback. The default Kubernetes value is 10.	**Data Type**: Integer **Default Value**: 10 **Range:** 0 or greater
`image.repository`	This is a mandatory parameter. Specifies the container image repository for Alertmanager.	**Data Type**: String **Default Value**: NA **Range:** NA **Placeholder**: ALERTMANAGER-REPO-ADDRESS
`image.pullPolicy`	This is an optional parameter. Specifies the image pull policy for the alert configuration container image. The pull policy controls if and when images are refreshed from the repository. • IfNotPresent—Pulls the image only once, and it doesn't try again. • Always—always pulls the image when the deployment is created. • Never—it doesn't pull the image when the deployment is created.	**Data Type**: String **Default Value**: IfNotPresent **Range:** Always, IfNotPresent, Never

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`image.tag`	This is a mandatory parameter. Specifies the version tag for the Alertmanager image. **Note**: Do not change the default value.	**Data Type**: String **Default Value**: 0.28.0 **Range:** NA
`baseURL`	This is an optional parameter. Specifies the full external URL at which Alertmanager is accessible.	**Data Type**: String **Default Value**: http://localhost/CLUSTER-NAME/alertmanager **Range:** NA
`extraArgs.data.retention`	This is an optional parameter. Specifies retention time for Alertmanager data.	**Data Type**: String **Default Value**: NA **Range:** NA **Place holder**: RETENTION-TIME-ALM
`nameOverride`	This is an optional parameter. Specifies a custom name override for the Alertmanager release.	**Data Type**: String **Default Value**: alm **Range:** NA
`fullnameOverride`	This is an optional parameter. Specifies the fully qualified name override for all resources.	**Data Type**: String **Default Value**: "" **Range:** NA
`namespaceOverride`	This is an optional parameter. Specifies the namespace in which resources are deployed.	**Data Type**: String **Default Value**: "" **Range:** NA
`automountServiceAccountToken`	This is an optional parameter. Specifies if pods should be auto-assigned the service account token. If the value is set to true, the pods are auto-assigned with the service account token. If the value is set to false, the pods are not assigned with the service account token.	**Data Type**: Boolean **Default Value**: true **Range:** true, false
`serviceAccount.create`	This is a mandatory parameter. Specifies whether the service account is created automatically or not for the alert manager files. If the value is set to true, it automatically creates a service account for the alert manager files. If the value is set as false, create a service account manually for the alert manager files.	**Data Type**: Boolean **Default Value**: true **Range:** true, false **Placeholder**: USE-DEFAULT-SVCACCOUNT-ALM
`serviceAccount.annotations`	This is an optional parameter. Specifies the annotations to be added to the ServiceAccount.	**Data Type**: String **Default Value**: {} **Range:** NA

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`serviceAccount.name`	This is an optional parameter. Specifies the service account name for the alert manager deployment. If the value of `serviceAccount.create` is set to true, it automatically generates a service account name for the alert manager files. If the value of `serviceAccount.create` is set to false, it uses the default service account name, which is created already.	**Data Type**: String **Default Value**: "" **Range**: Any string
`podSecurityContext.fsGroup`	This is an optional parameter. Specifies the filesystem group ID for Alertmanager pods.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`securityContext.capabilities.drop`	This is a mandatory parameter. Specifies that some previleges are given to process but not with all the privileges of the root user. If the value is set as ALL, all capabilities are dropped or no capabilities are given.	**Data Type**: List **Default Value**: NA **Range**: ["KILL", "MKNOD", "SETUID", "SETGID", "NET_RAW", "ALL"] **Place holder**: ["KILL", "MKNOD", "SETUID", "SETGID", "NET_RAW"]
`securityContext.runAsUser`	This is a mandatory parameter. Specifies the user ID to run the entrypoint of the container process. **Note**: Do not change this value.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`securityContext.runAsNonRoot`	This is a mandatory parameter. Indicates that the container must run as a non-root user. If the value is set as true, the Kubelet validates the image at runtime to ensure that it does not run as UID 0 (root) and fail to start the container if it does. If the value is set as false, the validations are not performed.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`securityContext.runAsGroup`	This is a mandatory parameter. Specifies the group user ID to run the entrypoint of the container process. **Note**: Do not change this value.	**Data Type:** Integer **Default Value**: 65534 **Range**: NA
`securityContext.allowPrivilegeEscalation`	This is a mandatory parameter. Specifies if a process can gain more privileges than its parent process. If this value is set as true, the process can gain more privileges than its parent process. If this value is set as false, the process can't gain more privileges than its parent process.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`service.annotations`	This is an optional parameter. Specifies the additional annotations for the Alertmanager service.	**Data Type**: String **Default Value**: {} **Range:** NA

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`service.labels`	This is an optional parameter. Specifies the additional labels for the Alertmanager service.	**Data Type**: String **Default Value**: {} **Range:** NA
`service.type`	This is an optional parameter. Specifies the service type for exposing Alertmanager.	**Data Type**: String **Default Value**: ClusterIP **Range**: ClusterIP, NodePort, LoadBalancer, ExternalName
`service.port`	This is an optional parameter. Specifies the port to expose on the Alertmanager service.	**Data Type**: Integer **Default Value**: 80 **Range**: 1–65535
`service.targetPort`	This is an optional parameter. Specifies the target container port for Alertmanager traffic.	**Data Type**: Integer **Default Value**: 9093 **Range**: 1–65535
`service.clusterPort`	This is an optional parameter. Specifies the port used for intra-cluster Alertmanager communication.	**Data Type**: Integer **Default Value**: 9094 **Range**: 1–65535
`service.loadBalancerIP`	This is a conditional parameter. Specifies a static external IP address to use for the LoadBalancer service type. **Note**: If the value of `service.type` is set as LoadBalancer, then set the value for this parameter.	**Data Type**: String **Default Value**: "" **Range**: Any IPv4/IPv6 address
`service.loadBalancerSourceRanges`	This is an optional parameter. Specifies the allowed IP source ranges for LoadBalancer access.	**Data Type**: List **Default Value**: [] **Range:** NA
`service.extraPorts`	This is an optional parameter. Specifies an extra list of additional ports exposed by the Alertmanager service.	**Data Type**: List **Default Value**: [] **Range:** NA
`service.ipDualStack.enabled`	This is an optional parameter. Specifies if IP dual-stack is enabled for the Alertmanager service. If the value is set as true, dual stack is supported for Alertmanager. If the value is set as false, dual stack support is unavailable for Alertmanager.	**Data Type**: String **Default Value**:NA **Range**: true, false **Placeholder**: ENABLE_DUAL_STACK
`service.ipDualStack.ipFamilies`	This is an optional parameter. Specifies the order of IP families (for example, IPv4, IPv6) for dual-stack networking.	**Data Type**: List **Default Value**: ["IPv6","IPv4"] **Range**: ["IPv6","IPv4"], ["IPv4","IPv6"]
`service.ipDualStack.ipFamilyPolicy`	This is an optional parameter. Specifies the dual-stack policy for the Alertmanager service, such as "PreferDualStack".	**Data Type**: String **Default Value**: PreferDualStack **Range**: NA

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`resources.limits.cpu`	This is an optional parameter. Specifies the maximum CPU allocated for Alertmanager pods.	**Data Type**: String **Default Value**: 500m **Range**: NA
`resources.limits.memory`	This is an optional parameter. Specifies the maximum memory available to Alertmanager pods.	**Data Type**: String **Default Value**: 200Mi **Range**: NA
`resources.limits.ephemeral-storage`	This is an optional parameter. Specifies the maximum ephemeral storage allowed for Alertmanager pods to control disk usage.	**Data Type**: String **Default Value**: 1Gi **Range**: NA
`resources.requests.cpu`	This is an optional parameter. Specifies the minimum CPU requested for Alertmanager pods.	**Data Type**: String **Default Value**: 100m **Range**: NA
`resources.requests.memory`	This is an optional parameter. Specifies the minimum memory requested for Alertmanager pods, reserving required memory for stable operation.	**Data Type**: String **Default Value**: 32Mi **Range**: NA
`resources.requests.ephemeral-storage`	This is an optional parameter. Specifies the minimum ephemeral storage requested for Alertmanager pods, reserving minimum disk space.	**Data Type**: String **Default Value**: 1Gi **Range**: NA
`nodeSelector`	This is an optional parameter. Specifies node selector labels for scheduling Alertmanager pods on suitable nodes.	**Data Type**: String **Default Value**: {} **Range:** NA
`statefulSet.annotations`	This is an optional parameter. Specifies annotations added to the Alertmanager StatefulSet resource.	**Data Type**: String **Default Value**: {} **Range:** NA
`podAnnotations`	This is an optional parameter. Specifies additional pod-level annotations for Alertmanager pods.	**Data Type**: String **Default Value**: {} **Range:** NA
`podLabels`	This is an optional parameter. Specifies additional labels for Alertmanager pods.	**Data Type**: String **Default Value**: {} **Range:** NA
`podDisruptionBudget.minAvailable`	This is an optional parameter. Specifies the minimum number of Alertmanager pods that must be available during pod disruptions.	**Data Type**: Integer **Default Value**: 1 **Range:** 0 or greater
`command`	This is an optional parameter. Specifies custom command(s) for launching Alertmanager containers.	**Data Type**: List **Default Value**: [] **Range:** NA

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`persistence.enabled`	This is an optional parameter. Specifies whether persistent storage is enabled for Alertmanager. If the value is set as true, persistent storage is enabled for Alertmanager. If the value is set as false, persistent storage is disabled for Alertmanager.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`persistence.storageClass`	This is an optional parameter. Specifies the Kubernetes storage class used for persistent Alertmanager storage.	**Data Type**: String **Default Value**: ALM-STORAGE-CLASS **Range**: NA
`persistence.accessModes`	This is an optional parameter. Specifies the access modes (for example, ReadWriteOnce) for persistent Alertmanager storage volumes.	**Data Type**: List **Default Value**: [ReadWriteOnce] **Range**: NA
`persistence.size`	This is a mandatory parameter. Specifies the size for persistent storage to be provisioned for Alertmanager. Example: 8Gi	**Data Type**: String **Default Value**: ALM-PV-SIZE **Range**: NA
`config.enabled`	This is a mandatory parameter. Specifies whether Alertmanager configuration is active or inactive. If the value is set as true, Alertmanager configuration is active. If the value is set as false, Alertmanager configuration is inactive.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`config.global`	This is an optional parameter. Specifies the global-level configuration settings for Alertmanager, such as SMTP or Slack integration.	**Data Type**: String **Default Value**: {} **Range:** NA
`config.templates`	This is an optional parameter. Specifies file paths to Alertmanager template files, used for custom alert notifications.	**Data Type**: List **Default Value**: ['/etc/alertmanager/*.tmpl'] **Range**: NA
`config.receivers`	This is an optional parameter. Specifies the alert receivers for routing.	**Data Type**: List **Default Value**: NA **Range**: NA
`config.route.group_wait`	This is an optional parameter. Specifies how long to wait to buffer alerts before sending a notification.	**Data Type**: String **Default Value**: 10s **Range**: NA **Unit**: Seconds
`config.route.group_interval`	This is an optional parameter. Specifies how often to send a notification for repeating alert groups.	**Data Type**: String **Default Value**: 5m **Range**: NA **Unit**: Minutes

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`config.route.receiver`	This is a mandatory parameter. Specifies the default receiver to which alerts will be sent.	**Data Type**: String **Default Value**: default-receiver **Range**: NA
`config.route.repeat_interval`	This is an optional parameter. Specifies the wait time duration to resend a notification about a given alert.	**Data Type**: String **Default Value**: 3h **Range**: NA **Unit**: Hours
`configmapReload.enabled`	This is an optional parameter. Specifies whether the configmap-reload deployment is enabled or disabled. If the value is set as true, configmap-reload deployment is enabled. If the value is set as false, configmap-reload deployment is disabled.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`configmapReload.name`	This is an optional parameter. Specifies the configmap-reload container name.	**Data Type**: String **Default Value**: configmap-reload **Range**: NA **Placeholder**configmap-reload
`configmapReload.image.repository`	This is an optional parameter. Specifies the repository for the configmap-reload container image.	**Data Type**: String **Default Value**: CONFIGMAP-RELOAD-REPO-ADDRESS **Range**: NA
`configmapReload.image.tag`	This is an optional parameter. Specifies the image tag for the configmap-reload container.	**Data Type**: String **Default Value**: 0.15.0 **Range**: NA
`configmapReload.image.pullPolicy`	This is an optional parameter. Specifies the image pull policy for the configmap-reload container image.	**Data Type**: String **Default Value**: IfNotPresent **Range**: IfNotPresent, Always, Never
`configmapReload.resources.limits.cpu`	This is an optional parameter. Specifies the maximum CPU resources for configmap-reload. Limiting resource consumption is strongly recommended.	**Data Type**: String **Default Value**: 400m **Range**: NA **Unit**: millicores
`configmapReload.resources.limits.memory`	This is an optional parameter. Specifies the maximum memory allowed for the configmap-reload container.	**Data Type**: String **Default Value**: 124Mi **Range**: NA **Unit**: Mebibytes
`configmapReload.resources.limits.ephemeral-storage`	This is an optional parameter. Specifies the ephemeral storage limit for the configmap-reload container.	**Data Type**: String **Default Value**: 1Gi **Range**: NA **Unit**: Gibibytes

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`configmapReload.resources.requests.cpu`	This is an optional parameter. Specifies the minimum CPU request for the configmap-reload container.	**Data Type**: String **Default Value**: 400m **Range**: NA **Unit**: millicores
`configmapReload.resources.requests.memory`	This is an optional parameter. Specifies the minimum memory request for the configmap-reload container.	**Data Type**: String **Default Value**: 124Mi **Range**: NA **Unit**: Mebibytes
`configmapReload.resources.requests.ephemeral-storage`	This is an optional parameter. Specifies the minimum ephemeral storage request for the configmap-reload container.	**Data Type**: String **Default Value**: 1Gi **Range**: NA **Unit**: Gibibytes
`configmapReload.securityContext.capabilities.drop`	This is a mandatory parameter. Specifies that some previleges are given to process but not with all the privileges of the root user in the configmap-reload container. If the value is set as ALL, all capabilities are dropped or no capabilities are given. **Note**: Do not change the default value.	**Data Type**: List **Default Value**: ["KILL", "MKNOD", "SETUID", "SETGID", "NET_RAW"] **Range**: ["KILL", "MKNOD", "SETUID", "SETGID", "NET_RAW", "ALL"]
`configmapReload.securityContext.runAsUser`	This is an optional parameter. Specifies the user ID to run configmap-reload as, usually set to a non-root value. **Note**: Do not change the default value.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`configmapReload.securityContext.runAsNonRoot`	This is a mandatory parameter. Specifies if configmap-reload must run as a non-root user. If the value is set as true, the Kubelet validates the image at runtime to ensure that it does not run as UID 0 (root) and fail to start the container if it does. If the value is set as false, the validations are not performed.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`configmapReload.securityContext.runAsGroup`	This is a mandatory parameter. Specifies the group user ID to run the configmap-reload process in the container. **Note**: Do not change this value.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
`configmapReload.securityContext.allowPrivilegeEscalation`	This is a mandatory parameter. Specifies if a process can gain more privileges than its parent process for the configmap-reload container. If this value is set as true, the process can gain more privileges than its parent process for the configmap-reload container. If this value is set as false, the process can't gain more privileges than its parent process for the configmap-reload container.	**Data Type**: Boolean **Default Value**: false **Range**: true, false

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Table 3-3 (Cont.) OSO Alertmanager Configuration Parameters

Parameter	Description	Details
`verticalPodAutoscaler.enabled`	This is an optional parameter. Specifies if vertical pod auto-scaling is enabled or not. If the value is set as true, vertical pod auto-scaling is enabled. If the value is set as false, vertical pod auto-scaling is disabled.	**Data Type**: Boolean **Default Value**: false **Range**: true, false

3.2.3 Alert Config Configuration Parameters

This section provides the alert config configuration parameters details that are used to install the OSO CSAR packages manually.

Configure the `ocoso_csar_25_2_200_0_0_0_alr_config_custom_values.yaml` with the defined values.

Table 3-4 OSO AlertConfig Configuration Parameters

Parameter Name	Description	Details

`annotations`	This is an optional parameter.
	Specifies the custom annotations to be added to OSO deployments that are associated to disable the sidecar injections into OSO pods.
	Note: This parameter is mandatory if ASM is enabled.
	Example:
	`annotations:`
	`  - sidecar.istio.io/inject: "false"`
		Data Type: String
		Default Value: {}
		Range: NA

`config.weight`	This is an optional parameter. Specifies an operator-defined value to control alert prioritization or execution order for available deployments.	**Data Type**: String **Default Value**: "" **Range**: NA
`containerSecurityContext.allowPrivilegeEscalation`	This is a mandatory parameter. This parameter controls whether a process can gain more privileges than its parent process. If this value is set as true, the process can gain more privileges than its parent process. If this value is set as false, the process can't gain more privileges than its parent process. Specifies whether the container can gain additional privileges. Disabling privilege escalation increases the overall pod security.	**Data Type**: Boolean **Default Value**: false **Range**: true, false

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Table 3-4 (Cont.) OSO AlertConfig Configuration Parameters

Parameter Name	Description	Details
containerSecurityContext.capabilities.drop	This is a mandatory parameter. Indicates that some privileges are given to the process, but not with all the privileges of the root user. or This attribute indicates when security context at the container level is enabled; this parameter can be used to drop all the default capabilities provided by the orchestration system. **Note**: Do not change the default value.	**Data Type**: List **Default Value**: ["KILL", "MKNOD", "SETUID", "SETGID", "NET_RAW"] **Range**: List of capabilities
containerSecurityContext.fsGroup	This is a mandatory parameter. Specifies the file system group ID for mounted volumes, providing group permissions to shared storage used by the container. **Note:** Do not change the default value.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
containerSecurityContext.runAsGroup	This is a mandatory parameter. Specifies the group ID used by container processes to enforce security and resource access control. **Note**: Do not change the default value.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
containerSecurityContext.runAsNonRoot	This is a mandatory parameter. Specifies that the container must run as a non-root user. If the value is set as true, the Kubelet validates the image at runtime to ensure that it does not run as UID 0 (root) and fail to start the container if it does. If the value is set as false, the validations are not performed.	**Data Type**: Boolean **Default Value**: false **Range**: true, false
containerSecurityContext.runAsUser	This is a mandatory parameter. Specifies the User Id (UID) to run the entrypoint of the container process. **Note:** Do not change this value.	**Data Type**: Integer **Default Value**: 65534 **Range**: NA
global_oso_alr_config.customExtension.allResources.annotations	This is an optional parameter. Specifies the annotations to add to all created resources in the deployment. Specifies the custom annotations that should be added to all the OSO deployments for alert configuration resources.	**Data Type**: String **Default Value**: {} **Range**: NA
global_oso_alr_config.customExtension.allResources.labels	This is an optional parameter. Specifies the custom annotations that should be added to all the OSO deployments for alert configuration.	**Data Type**: String **Default Value**: {} **Range**: NA
hookJobResources.limits.cpu	This is an optional parameter. Specifies the maximum CPU resource allocated to hook jobs, including the Helm test job.	**Data Type**: Integer **Default Value**: 0.5 **Range**: NA

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Table 3-4 (Cont.) OSO AlertConfig Configuration Parameters

Parameter Name	Description	Details
`hookJobResources.limits.memory`	This is an optional parameter. Specifies the maximum memory allocated to hook jobs, including the helm test job.	**Data Type**: String **Default Value**: 512Mi **Range**: NA **Unit**: Mebibytes
`hookJobResources.requests.cpu`	This is an optional parameter. Specifies the amount of CPU that the system will guarantee for the hook job resource, and Kubernetes will use this value to decide on which node to place the pod.	**Data Type**: Integer **Default Value**: 0.5 **Range**: NA
`hookJobResources.requests.memory`	This is an optional parameter. Specifies the maximum memory for requests allocated to hook jobs, including the helm test job. The memory that the system will guarantee for the hook job resource, and Kubernetes will use this value to decide on which node to place the pod.	**Data Type**: String **Default Value**: 512Mi **Range**: NA **Unit**: Mebibytes
`image.pullPolicy`	This is a mandatory parameter. Specifies the image pull policy for the alert configuration container image. The pull policy controls if and when images are refreshed from the repository. • IfNotPresent—Pulls the image only once, and it doesn't try again. • Always—always pulls the image when the deployment is created. • Never—it doesn't pull the image when the deployment is created.	**Data Type**: String **Default Value**: IfNotPresent **Range**: Always, IfNotPresent, Never
`image.repository`	This is a mandatory parameter. Specifies the container image repository URL of the oso-alr-config image where it is located. Example: `occne.io/occne/oso_alert_config`	**Data Type:** String **Default Value:** NA **Placeholder**: OSO_ALERT_CONFIG_IMAGE **Range**: NA
`image.tag`	This is a mandatory parameter. Specifies the version tag for the alert configuration container image. Example: 25.2.200	**Data Type:** String **Default Value:** NA **Placeholder**: OSO_VERSION_PLACEHOLDER **Range**: NA
`osoConfigMapName`	This is a mandatory parameter. Specifies the name of the OSO Prometheus ConfigMap which contains the alert configuration. Set this parameter to ensure Prometheus loads the correct alerting rules and settings. Example: oso-prom-svr	**Data Type:** String **Default Value:** NA **Placeholder**: OSO-PROM-CONFIGMAP-NAME **Range**: NA

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Table 3-4 (Cont.) OSO AlertConfig Configuration Parameters

Parameter Name	Description	Details
`serviceAccount.create`	This is a mandatory parameter. Specifies whether the service account is created automatically or not for the alert configuration files. If the value is set as true, it automatically creates a service account for the alert configuration files. If the value is set as false, create a service account manually for the alert configuration files.	**Data Type**: Boolean **Default Value**: false **Range**: true, false
`serviceAccount.name`	This is a mandatory parameter. Specifies the service account name for the alert configuration deployment. If the value of `serviceAccount.create` is set as true, it automatically generates a service account name for the alert configuration files. If the value of `serviceAccount.create` is set as false, it uses the default service account name, which is created already.	**Data Type**: String **Default Value**: NA **Range**: NA **Placeholder**: oso-config-serviceaccount

3.2.4 Alert Processing Microservice Configuration Parameters

This section provides the Alert Processing Microservice configuration parameters details that are used to install the OSO CSAR packages manually.

Configure `ocoso_csar_25_2_200_0_0_0_apm_custom_values.yaml` with the specific values.

Table 3-5 OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`useasm`	This is an optional parameter. Indicates if ASM feature is enabled or disabled. If the value is set to true, ASM feature is enabled. If the value is set to false, ASM feature is disabled.	**Data Type**: Boolean **Default Value**: false **Placeholder**: <USEASM> **Range**: false, true
`apmEnabled`	This is an optional parameter. Indicates if the Alert Processing Microservice (APM) feature is enabled or disabled. If the value is set to true, APM feature is enabled. If the value is set to false, APM feature is disabled.	**Data Type**: Boolean **Default Value**: false **Placeholder**: <BOOL-APM-ENABLED> **Range**: false, true
`namespace`	This is a mandatory parameter. Indicates the Kubernetes namespace where the service will be deployed.	**Data Type**: String **Default Value**: oso **Placeholder**: <NAMESPACE> **Range**: NA

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Table 3-5 (Cont.) OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`clustername`	This is a mandatory parameter. Indicates the cluster name prefix that appears in GUI URLs. Comment this line if the prefix is not needed.	**Data Type**: String **Default Value**: "" **Placeholder**: <CLUSTER-NAME> **Range**: NA
`resources.requests.cpu`	This is a mandatory parameter. Indicates the minimum amount of CPU resources guaranteed for the APM container.	**Data Type**: String **Default Value**: 2000m **Placeholder**: <APM-CPU-REQUEST> **Range**: NA **Unit**: millicpu
`resources.requests.memory`	This is a mandatory parameter. Indicates the minimum amount of memory resources guaranteed for the APM container.	**Data Type**: String **Default Value**: 2Gi **Placeholder**: <APM-MEMORY-REQUEST> **Range**: NA **Unit**: Gi (gibibytes)
`resources.requests.ephemeral-storage`	This is a mandatory parameter. Indicates the minimum ephemeral storage allocated for the APM container.	**Data Type**: String **Default Value**: 1Gi **Placeholder**: <APM-EPHEMERAL-STORAGE-REQUEST> **Range**: NA **Unit**: Gi (gibibytes)
`resources.limits.cpu`	This is a mandatory parameter. Indicates the maximum amount of CPU resources allowed for the APM container; used for burst scenarios.	**Data Type**: String **Default Value**: 4000m **Placeholder**: <APM-CPU-LIMIT> **Range**: NA **Unit**: millicpu
`resources.limits.memory`	This is a mandatory parameter. Indicates the maximum amount of memory resources allowed for the APM container to prevent resource overuse.	**Data Type**: String **Default Value**: 4Gi **Placeholder**: <APM-MEMORY-LIMIT > **Range**: NA **Unit**: Gi (gibibytes)
`resources.limits.ephemeral-storage`	This is a mandatory parameter. Indicates the maximum ephemeral storage allowed for APM container.	**Data Type**: String **Default Value**: 4Gi **Placeholder**: <APM-EPHEMERAL-STORAGE-LIMIT > **Range**: NA **Unit**: Gi (gibibytes)
`fullnameOverride`	This is a mandatory parameter. Indicates the APM service name. **Note**: This name should match with the <APM-SVC-NAME > in the Alertmanager custom values.yaml file.	**Data Type**: String **Default Value**: oso-apm **Placeholder**: <APM-SVC-NAME > **Range**: NA

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Table 3-5 (Cont.) OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`global_oso.k8Resource.container.prefix`	This is an optional parameter. Indicates the prefix to be added to container names in the OSO deployment.	**Data Type**: String **Default Value**: NA **Range**: NA
`global_oso.k8Resource.container.suffix`	This is an optional parameter. Indicates the suffix to be added to container names in the OSO deployment.	**Data Type**: String **Default Value**: NA **Range**: NA
`global_oso.serviceAccountNameAPM`	This is an optional parameter. Indicates the custom service account name for APM, if specified.	**Data Type**: String **Default Value**: "" **Range**: NA
`global_oso.customExtension.allResources.labels`	This is an optional parameter. Indicates the key/value labels to be applied to all resources as defined by TYPE1 label.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`global_oso.customExtension.lbServices.labels`	This is an optional parameter. Indicates the key/value labels to be applied to load balancer services as defined by TYPE2 label.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`global_oso.customExtension.nonlbServices.labels`	This is an optional parameter. Indicates key/value labels to be applied to non-load balancer services as defined by TYPE2 label.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`global_oso.customExtension.lbDeployments.labels`	This is an optional parameter. Indicates key/value labels to be applied to load balancer deployments as defined by TYPE2 label.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`global_oso.customExtension.nonlbDeployments.labels`	This is an optional parameter. Indicates key/value labels to be applied to non-load balancer deployments as defined by TYPE2 label.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`annotations`	This is an optional parameter. Indicates custom annotations to be added to OSO pods. Use this parameter to disable sidecar injections or similar.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`deploymentAnnotations`	This is an optional parameter. Indicates additional annotations for the deployment.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`replicaCount`	This is a mandatory parameter. Indicates the number of replica pods for the deployment.	**Data Type**: Integer **Default Value**: 1 **Range**: 1 or more
`podAnnotations`	This is an optional parameter. Indicates the additional annotations for pods.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs

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Table 3-5 (Cont.) OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`podLabels`	This is an optional parameter. Indicates the labels to be added to pods.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`revisionHistoryLimit`	This is an optional parameter. Indicates the number of previous ReplicaSets to retain for rollback. The default Kubernetes value is 10.	**Data Type**: Integer **Default Value**: 10 **Range**: NA
`automountServiceAccountToken`	This is an optional parameter. Indicates whether the service account token should be automatically mounted or not. If the value is set to true, the service account tokens are automatically mounted. If the value is set to false, the service account tokens are not mounted automatically.	**Data Type**: Boolean **Default Value**: true **Range**: true, false
`serviceAccount.create`	This is a mandatory parameter. Indicates whether a service account should be created or not for APM. If the value is set to true, service account is created for APM. If the value is set to false, service account is not created for APM.	**Data Type**: Booelan **Default Value**: true **Placeholder**: <USE-DEFAULT-SVCACCOUNT-APM> **Range**: true, false
`serviceAccount.annotations`	This is an optional parameter. Indicates the annotations to add to the service account.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`serviceAccount.name`	This is an optional parameter. Indicates the name of the service account to use. If a name is not set and the value of `serviceAccount.create` is true, a name is generated automatically.	**Data Type**: String **Default Value**: "" **Range**: NA
`nodeSelector`	This is an optional parameter. Indicates node selector labels for pod assignment.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`securityContext.capabilities.drop`	This is a mandatory parameter. Indicates the Linux capabilities to drop from the container for enhanced security.	**Data Type**: List of Strings **Default Value**: ["KILL", "MKNOD", "SETUID", "SETGID", "NET_RAW"] **Range**: NA
`securityContext.runAsUser`	This is a mandatory parameter. Indicates the user ID the process runs as inside the container.	**Data Type**: Integer **Default Value**: 65534 **Range**: 0 - 65535

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Table 3-5 (Cont.) OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`securityContext.runAsNonRoot`	This is a mandatory parameter. Indicates whether the container must run as a non-root user or not. If the value is set to true, the container runs as non-root user. If the value is set to false, the container does not run as a non-root user.	**Data Type**: Boolean **Default Value**: true **Range**: true or false
`securityContext.runAsGroup`	This is a mandatory parameter. Indicates the primary group ID the process runs as inside the container.	**Data Type**: Integer **Default Value**: 65534 **Range**: 0 - 65535
`securityContext.allowPrivilegeEscalation`	This is a mandatory parameter. Indicates whether privilege escalation is allowed inside the container or not. If the value is set to true, privilege escalation is allowed inside the container. If the value is set to false, privilege escalation is not allowed inside the container.	**Data Type**: Boolean **Default Value**: false **Range**: true or false
`command`	This is an optional parameter. Indicates the custom commands to be run in the container on startup.	**Data Type:** List **Default Value**: [] **Range**: Any list of command strings
`env.severityList`	This is a mandatory parameter. Indicates the list of alert severities to be used in the environment configuration.	**Data Type**: String **Default Value:** SEVERITYLIST **Range**: minor, major, fatal,informational, warning, error, critical
`env.kafkaIp`	This is a conditional parameter. Configure this parameter when `apmenabled` is set to true. Indicates the external bootstrap service IP which maps to the Kafka brokers. Internal bootstrap service IP if APM or OSO is deployed in the same cluster.	**Data Type**: String **Default Value**: NA **Placeholder**: KAFKAIP **Range**: NA
`env.kafkaPort`	This is a conditional parameter. Configure this parameter when `apmenabled` is set to true. Indicates the external bootstrap service port which maps to the Kafka brokers. Internal bootstrap service port if APM or OSO is deployed in the same cluster.	**Data Type**: String **Default Value**: NA **Placeholder**: KAFKAPORT **Range**: NA
`env.kafkaTopic`	This is a conditional parameter. Configure this parameter when `apmenabled` is set to true. Indicates the Kafka topic to which APM will publish alert messages.	**Data Type**: String **Default Value**: NA **Placeholder**: KAFKATOPIC **Range**: NA

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Table 3-5 (Cont.) OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`env.kafkaGroupId`	This is a conditional parameter. Configure this parameter when `apmenabled` is set to true. Indicates a name that the user provides.	**Data Type**: String **Default Value**: NA **Placeholder**: KAFKAGROUPID **Range**: NA
`env.kafkaBatchingLinger`	This is an optional parameter. Indicates the time that the Kafka producer waits before sending a batch, allowing more messages to be grouped together. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "50" **Range**: NA **Unit**: milliseconds
`env.kafkaMaxBatchSize`	This is an optional parameter. Indicates the maximum number of messages in a batch to be included before the producer flushes the batch to Kafka. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "500" **Range**: NA
`env.kafkaDeliveryTimeout`	This is an optional parameter. Indicates the timeout for an individual Producer message write operation. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "60000" **Range**: NA **Unit**: milliseconds
`env.kafkaRetryBackoff`	This is an optional parameter. Indicates the wait time before retrying a failed Kafka write operation. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "100" **Range**: NA **Unit**: milliseconds

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Table 3-5 (Cont.) OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`env.kafkaRetryBackoffMax`	This is an optional parameter. Indicates the maximum wait time on successive retries for Kafka writes. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "1000" **Range**: NA **Unit**: milliseconds
`env.kafkaCompressionType`	This is an optional parameter. Indicates the compression type (like none, gzip, and so on) used when sending messages to Kafka. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "none" **Range**: none, gzip, and so on
`env.kafkaRequestTimeout`	This is an optional parameter. Indicates the maximum time the producer waits for a server response for each request to Kafka. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "20000" **Range**: NA **Unit**: milliseconds
`env.APMPollWait`	This is an optional parameter. Indicates the time that the APM waits between polling Kafka for delivery events. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "0.001" **Range**: NA **Unit**: seconds

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Table 3-5 (Cont.) OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`env.APMMsgWriteTimeout`	This is an optional parameter. Indicates the maximum time to wait for Kafka message delivery acknowledgment per message. **Note**: Do not change the default value. This parameter influences internal batching, timeouts, and retry behaviors for the Kafka producer and APM's messaging workflow. Adjust the value only if specifically required for Kafka performance tuning or troubleshooting purposes.	**Data Type**: String **Default Value**: "70" **Range**: NA **Unit**: seconds
`image.repository`	This is a mandatory parameter. Indicates the repository location of the APM Docker image.	**Data Type**: String **Default Value**: APM-REPO-ADDRESS **Range**: Valid registry path
`image.pullPolicy`	This is a mandatory parameter. Indicates the image pull policy for the Docker image.	**Data Type**: String **Default Value**: IfNotPresent **Range**: "Always", "IfNotPresent", or "Never"
`image.tag`	This is a mandatory parameter. Indicates the image tag in docker repository.	**Data Type**: String **Default Value**: 25.2.200 **Placeholder**: OSO_VERSION_PLACEHOLDER **Range**: Any string value
`imagePullSecrets`	This is an optional parameter. Indicates the list of image pull secrets needed to pull the image from the repository.	**Data Type**: List **Default Value**: [] **Range**: List of secret objects
`terminationGracePeriodSeconds`	This is an optional parameter. Indicates the duration in that Kubernetes waits before forcefully terminating the pod.	**Data Type**: Integer **Default Value**: 40 **Range**: 0 or more **Unit**: seconds
`service.annotations`	This is an optional parameter. Indicates additional annotations to add to the service.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`service.labels`	This is an optional parameter. Indicates additional labels to add to the service.	**Data Type**: Key Value Pair **Default Value**: {} **Range**: Any key/value pairs
`service.clusterIP`	This is an optional parameter. Indicates the cluster IP address for the service.	**Data Type**: String **Default Value**: "" **Range**: Valid IP as string or empty for auto-assignment
`service.externalIPs`	This is an optional parameter. Indicates a list of external IPs for the service.	**Data Type**: List **Default Value**: [] **Range**: List of valid IP addresses

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Table 3-5 (Cont.) OSO Alert Processing Microservice Configuration Parameter

Parameter Name	Description	Details
`service.loadBalancerIP`	This is an optional parameter. Indicates the load balancer IP address for the service.	**Data Type**: String **Default Value**: "" **Range**: Valid IP or empty
`service.loadBalancerSourceRanges`	This is an optional parameter. Indicates the allowed source address ranges for service access via load balancer.	**Data Type**: List **Default Value**: [] **Range**: List of valid IP addresses
`service.ipDualStack.enabled`	This is an optional parameter. Indicates whether dual stack support is enabled for the service IP family. if the value is set to true, dual stack support is enabled for the service IP family. if the value is set to false, dual stack support is disabled for the service IP family.	**Data Type**: Boolean **Default Value**: false **Placeholder**:ENABLE_DUAL_STACK **Range**: true, false
`service.ipDualStack.ipFamilies`	This is an optional parameter. Indicates the IP families allowed for service assignment.	**Data Type**: List **Default Value**: ["IPv6", "IPv4"] **Range**: IPv4, IPv6
`service.ipDualStack.ipFamilyPolicy`	This is an optional parameter. Indicates the policy for IP family assignment when dual stack is enabled. • If the value is set as "SingleStack", then OSO supports either IPv4 or IPv6. • If the value is set as "PreferDualStack", then OSO supports both IPv4 or IPv6. **Note:** When dual stack is supported, OSO prefers IPv6 over IPv4.	**Data Type**: String **Default Value**: "PreferDualStack" **Range**: "SingleStack", "PreferDualStack"
`service.sessionAffinity`	This is an optional parameter. Indicates the session affinity to be used for the service.	**Data Type**: String **Default Value**: None **Range**: None
`service.port`	This is a mandatory parameter. Indicates the main service port exposed by the APM service.	**Data Type**: Integer **Default Value**: NA **Placeholder**: APM-SVC-PORT **Range**: NA
`service.targetPort`	This is a mandatory parameter. Indicates the target port on the pod that receives the traffic. **Note**: Do not change the default value.	**Data Type**: Integer **Default Value**: 5000 **Range**: NA
`service.extraPorts`	This is an optional parameter. Indicates a list of additional ports exposed on both services. **Note**: Do not change the default value.	**Data Type**: List **Default Value**: [] **Range**: NA
`service.type`	This is a mandatory parameter. Indicates the service type for Kubernetes service configuration.	**Data Type**: String **Default Value**: "ClusterIP" **Range**: "ClusterIP", "NodePort", "LoadBalancer"

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4 Using OSO with IPv6

This section details the steps to access OSO services like Prometheus and Alertmanager using IPv6.

> **Note**
>
> You can use the Installing OSO using CSAR procedure to install OSO in an IPv6 cluster.

- To access Prometheus GUI using IPv6, use the following URL format and open the GUI using any IPv6 supported browser:

  Load Balancer:

  ```
  LoadBalancerIP-Prometheus]
  ```

  Example:

  ```
  http://[2606:b400:605:b819:4631:92ff:fe73:9d2c]
  ```

  Node Port:

  ```
  [AnyWorkerNodeIP]:NodePort-Prometheus
  ```

  Example:

  ```
  http://[2606:b400:605:b819:4631:92ff:fe73:9d2c]:30090
  ```

- Currently, Alertmanager has an issue in accessing Alertmanager GUI with IPv6 (see, Parsing URLs with IPv6 host issue). To overcome this issue, perform the following steps to use the DNS names concept as Alertmanager does not support IPv6 address format.

  1. Open the `hosts` file from the following path: `C:\Windows\System32\drivers\etc\hosts`.
  2. Add the following entry to map the worker-node IP of IPv6 cluster with a DNS name:

     ```
     # DNS Mapping for alertmanager
     2606:b400:605:b819:4631:92ff:fe73:9d2c alertmanager
     ```

  3. Open GUI using NodePort and DNS name. For example, `http://alertmanager:30854/alertmanager`

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5
Upgrading OSO

This chapter provides information about upgrading Oracle Communications Cloud Native Core, Operations Services Overlay (OSO) deployment to the latest release. It is recommended to perform OSO upgrade in a specific order. For more information about the upgrade order, see *Oracle Communications Cloud Native Core, Solution Upgrade Guide*.

Note

- While performing OSO upgrade from 25.1.2xx or 25.2.1xx to 25.2.200, a small service interruption is expected. This outage is caused because OSO pods will be deleted and recreated after the upgrade.
- When performing an OSO upgrade, if you make changes to the configmap, the OSO pods do not restart automatically and continue using the existing data.To ensure the OSO pods retrieve the latest data, add the following to the `ocoso_csar_25_2_200_0_0_0_alm_custom_values.yaml` file:

```
configmapReload:
    extraArgs:
        webhook-url: http://127.0.0.1:9093/<CLUSTER-NAME>/
alertmanager/-/reload
```

Where, `<CLUSTER-NAME>` is the name of the target cluster where OSO is deployed. For more details about the AlertManager configuration parameters, see Alertmanager Configuration Parameters.

5.1 Supported Upgrade Paths

The following table lists the supported upgrade paths for OSO:

Table 5-1 Supported Upgrade Paths

Source Release	Target Release
25.2.1xx	25.2.200
25.1.2xx	25.2.200

5.2 Prerequisites

Following are the prerequisites for upgrading OSO:

- Ensure that the system has OSO 25.2.1xx or 25.1.2xx installed and the OSO is working properly.
- Verify if all the pods and services are up and running.

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- Ensure that the NFs are upgraded after the OSO upgrade.

5.3 Upgrading OSO using CSAR

This section describes the procedure to upgrade an existing OSO using CSAR.

1. Prepare the `ocoso_csar_25_2_200_0_0_0_custom_values.yaml` file by performing the following steps. This .yaml file is used as the input during the upgrade process.
   a. Download OSO CSAR zip file from My Oracle Support (MOS).
   b. Unzip the CSAR zip file:

      ```
      $ unzip <OSO CSAR package>
      ```

   c. Upload all the artifacts present in the `Artifacts/Images` folder to the configured repository. For more information on the artifacts, see the Installation Prerequisite section.
   d. Update the Prometheus and Alertmanager `ocoso_csar_prom_25_2_200_0_0_0_custom_values.yaml` and `ocoso_csar_alm_25_2_200_0_0_0_custom_values.yaml` files present in the `Artifacts/Scripts` directory with the required values as mentioned in OSO Configuration Parameters.
   e. Untar the Helm charts tgz file available in the `Artifacts/Scripts` directory.

      ```
      cd Artifacts/Scripts
      $ tar -xvzf <helm charts.tgz file>
      ```

2. Run the following command to upgrade the existing OSO release:

   ```
   $ helm upgrade <OSO release-name for prometheus> <path to the new prom-OSO
   helm chart> -n <oso-namespace> -f <path to
   ocoso_csar_prom_25.2.200_custom_values.yaml file>
   $ helm upgrade <OSO release-name for alertmanager> <path to the new alm-
   OSO helm chart> -n <oso-namespace> -f <path to
   ocoso_csar_alm_25.2.200_custom_values.yaml file>
   ```

   > **Note**
   >
   > To install the alert config feature, see Automated Configuration of NF Alerts.

3. Post the Helm upgrade a new Prometheus pod spuns up, which is in container creating state. To make it into running state, detach the PVC from old pod in K8s and let it attach to this new upgraded pod.

   ```
   $ kubectl get deployment -n <oso-namespace>
   # Find Prometheus deployment name and replace it in below commands, Both
   the commands below needs to be run at the same time
   $ kubectl -n <oso-namespace> scale deploy <oso-deployment-name> --
   replicas=0
   ```


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```
$ kubectl -n <oso-namespace> scale deploy <oso-deployment-name> --
replicas=1
```

4. Verify if all the pods are up and running with the latest versions and changes.
5. Verify if the upgraded OSO is working as expected by performing the Verifying Installation procedure.

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6
Rolling Back OSO

This chapter provides information about rolling back Oracle Communications Cloud Native Core, Operations Services Overlay (OSO) deployment to previous releases.

6.1 Supported Rollback Paths

The following table lists the supported rollback paths for OSO:

Table 6-1 Supported Rollback Paths

Source Release	Target Release
25.2.200	25.2.1xx
25.2.200	25.1.2xx

6.2 Prerequisites

Following are the prerequisites to rollback OSO:

- Ensure that the system has OSO 25.2.200 installed and the OSO is working properly.
- Verify if all the pods and services are up and running.

6.3 Rollback Tasks

To roll back from OSO 25.2.200 to previous releases 25.1.2xx or 25.2.1xx:

1. Run the following command to check the installed Helm charts.

   ```
   $ helm -n oso ls
   ```

   For example:

   ```
   NAME        NAMESPACE    REVISION
   UPDATED                                    STATUS
   CHART                  APP VERSION
   oso-a       oso          2           2025-08-04 17:46:51.998024802 +0000
   UTC    deployed    alertmanager-1.15.1     25.2.200-39-gbc755fc
   oso-alr-cfg    oso          2           2025-08-04 17:47:18.547249161
   +0000 UTC    deployed      oso-alr-config-0.1.0    25.2.200-39-gbc755fc
   oso-apm     oso          1           2025-08-01 22:08:15.58454657  +0000
   UTC    deployed      apm-service-25.2.200    25.2.200-alpha.1
   oso-p       oso          2           2025-08-04 17:46:51.276209128 +0000
   UTC    deployed      prometheus-27.5.0       25.2.200-39-gbc755fc
   ```


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2. Pick a chart to rollback and check the revision you want to roll back your release to. The chart can be either Prometheus or alertmanager.

   ```
   $ helm -n <namespace> history <oso-release-name>
   ```

   For example:

   ```
   $ helm -n oso history oso-p
   ```

   Sample output

   ```
   REVISION        UPDATED                         STATUS
   CHART                   APP VERSION             DESCRIPTION
   1               Fri Aug  1 17:46:51 2025        superseded
   prometheus-27.5.0       25.2.200   Install complete
   2               Mon Aug  4 14:46:19 2025        deployed
   prometheus-27.5.0       25.2.200   Upgrade complete
   ```

3. Pick the revision number to which you wish to roll back your release into. In above example, it will be 1. Run the following command to roll back:

   ```
   $ helm  -n <namespace> rollback <oso-release-name> <oso revision number>
   ```

   For example:

   ```
   $ helm -n oso rollback oso 1
   ```

   Sample output

   ```
   Rollback was a success! Happy Helming!
   ```

   For example:

   ```
   $ helm -n oso history oso-p
   REVISION           UPDATED                         STATUS
   CHART                  APP VERSION       DESCRIPTION
    1               Fri Aug  1 17:46:51 2025        superseded
   prometheus-27.5.0       25.1.200       Install complete
    2              Mon Aug  4 14:46:19 2025        superseded
   prometheus-27.5.0       25.2.100       Upgrade complete
    3              Thu Aug  7 12:37:02 2025        deployed
   prometheus-27.5.0       25.1.200       Rollback to 1
   ```

4. [

   > **Note**
   >
   > This step is only required for Prometheus chart.

   ] After Helm rollback a new Prometheus pod is created but in pending state. To make it into running state, we have to detach the PVC from old pod and attach to the new pod using below steps:

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> **Note**
>
> Find Prometheus deployment name and replace it in the following commands, Both the commands given below should be run at the same time.

```
$ kubectl get deployment -n <oso-namespace>
# Find Prometheus deployment name and replace it in below commands, Both
the commands below needs to be run at the same time
$ kubectl -n <oso-namespace> scale deploy <oso-deployment-name> --
replicas=0
$ kubectl -n <oso-namespace> scale deploy <oso-deployment-name> --
replicas=1
```

For example with sample output

```
$ kubectl -n oso scale deploy oso-p-prom-svr --replicas=0
deployment.apps/oso-prom-svr scaled
$ kubectl -n oso scale deploy oso-p-prom-svr --replicas=1
deployment.apps/oso-prom-svr scaled
```

5. Verify if all the pods are up and running with the latest versions and changes, perform the following command:

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

   For example:

   ```
   $ kubectl get pods -n occne-infra
   ```

   Sample output

   ```
   NAME                              READY   STATUS    RESTARTS   AGE
   oso-prom-alm-0                    2/2     Running   0          25h
   oso-prom-alm-1                    2/2     Running   0          25h
   oso-prom-svr-84c4hfd488-qsnvx     2/2     Running   0          14s
   ```

6. Verify if the upgraded OSO is working as expected by performing the Verifying Installation procedure.

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7 Uninstalling OSO

This chapter provides information about uninstalling Oracle Communications Cloud Native Core, Operations Services Overlay (OSO).

7.1 Uninstalling OSO Using Helm

To uninstall OSO, run the following commands:

1. [Optional]: Take backup of prometheus data using Creating Backup of Prometheus Time Series Database (TSDB) Using Snapshot Utility.
2. Run the following command to list all the OSO components installed using OSO namespace.

   ```
   $ helm list -n <oso-namespace>
   ```

   For example: `$ helm list -n oso`

   Sample output:

   ```
   NAME            NAMESPACE       REVISION
   UPDATED                                 STATUS
   CHART                   APP VERSION
   oso-alm         oso             1               2026-01-22
   07:21:12.915700279 +0000 UTC deployed        alertmanager-1.15.1
   25.2.200
   oso-alrt-config oso             1               2026-01-22
   11:57:34.950494069 +0000 UTC deployed        oso-alr-config-0.1.0
   25.2.200
   oso-apm         oso             1               2026-01-22
   07:21:14.085348726 +0000 UTC deployed        apm-service-25.2.200
   25.2.200
   oso-prom        oso             1               2026-01-22
   07:21:11.719282076 +0000 UTC deployed        prometheus-27.5.0
   25.2.200
   ```

3. Run the following command to list all the Kubernetes services:

   ```
   $ kubectl get all -n <oso-namespace>
   ```

   For example:`$ kubectl get all -n oso`

   Sample output:

   ```
   NAME                                READY   STATUS    RESTARTS   AGE
   pod/apm-svc-6584494467-zfdwv        1/1     Running   0          4h45m
   pod/oso-alm-0                       2/2     Running   0          4h42m
   ```


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```
pod/oso-alm-1                        2/2     Running   0          4h42m
pod/oso-prom-svr-74cff66546-nrrd4    2/2     Running   0          4h45m

NAME                        TYPE        CLUSTER-IP      EXTERNAL-IP
PORT(S)                     AGE
service/apm-svc             ClusterIP   10.233.31.59    <none>
80/TCP                      4h45m
service/oso-alm             NodePort    10.233.11.166   <none>
80:30939/TCP                4h45m
service/oso-alm-headless    ClusterIP   None            <none>        80/
TCP,9094/TCP,9094/UDP   4h45m
service/oso-prom-svr        NodePort    10.233.56.164   <none>
80:31048/TCP                4h45m

NAME                             READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/apm-svc          1/1     1            1           4h45m
deployment.apps/oso-prom-svr     1/1     1            1           4h45m

NAME                                        DESIRED   CURRENT   READY   AGE
replicaset.apps/apm-svc-6584494467          1         1         1       4h45m
replicaset.apps/oso-prom-svr-74cff66546     1         1         1       4h45m

NAME                          READY   AGE
statefulset.apps/oso-alm      2/2     4h45m
```

4. Run the following command to delete all PVCs in the OSO namespace.

```
# Delete all pvcs
$ kubectl delete pvc --all -n <oso-namespace>
```

Sample output

```
persistentvolumeclaim "storage-oso-alm-0" deleted
persistentvolumeclaim "storage-oso-alm-1" deleted
```

5. Run the following commands to uninstall the OSO components:
   - Run the following command to uninstall oso-prometheus.

     ```
     $ helm uninstall oso-prom -n <oso-namespace>
     ```

     For example:

     ```
     $ helm uninstall oso-prom -n oso
     ```

     Sample output:

     ```
     release "oso-prom" uninstalled
     ```

   - Run the following command to uninstall oso-alert-manager.

     ```
     $ helm uninstall oso-alm -n <oso-namespace>
     ```


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For example:

```
$ helm uninstall oso-alm -n oso
```

Sample output:

```
release "oso-alm" uninstalled
```

- Run the following command to uninstall oso-apm service.

```
$ helm uninstall oso-apm -n <oso-namespace>
```

For example:

```
$ helm uninstall oso-apm -n oso
```

Sample output:

```
release "oso-apm" uninstalled
```

- Run the following command to uninstall oso-alert-config.

```
$ helm uninstall oso-alrt-config -n <oso-namespace>
```

For example:

```
$ helm uninstall oso-alrt-config -n oso
```

Sample output:

```
release "oso-alrt-config" uninstalled
```

Helm keeps a record of its releases, so you can still reactivate the release after uninstalling it. Run the following command to verify if all the OSO related resources are uninstalled.

```
$ kubectl get all -n <oso-namespace>
```

Sample output:

```
NAME                                 COMPLETIONS   DURATION   AGE
oso-alr-config-hook-post-install   0/1           138m       138m
```

In case of successful uninstallation, no OSO resource is displayed in the command output.

If the command output displays the OSO resources or objects, then perform Deleting Kubernetes Resources.

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7.2 Deleting Kubernetes Resources

This section describes how to delete Kubernetes resources or objects where OSO is deployed.

> **⚠ Caution**
>
> Be sure before running the following command as it deletes all the Kubernetes objects in the specified namespace.

Run the following command to delete the Kubernetes specific resources:

```
kubectl delete <resource-type> <resource-name> -n <release-namespace>
```

For example:

```
$ kubectl delete job oso-alr-config-hook-post-install
```

Sample output:

```
job.batch "oso-alr-config-hook-post-install" deleted
```


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A
Key Information About OSO

This section provides important information that the user must know about OSO.

The following are some of the important points about OSO installation that you must be aware of:

1. All the services having GUI are converted to ClusterIP as Cloud Native Configuration Console (CNC Console) hyperlinks for OSO GUIs are currently not enabled. Therefore, you can access the GUIs through CNC Console only.
   Run the following command to get the list of services and check their service type.

   ```
   $ kubectl get service -n <namespace>
   ```

   Sample output:

   ```
   NAME                                                    TYPE            CLUSTER-
   IP      EXTERNAL-IP   PORT(S)                          AGE
   apm-svc                                                 ClusterIP
   10.233.48.96    <none>        80/TCP                    4d13h
   oso-prom-alm                                            ClusterIP
   10.233.48.28    <none>        80:31717/TCP              4d13h
   oso-prom-alm-headless                                   ClusterIP
   None            <none>        80/TCP,6783/TCP           4d13h
   oso-prom-svr                                            ClusterIP
   10.233.22.117   <none>        80:30266/TCP              4d13h
   ```

2. Since Alertmanager is a StatefulSets, the Persistent Volume (PV) or Persistent Volume Claim (PVC) do not get deleted automatically when the following helm uninstallation command is run for the respective OSO helm-release:

   ```
   $ helm uninstall oso-release-name -n <namespace>
   ```

   This uninstallation command removes all resources related to the OSO release. However it does not remove the PVs or PVCs for Alertmanager. Therefore, perform the following steps to manually remove PVs and PVCs in Alertmanager:

   a. Run the following command to retrieve the list of PVCs:

      ```
      $ kubectl get pvc -n <namespace>
      ```

      Sample output:

      ```
      NAME             STATUS    VOLUME
      CAPACITY   ACCESS MODES   STORAGECLASS   AGE
      oso-prom-svr     BOUND     pvc-a639c8cb-eee1-4fa3-be1b-d4c4e5d66b9a
      8Gi        RWO            standard       159m
      ```


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```
oso-prom-alm-0   BOUND     pvc-a639c8cb-eee1-4fa3-be1b-d4c4e5d6689J
2Gi        RWO            standard       159m
oso-prom-alm-1   BOUND     pvc-a639c8cb-eee1-4fa3-be1b-d4c4e5d6689k
2Gi        RWO            standard       159m
```

b. Run the following command to delete the PVCs:

```
$ kubectl delete pvc oso-prom-svr oso-prom-alm-0 oso-prom-alm-1 -n
<namespace>
```

Sample output:

```
persistentvolumeclaim "oso-prom-svr" deleted
persistentvolumeclaim "oso-prom-alm-0" deleted
persistentvolumeclaim "oso-prom-alm-1" deleted
```

c. Run the following command to retrieve the PV details:

```
$ kubectl get pv -n <namespace>
```

Sample output:

```
NAME                                       CAPACITY  ACCESS MODES
RECLAIM POLICY   STATUS
CLAIM
STORAGECLASS       REASON   AGE
pvc-104a1c0c-72f7-4ae0-b368-71c4e22082ce   2Gi        RWO
Delete           Bound    osoxyz2/storage-volume-oso-xyz2-prom-
alm-1           standard                   4d13h
pvc-1e75d93e-0731-45f2-9ef7-46cf8cbbb3f9   2Gi        RWO
Delete           Bound    osoxyz1/storage-volume-oso-xyz-prom-
alm-0            standard                   4d13h
pvc-30400fe7-61dd-4e2f-8a50-149e4e14be90   2Gi        RWO
Delete           Bound    osoxyz2/oso-xyz2-prom-
svr                           standard                  4d12h
```

d. Run the following command to delete the PVs:

```
$ kubectl delete pv pvc-104a1c0c-72f7-4ae0-b368-71c4e22082ce
pvc-1e75d93e-0731-45f2-9ef7-46cf8cbbb3f9
pvc-30400fe7-61dd-4e2f-8a50-149e4e14be90 -n osoxyz1
```


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B
Prometheus Vertical Scaling

This section describes the procedure for vertical scaling of Prometheus.

To scale Prometheus deployments, follow these steps:

1. Get the list of deployments and identify the OSO Prometheus deployment with the suffix `prom-svr`:

   ```
   # To list all the deployments in the OSO namespace
   $ kubectl -n <OSO_namespace> get deployments
   # To filter the deployment name by its suffix
   $ kubectl -n <OSO_namespace> get deployments | grep prom-svr
   ```

2. Edit the OSO deployment using the following command:

   > **Note**
   >
   > This will open a *vi* editor with the deployment's yaml definition.

   ```
   $ kubectl -n <OSO_namespace> edit deployment <oso_deployment_name>-prom-svr
   ```

3. Find the `resources` section for the `prom-svr` container in the edit mode of deployment, and edit the amount of resources as per the requirements.

   ```
   name: prom-svr
   ports:
   ... # ports definitions
   readinessProbe:
   ... # readiness probe definition
   resources:
     limits:
       cpu: "2"
       memory: 4Gi
     requests:
       cpu: "2"
       memory: 4Gi
   ```

4. Save and quit from the editor after making the required changes in the yaml file for the CPU and memory. In case of any errors while editing, the editor opens again and error message appears at the top of the yaml file as a comment.

   > **Note**
   >
   > If any of these objects have two containers each, you will find two resources sections. For more information about how to assign resources, see https://kubernetes.io/docs/concepts/configuration/manage-resources-containers/.

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C

Creating Backup of Prometheus Time Series Database (TSDB) Using Snapshot Utility

This section details how users can create backup of Prometheus Time Series Database (TSDB) using the snapshot utility.

> **Note**
>
> The Prometheus PVC size must be increased when the snapshot utility is enabled. For more information about the resources, see Resource Utilization.

Capturing TSDB Snapshots

Perform the following steps to capture the TSDB snapshots:

1. Enable the `web.enable-admin-api` flag provided in `ocoso_csar_25_2_200_0_0_0_prom_custom_values.yaml`:

   ```
   extraFlags:
              - web.enable-lifecycle
              ## web.enable-admin.api flag controls access to the
   administrative HTTP API which includes functionality such as
              ## deleting time series. This is disabled by default.
              - web.enable-admin-api
   ```

2. Install OSO using Installing OSO Using CSAR.
3. Use the ephemeral (Debug) container to capture the snapshot and export it out of Prometheus. After the export is done successfully, ephemeral container will be exited and stopped.

   > **Note**
   >
   > - Take the backup of current Prometheus data. You can wait for a couple days for Prometheus database to fill up with the required data or until OSO's retention period is over (the default period is 7 days). Then, perform the following steps to take the backup.
   > - Use the `occne.io/occne/oso_snapshot:25.2.200` image for ephemeral container. This image is created for the purpose of handling the creation and removal of the TSDB snapshots. You must load and push this image into the customer's central or system registry.

4. Capture snapshots by connecting the Debug container to the Prometheus server. When OSO is configured with `CLUSTER_NAME_PREFIX`, run the following command:

   ```
   $ kubectl -n <oso-namespace> debug <oso-prom-pod-name> -it --
   image=<oso_snapshot_image_url> --target=<name of Prometheus server
   ```


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```
container> --env OSO_PROMETHEUS_SERVICE_NAME=<oso-prometheus-service-name>
--env CLUSTER_NAME_PREFIX=<cluster-name-prefix> &
```

When OSO is **not** configured with `CLUSTER_NAME_PREFIX`, provide only the `OSO_PROMETHEUS_SERVICE_NAME` and run the following command:

```
$ kubectl -n <oso-namespace> debug <oso-prom-pod-name> -it --
image=<oso_snapshot_image_url> --target=<name of Prometheus server
container> --env OSO_PROMETHEUS_SERVICE_NAME=<oso-prometheus-service-name>
&
```

For example:

```
$ kubectl -n oso debug oso-p-prom-svr-55f8d47c74-4vwfx -it --image=occne-
repo-host:5000/occne.io/occne/oso_snapshot:25_2_200 --target=prom-svr --
env OSO_PROMETHEUS_SERVICE_NAME=oso-p-prom-svr --env
CLUSTER_NAME_PREFIX=occne3-n2 &

Targeting container "prom-svr". If you don't see processes from this
container it may be because the container runtime doesn't support this
feature.
--profile=legacy is deprecated and will be removed in the future. It is
recommended to explicitly specify a profile, for example "--
profile=general".
Defaulting debug container name to debugger-x25bq.
If you don't see a command prompt, try pressing enter.

[1]+  Stopped        kubectl -n oso debug oso-p-prom-svr-55f8d47c74-4vwfx -
it --image=occne-repo-host:5000/occne.io/occne/oso_snapshot:25_2_200 --
target=prom-svr --env OSO_PROMETHEUS_SERVICE_NAME=oso-p-prom-svr --env
CLUSTER_NAME_PREFIX=occne3-n2
```

> **Note**
>
> There is an ampersand (&) character at the end of the command. This character indicates that the process is running in the background and allows the terminal available for other processes. In the above example, "`Defaulting debug container name to debugger-x25bq.`", the name "`debugger-x25bq`" indicates the ephemeral container name of the active container. This is used to copy the snapshot out of the pod and to remove it later.

5. Run the below command to view the logs, when the snapshot process is running in the background. The output should look like below with "`200 OK`" code.

```
kubectl -n <oso-namespace> logs <oso-prom-pod-name> -c <ephemeral-
container-name>
```

For example:

```
$ kubectl -n oso logs oso-p-prom-svr-55f8d47c74-4vwfx -c debugger-x25bq
```


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Sample output:

```
total 36K
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
-rw-r--r--. 1 nobody nobody 7.2K Aug 20 16:53 snapshots.log
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
  % Total    % Received % Xferd  Average Speed   Time    Time     Time
Current
                                 Dload  Upload   Total   Spent    Left
Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:--
--:--:--     0*   Trying 10.233.11.145:80...
* Connected to oso-p-prom-svr (10.233.11.145) port 80 (#0)
> POST /occne3-n2/prometheus/api/v1/admin/tsdb/snapshot HTTP/1.1
> Host: oso-p-prom-svr
> User-Agent: curl/7.76.1
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
< Content-Type: application/json
< Date: Wed, 20 Aug 2025 16:53:24 GMT
< Content-Length: 72
<
{ [72 bytes data]
100    72  100    72    0     0   1440      0 --:--:-- --:--:-- --:--:--
1440
* Connection #0 to host oso-p-prom-svr left intact
```

6. Verify if the log of the curl command that issues the snapshot creation logic inside debug container is successful, by looking for a "`< HTTP/1.1 200 OK`" in the above sample output. Export the tarball (.tgz artifact) out of the debug container using the following command.

   ```
   $ kubectl cp <oso-namespace>/<oso-prom-svr-pod-name>:/proc/1/root/data/
   snapshots.tgz -c <debug-container-name> /tmp/<snapshot-folder-name>/
   snapshots.tgz
   ```

Figure C-1 Exporting tgz artifact from Debug container

7. Get the snapshot process back to foreground, once the snapshots tar is available in the local system, by running the following command:

   ```
   $ fg $(jobs | awk -F '[][]' '/oso_snapshot/{print $2}')
   ```

   For example:

   ```
   $ fg $(jobs | awk -F '[][]' '/oso_snapshot/{print $2}')
   ```


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Sample output:

```
$ fg $(jobs | awk -F '[][]' '/oso_snapshot/{print $2}')
kubectl -n oso debug oso-p-prom-svr-55f8d47c74-4vwfx -it --image=occne-
repo-host:5000/occne.io/occne/oso_snapshot:25_2_200 --target=prom-svr --
env OSO_PROMETHEUS_SERVICE_NAME=oso-p-prom-svr --env
CLUSTER_NAME_PREFIX=occne3-n2
```

The above step leaves the terminal in a waiting state.

Press **Enter** in the terminal to finalize the process and to see the full log of the snapshot creation process.

```
------------------------------ Snapshot procedure started
---------------------------------

STEP 1: CHECKING FOR EXISTING SNAPSHOT ARCHIVES AND CLEANING UP IF
NECESSARY

Listing current contents of the directory for snapshot archives:

total 32K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
-rw-r--r--. 1 nobody nobody  239 Aug 20 16:51 snapshots.log

No previous snapshots.tgz found. All clear!

No previous snapshots directory found. All clear!

STEP 2: CAPTURING SNAPSHOT OF CURRENT PROMETHEUS DB USING ADMINISTRATIVE
API

Wed Aug 20 16:51:01 UTC 2025

Sending POST request to Prometheus API to create a snapshot with Cluster
Name Prefix...

Executing: curl -vvv -XPOST "http://oso-p-prom-svr/occne3-n2/
prometheus/api/v1/admin/tsdb/snapshot"

  % Total    % Received % Xferd  Average Speed   Time    Time     Time
Current
                                 Dload  Upload   Total   Spent    Left
Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:--
--:--:--     0*   Trying 10.233.11.145:80...
* Connected to oso-p-prom-svr (10.233.11.145) port 80 (#0)
> POST /occne3-n2/prometheus/api/v1/admin/tsdb/snapshot HTTP/1.1
> Host: oso-p-prom-svr
> User-Agent: curl/7.76.1
> Accept: */*
```


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```
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
< Content-Type: application/json
< Date: Wed, 20 Aug 2025 16:51:01 GMT
< Content-Length: 72
<
{ [72 bytes data]
100    72  100    72    0     0    911      0 --:--:-- --:--:-- --:--:--
911
* Connection #0 to host oso-p-prom-svr left intact
{"status":"success","data":\{"name":"20250820T165101Z-0eb533ff8d43ed64"}}

 Snapshot is successfully created!

 Directory contents of Prometheus DB AFTER successful Snapshot:

total 36K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:51 snapshots
-rw-r--r--. 1 nobody nobody 2.0K Aug 20 16:51 snapshots.log

STEP 3: CREATING EXPORTABLE ARCHIVE OF THE SNAPSHOT DATA

 Snapshots is successfully archived!

total 40K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:51 snapshots
-rw-r--r--. 1 nobody nobody  162 Aug 20 16:51 snapshots.tgz
-rw-r--r--. 1 nobody nobody 2.5K Aug 20 16:51 snapshots.log
Non-interactive shell detected. Skipping interactive prompt...

---------------------------------- Snapshot creation procedure completed
--------------------------------------

------------------------------- Snapshot procedure started
----------------------------------

STEP 1: CHECKING FOR EXISTING SNAPSHOT ARCHIVES AND CLEANING UP IF
NECESSARY

Listing current contents of the directory for snapshot archives:

total 40K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
```


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```
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:51 snapshots
-rw-r--r--. 1 nobody nobody  162 Aug 20 16:51 snapshots.tgz
-rw-r--r--. 1 nobody nobody 3.3K Aug 20 16:53 snapshots.log

Found snapshots.tgz archive. Deleting...

 Successfully deleted!

Found snapshots directory. Deleting...

 Successfully deleted!

STEP 2: CAPTURING SNAPSHOT OF CURRENT PROMETHEUS DB USING ADMINISTRATIVE
API

Wed Aug 20 16:53:01 UTC 2025

Sending POST request to Prometheus API to create a snapshot with Cluster
Name Prefix...

Executing: curl -vvv -XPOST "http://oso-p-prom-svr/occne3-n2/
prometheus/api/v1/admin/tsdb/snapshot"

  % Total    % Received % Xferd  Average Speed   Time    Time     Time
Current
                                 Dload  Upload   Total   Spent    Left
Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:--
--:--:--     0*   Trying 10.233.11.145:80...
* Connected to oso-p-prom-svr (10.233.11.145) port 80 (#0)
> POST /occne3-n2/prometheus/api/v1/admin/tsdb/snapshot HTTP/1.1
> Host: oso-p-prom-svr
> User-Agent: curl/7.76.1
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
< Content-Type: application/json
< Date: Wed, 20 Aug 2025 16:53:01 GMT
< Content-Length: 72
<
{ [72 bytes data]
100    72  100    72    0     0   2000      0 --:--:-- --:--:-- --:--:--
1945
* Connection #0 to host oso-p-prom-svr left intact
{"status":"success","data":\{"name":"20250820T165301Z-0572f8dd893c2028"}}

 Snapshot is successfully created!

 Directory contents of Prometheus DB AFTER successful Snapshot:

total 40K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
```


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```
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:53 snapshots
-rw-r--r--. 1 nobody nobody 5.3K Aug 20 16:53 snapshots.log

STEP 3: CREATING EXPORTABLE ARCHIVE OF THE SNAPSHOT DATA

 Snapshots is successfully archived!

total 44K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:53 snapshots
-rw-r--r--. 1 nobody nobody  161 Aug 20 16:53 snapshots.tgz
-rw-r--r--. 1 nobody nobody 5.8K Aug 20 16:53 snapshots.log
Non-interactive shell detected. Skipping interactive prompt...

---------------------------------- Snapshot creation procedure completed
----------------------------------------

------------------------------- Snapshot procedure started
---------------------------------

STEP 1: CHECKING FOR EXISTING SNAPSHOT ARCHIVES AND CLEANING UP IF
NECESSARY

Listing current contents of the directory for snapshot archives:

total 44K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:53 snapshots
-rw-r--r--. 1 nobody nobody  161 Aug 20 16:53 snapshots.tgz
-rw-r--r--. 1 nobody nobody 6.6K Aug 20 16:53 snapshots.log

Found snapshots.tgz archive. Deleting...

 Successfully deleted!

Found snapshots directory. Deleting...

 Successfully deleted!

STEP 2: CAPTURING SNAPSHOT OF CURRENT PROMETHEUS DB USING ADMINISTRATIVE
API

Wed Aug 20 16:53:24 UTC 2025

Sending POST request to Prometheus API to create a snapshot with Cluster
```


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```
Name Prefix...

Executing: curl -vvv -XPOST "http://oso-p-prom-svr/occne3-n2/
prometheus/api/v1/admin/tsdb/snapshot"

  % Total    % Received % Xferd  Average Speed   Time    Time     Time
Current
                                 Dload  Upload   Total   Spent    Left
Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:--
--:--:--     0*   Trying 10.233.11.145:80...
* Connected to oso-p-prom-svr (10.233.11.145) port 80 (#0)
> POST /occne3-n2/prometheus/api/v1/admin/tsdb/snapshot HTTP/1.1
> Host: oso-p-prom-svr
> User-Agent: curl/7.76.1
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
< Content-Type: application/json
< Date: Wed, 20 Aug 2025 16:53:24 GMT
< Content-Length: 72
<
{ [72 bytes data]
100    72  100    72    0     0   1440      0 --:--:-- --:--:-- --:--:--
1440
* Connection #0 to host oso-p-prom-svr left intact
{"status":"success","data":\{"name":"20250820T165324Z-3e8dc6572924e398"}}

 Snapshot is successfully created!

 Directory contents of Prometheus DB AFTER successful Snapshot:

total 44K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:53 snapshots
-rw-r--r--. 1 nobody nobody 8.5K Aug 20 16:53 snapshots.log

STEP 3: CREATING EXPORTABLE ARCHIVE OF THE SNAPSHOT DATA

 Snapshots is successfully archived!

total 48K
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:53 snapshots
-rw-r--r--. 1 nobody nobody  163 Aug 20 16:53 snapshots.tgz
-rw-r--r--. 1 nobody nobody 9.0K Aug 20 16:53 snapshots.log
```


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```
---------------------------------- Snapshot creation procedure completed
---------------------------------------

Session ended, the ephemeral container will not be restarted but may be
reattached using 'kubectl attach oso-p-prom-svr-55f8d47c74-4vwfx -c
debugger-x25bq -i -t' if it is still running
```

8. (Mandatory) Clean up the snapshot archive. Run the following command to remove the snapshots created.

> **Warning**
>
> Failing to perform the following step will leave a snapshot hanging in your system and may fill up your system's storage.

```
kubectl -n <oso-namespace> debug <oso-prom-pod-name> -it --
image=<oso_snapshot_image_url> --target=prom-svr --env REMOVE=yes
```

9. Verify the output of the above command to confirm if the snapshots were removed. For example:

```
$ kubectl -n oso debug oso-p-prom-svr-55f8d47c74-4vwfx -it --image=occne-
repo-host:5000/occne.io/occne/oso_snapshot:25_2_200 --target=prom-svr --
env REMOVE=yes
```

Sample output:

```
Targeting container "prom-svr". If you don't see processes from this
container it may be because the container runtime doesn't support this
feature.
--profile=legacy is deprecated and will be removed in the future. It is
recommended to explicitly specify a profile, for example "--
profile=general".
Defaulting debug container name to debugger-fc5q6.

---------------------------------- REMOVE flag is set to 'yes'. Cleaning
up snapshot archives -----------------------------------

 Prometheus DB Directory contents BEFORE cleanup:
total 48K
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 3 nobody nobody 4.0K Aug 20 16:53 snapshots
-rw-r--r--. 1 nobody nobody 9.5K Aug 20 16:54 snapshots.log
-rw-r--r--. 1 nobody nobody  163 Aug 20 16:53 snapshots.tgz
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal

 Snapshots archives removed successfully!
```


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```
 Prometheus DB Directory contents AFTER cleanup:
total 28K
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 chunks_head
-rw-r--r--. 1 nobody nobody    0 Aug 19 17:12 lock
drwxrws---. 2 root   nobody  16K Aug 19 17:12 lost+found
-rw-r--r--. 1 nobody nobody  20K Aug 19 17:12 queries.active
drwxr-sr-x. 2 nobody nobody 4.0K Aug 19 17:12 wal

---------------------------------- Snapshot cleanup process completed
-------------------------------------
```

10. (Mandatory)Validate the contents of the snapshot by running the following command on the snapshot file:

    ```
    $ tar tvf snapshots.tgz
    ```

    For example:

    ```
    $ tar tvf snapshots.tgz
    drwxr-sr-x nobody/nobody      0 2025-08-25 21:11 snapshots/
    drwxr-sr-x nobody/nobody      0 2025-08-25 21:11 snapshots/
    20250825T211118Z-0aa128d1c1f37e71/
    drwxr-sr-x nobody/nobody      0 2025-08-25 21:11 snapshots/
    20250107T084350Z-2a422bf3ea6cee2c/01JGZYYEXF1DR08XFAHX99Z1EW/
    drwxr-sr-x nobody/nobody      0 2025-08-25 21:11 snapshots/
    20250107T084350Z-2a422bf3ea6cee2c/01JGZYYEXF1DR08XFAHX99Z1EW/chunks/
    -rw-r--r-- nobody/nobody  14004 2025-08-25 21:11 snapshots/
    20250107T084350Z-2a422bf3ea6cee2c/01JGZYYEXF1DR08XFAHX99Z1EW/chunks/000001
    -rw-r--r-- nobody/nobody      9 2025-08-25 21:11 snapshots/
    20250107T084350Z-2a422bf3ea6cee2c/01JGZYYEXF1DR08XFAHX99Z1EW/tombstones
    -rw-r--r-- nobody/nobody  69072 2025-08-25 21:11 snapshots/
    20250107T084350Z-2a422bf3ea6cee2c/01JGZYYEXF1DR08XFAHX99Z1EW/index
    -rw-r--r-- nobody/nobody    273 2025-08-25 21:11 snapshots/
    20250107T084350Z-2a422bf3ea6cee2c/01JGZYYEXF1DR08XFAHX99Z1EW/meta.json
    ```

    > **Note**
    >
    > If the snapshot in your system does not have the structure shown above, delete the snapshot and try the process again.

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