Oracle® Communications

Cloud Native Core Solution Upgrade Guide

Release 3.24.3
G16999-01
November 2024

Oracle Communications Cloud Native Core Solution Upgrade Guide, Release 3.24.3

G16999-01

Contents

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Acronyms

Table Acronyms

Term	Definition
BSF	Oracle Communications Cloud Native Core, Binding Support Function
CNC	Cloud Native Core
cnDBTier	Oracle Communications Cloud Native Core, Cloud Native Database Tier
CNE	Oracle Communications Cloud Native Core, Cloud Native Environment
Policy	Oracle Communications Cloud Native Core, Converged Policy
NEF	Oracle Communications Cloud Native Core, Network Exposure Function
NF	Network Function
NRF	Oracle Communications Cloud Native Core, Network Repository Function
NSSF	Oracle Communications Cloud Native Core, Network Slice Selection Function
OCCM	Oracle Communications Cloud Native Core, Certification Management
OSO	Oracle Communications Cloud Native Core, Operation Services Overlay
PDB	Pod Distribution Budget
SCP	Oracle Communications Cloud Native Core, Service Communication Proxy
SEPP	Oracle Communications Cloud Native Core, Security Edge Protection Proxy
UDR	Oracle Communications Cloud Native Core, Unified Data Repository

What's New in This Guide

This section introduces the documentation updates for release 3.24.3.

Release 3.24.3 - G16999-01, November 2024

Updated the source and target release versions for the upgrade and rollback in Table 2-1 and Table 2-3 respectively in the CNC Upgrade with CNE chapter.

1 Introduction

1.1 Overview

Oracle's Network Functions support deployment on Oracle Communications Cloud Native Core, Cloud Native Environment (CNE), non-Oracle cloud native environment, and Cloud Infrastructure (OCI) environment. This document provides information on Cloud Native Core (CNC) upgrade guidelines required to upgrade and rollback Oracle CNC solutions in the following environment:

- CNE: For information on upgrade or rollback procedures, see CNC Upgrade with Oracle CNE.
- Non-Oracle CNE: For information on upgrade or rollback procedures, see CNC Upgrade with Non-Oracle CNE.
- Oracle Cloud Infrastructure (OCI): For information on upgrade or rollback procedures, see CNC Upgrade with OCI.

Oracle CNC includes the following components:

- Oracle Communications Cloud Native Core, Binding Support Function (BSF)
- Oracle Communications Cloud Native Configuration Console (CNC Console)
- Oracle Communications Cloud Native Core, cnDBTier (cnDBTier)
- Oracle Communications Operations Services Overlay (OSO)
- Oracle Communications Cloud Native Core, Converged Policy (Policy)
- Oracle Communications Cloud Native Core, Service Communication Proxy (SCP)
- Oracle Communications Cloud Native Core, Security Edge Protection Proxy (SEPP)
- Oracle Communications Cloud Native Core, Network Exposure Function (NEF)
- Oracle Communications Cloud Native Core, Network Repository Function (NRF)
- Oracle Communications Cloud Native Core, Network Slice Selection Function (NSSF)
- Oracle Communications Cloud Native Core, Unified Data Repository (UDR)
- Oracle Communications Cloud Native Core, Certification Management (OCCM)
- Oracle Communications Cloud Native Core, OCI Adaptor NF Deployment on OCI Guide
- Oracle Communications Cloud Native Core, Reference Architecture for CNC deployment on OCI

1.2 References

The following references provide additional information on product operations, maintenance, and support:

- *Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide.*

- *Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, cnDBTier Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Operations Services Overlay Installation and Upgrade Guide.*
- *Oracle Communications Cloud Native Core, Network Slice Selection Function Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Policy Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Network Exposure Function Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Unified Data Repository Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Security Edge Protection Proxy Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Binding Support Function Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, Certification Management Installation, Upgrade, and Fault Recovery Guide.*
- *Oracle Communications Cloud Native Core, OCI Adaptor NF Deployment on OCI Guide*
- *Oracle Communications, Reference Architecture for CNC deployment on OCI*

2

CNC Upgrade with CNE

This chapter provides information about Cloud Native Core (CNC) upgrade in a Oracle Communications Cloud Native Core, Cloud Native Environment (CNE).

2.1 Overview

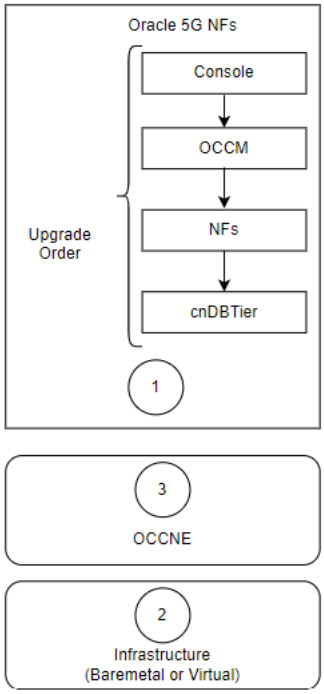
This section provides an overview of how to perform an upgrade of Oracle CNC with Oracle Communications Cloud Native Core, Cloud Native Environment (CNE). You must complete the preupgrade procedures described in each subsection to ensure that the system is ready for an upgrade.

You can upgrade each Cloud Native Core (CNC) related network function (and its components) from the specified source release to the target release. Once the required network function is up and running, upgrade infrastructure, followed by CNE upgrade.

> **Note**
>
> The upgrade procedure for the infrastructure is not covered in this document. For more information about infrastructure upgrades, see the relevant infrastructure document.

If you are using Oracle's full-stack, perform the upgrade procedure in the following sequence:

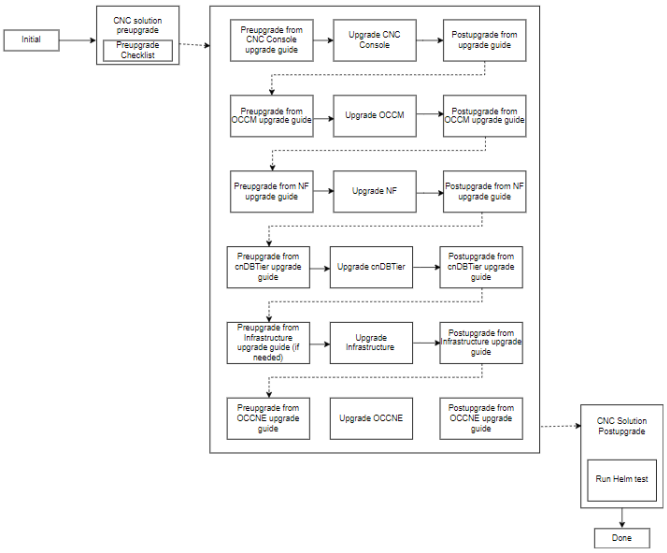
Figure 2-1 CNC Upgrade Order on Oracle Communications Cloud Native Core, Cloud Native Environment



2.2 Planning Upgrade

The following flow diagram gives a high-level overview of the sequence to be followed for upgrading CNC solution.

Figure 2-2 Planning Upgrade of CNC Solution



The following table lists the supported upgrade sequence:

Table 2-1 Upgrade Sequence

Deployment Mode	Source Version	Target Version	Upgrade Sequence
Single Cluster or Multicluster	24.2.x, 24.1.x	24.3.0	1. Oracle NFs a. CNC Console Upgrade b. OCCM Upgrade c. NF Upgrade d. cnDBTier Upgrade 2. Infrastructure (if needed) 3. CNE

2.2.1 General Guidelines

Oracle recommends the following guidelines for upgrading CNC solution with CNE:

- Perform upgrade testing in sandbox or lab deployment before testing in production sites.
- Upgrade all components to their target release, as per the compatibility matrix provided in the *Oracle Communications Cloud Native Core Release Notes*.
- In a multisite deployment model, perform the upgrade of one site at a time. Follow the sequence mentioned in upgrade sequence to upgrade all the components in the specific site and then proceed to the next site.
  Refer to cnDBTier and NF-specific installation, upgrade, and fault recovery guide for post upgrade steps to verify the health of cnDBTier services and NF components.
- It is recommended to perform an upgrade of CNC Console, OCCM, NF, and cnDBTier in a single maintenance window. If upgrade takes longer than a single maintenance window, individual components can be upgraded in multiple maintenance windows. Ensure that the upgrade order is followed as per the sequence mentioned in upgrade sequence.
- Ensure that Console and NF versions are compatible with OCCM before integration.
- Perform infrastucture upgrade, if needed.
- You can perform a CNE upgrade in multiple maintenance windows. For more information about upgrading CNE, see *Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide*.
- If CNE is a shared cluster, upgrade all the instances of CNC Console, OCCM, NF, and cnDBTier before upgrading CNE.
- If multiple NFs share a cnDBTier, upgrade all the instances of CNC Console, OCCM, and NFs sharing that cnDBTier of the specific site, before upgrading the cnDBTier of the site.
- Rollback is the reverse order of upgrade.

2.2.2 Preupgrade Checklist

Go through the following checklist before performing an upgrade.

2.2.2.1 Resource Requirement

This section details about the resources required to upgrade CNE and Oracle Network Functions.

2.2.2.1.1 Cloud Native Environment

CNE automatically drains its worker nodes while performing the upgrade. When a worker node is drained, Kubernetes safely evicts all of the pods that were hosted on that worker node.

> **Note**
>
> NF, cnDBTier, and CNC Console support Pod Distribution Budget (PDB) to gracefully handle worker node draining. Thus, based on available resources, a CNE worker node upgrade will happen. Operator needs to ensure that enough resources are available after draining the worker node. For more information on CNE resource requirements, see *Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide*.

2.2.2.1.2 Network Functions

For CNC Console, OCCM, NF, OSO, and cnDBTier upgrade, reevaluate resource requirement before performing the upgrade. It is possible that CNC Console, OCCM, NF, OSO, or cnDBTier requires additional resources due to changes in architecture or service model.

For more information on NF resource requirements, see NF-specific installation, upgrade, and fault recovery guides.

2.2.2.2 Prerequisites

Ensure that the following prerequisites are met before performing an upgrade:

- Verify that all required worker nodes are available for scheduling pods during upgrade. For example, taints applied on worker nodes (for any maintenance activity etc.). Make sure required number of worker nodes are available as per dimensioning before upgrade.
- Ensure that at least two worker nodes (that is, resource for largest worker node in cluster x 2) worth of total resources are free and available in CNE cluster.
- Monitor infrastructure related issue (for example, storage or hardware alarms from infrastructure) manually before CNE or Operating System upgrade.
- Take a backup of the following artifacts after installation of each of the CNC components:
  - custom values.yaml file
  - servicemesh-config-custom-values.yaml file
  - Updated helm charts
  - Secrets
  - Certificates
  - Keys used

- See CNC Console, OCCM, NF, cnDBTier, and CNE installation and upgrade guides for preupgrade task details before upgrading respective components.

2.2.3 Upgrade Workflow

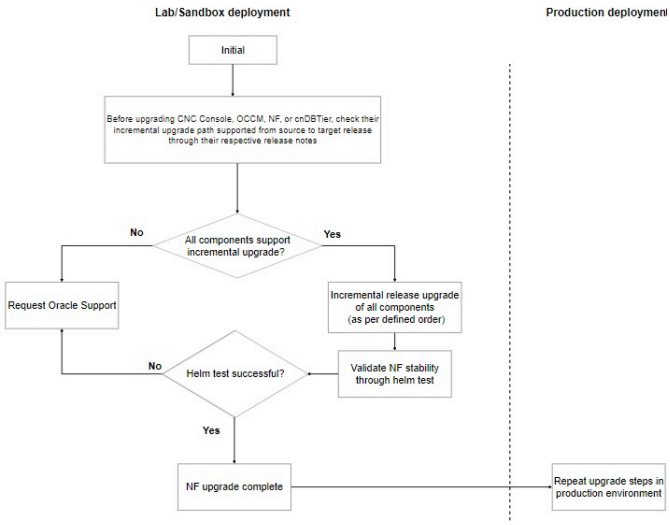
The section provides details about the upgrade sequence.

See CNC Console, OCCM, NF, cnDBTier, and CNE installation and upgrade guides for details on upgrading the respective components. The infrastructure upgrade is performed (if needed) after NF upgrade and before CNE upgrade.

2.2.3.1 CNC Console, OCCM, NF, and cnDBTier Upgrade

This section describes the upgrade workflow for CNC Console, OCCM, NF, and cnDBTier.

Figure 2-3 CNC Console, OCCM, NF, and cnDBTier Upgrade with CNE



The following procedure explains the upgrade work flow for Oracle NF:

1. Check the supported upgrade path for each NF. To know the upgrade path, see *Oracle Communications Cloud Native Core Release Notes*.

> **Note**
>
> For multisite deployment model, follow the procedure on each site.

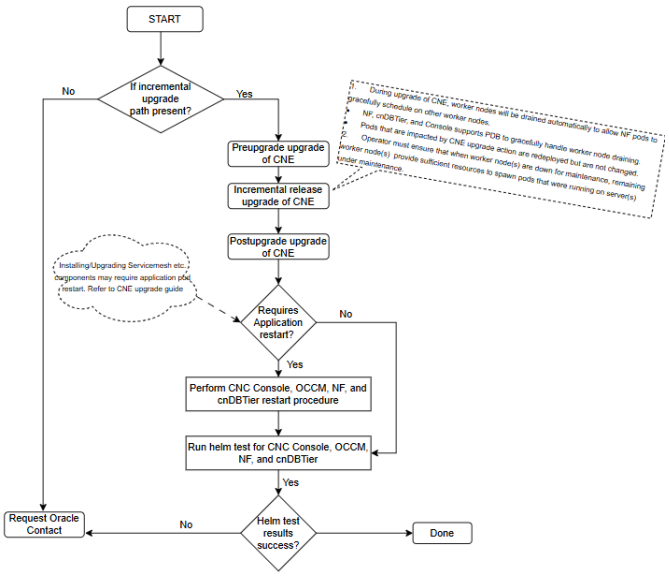
2. Check if all the components support incremental upgrades. If it is not supported, perform one of the following procedure:
   a. perform multiple hop upgrades.
   b. perform a fresh installation after site isolation.
   c. contact My Oracle Support.
3. Upgrade the components based on the upgrade sequence mentioned in the Planning Upgrade section.

4. Run the Helm test command to check the upgrade status.
5. Once the Helm test is successful, then the upgrade is complete.
6. Perform the above upgrade steps in the production environment.

2.2.3.2 CNE Upgrade

The following flow diagrams explains the process for upgrading CNE:

Figure 2-4 CNE Upgrade Procedure



The following procedure explains the upgrade workflow for Oracle Communications Cloud Native Core, Cloud Native Environment (CNE):

1. Check the supported upgrade path for CNE. To know the upgrade path, see *Oracle Communications Cloud Native Core Release Notes*.
2. Check if CNE supports incremental upgrades. If it is not supported, contact My Oracle Support.
3. Upgrade the components based on the upgrade sequence mentioned in the Planning Upgrade section.
4. Check and perform an application pod restart, if required.
   For example: After upgrading the service mesh, restart the application pods of CNC Console, OCCM, NF, and cnDBTier even if they are running on the latest versions.
5. Run the Helm test command to check the upgrade status.
6. Once the Helm test is successful, the upgrade is complete.

2.3 Performing the Upgrade

See the following documents for detailed procedures to upgrade the respective components:

Table 2-2 CNC Components Document Reference

CNC Components	Upgrade Supported?	Document Reference
Oracle Communications Cloud Native Core, Binding Support Function (BSF)	Yes	*Oracle Communications Cloud Native Core, Binding Support Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Configuration Console (CNC Console)	Yes	*Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Cloud Native Environment (CNE)	Yes	*Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, cnDBTier (cnDBTier)	Yes	*Oracle Communications Cloud Native Core, cnDBTier Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Exposure Function (NEF)	Yes	*Oracle Communications Cloud Native Core, Network Exposure Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Repository Function (NRF)	Yes	*Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Slice Selection Function (NSSF)	Yes	*Oracle Communications Cloud Native Core, Network Slice Selection Function Installation, Upgrade, and Fault Recovery Guide* **Note**: In case of georedundant deployment, first upgrade cnDBTier on all sites and then NSSF on all sites.
Oracle Communications Cloud Native Core, Converged Policy (Policy)	Yes	*Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Security Edge Protection Proxy (SEPP)	Yes	*Oracle Communications Cloud Native Core, Security Edge Protection Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Service Communication Proxy (SCP)	Yes	*Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Unified Data Repository (UDR)	Yes	*Oracle Communications Cloud Native Core, Unified Data Repository Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Certification Management (OCCM)	Yes	*Oracle Communications Cloud Native Core, Certification Management, Upgrade, and Fault Recovery Guide*

2.4 Performing the Postupgrade Tasks

This section explains the postupgrade tasks.

2.4.1 NF Postupgrade

- Verify postupgrade of all the components by running the "`helm test`" provided by CNC Console, OCCM, NF, and cnDBTier to verify the deployment health and status.
- See CNC Console, OCCM, NF, and cnDBTier installation, upgrade, and fault recovery guides for postupgrade task details after upgrading the respective components.

2.4.2 CNE Postupgrade

For information on CNE postupgrade tasks, see *Oracle Communications Cloud Native Core, Cloud Native Environment Installation, Upgrade, and Fault Recovery Guide*.

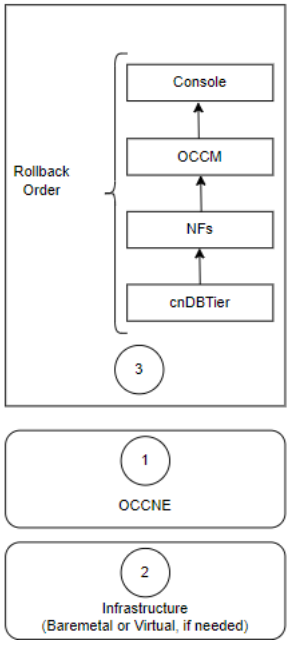
2.5 Performing the Rollback

> **Note**
>
> Before rollback contact My Oracle Support to analyze the cause of failure and any possible workarounds.

This section helps you to decide the order of the rollback of the components that were upgraded successfully. For example, a rollback is triggered if the cnDBTier upgrade fails (or validation after an upgrade fails) for any reason, and this guide provides the information to perform the rollback of NFs and CNC Console in a given order.

The following diagram details the rollback sequence:

Figure 2-5 Rollback Sequence



The following table lists the supported rollback sequence:

Table 2-3 Rollback Sequence

Deployment Mode	Source Version	Target Version	Rollback Sequence
Single Cluster or Multicluster	24.3.0	24.2.x, 24.1.x	1. CNE roll back 2. Infrastructure roll back 3. Oracle NFs a. cnDBTier roll back b. NF roll back c. OCCM roll back d. CNC Console roll back

See the following documents for detailed procedures to roll back the respective components:

Table 2-4 CNC Components Document Reference

CNC Components	Document Reference
Oracle Communications Cloud Native Core, Binding Support Function (BSF)	*Oracle Communications Cloud Native Core, Binding Support Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Configuration Console (CNC Console)	*Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, cnDBTier (cnDBTier)	*Oracle Communications Cloud Native Core, cnDBTier Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Exposure Function (NEF)	*Oracle Communications Cloud Native Core, Network Exposure Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Repository Function (NRF)	*Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Slice Selection Function (NSSF)	*Oracle Communications Cloud Native Core, Network Slice Selection Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Converged Policy (Policy)	*Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Security Edge Protection Proxy (SEPP)	*Oracle Communications Cloud Native Core, Security Edge Protection Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Service Communication Proxy (SCP)	*Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Unified Data Repository (UDR)	*Oracle Communications Cloud Native Core, Unified Data Repository Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Certification Management (OCCM)	*Oracle Communications Cloud Native Core, Certification Management Installation, Upgrade, and Fault Recovery Guide*

2.6 Performing the Postrollback Tasks

Perform the following postrollback tasks:

- Verify the rollback of all the components by running the "`helm test`" provided by CNC Console, OCCM, NF, and cnDBTier to verify the deployment health and status.
- See CNC Console, OCCM, NF, cnDBTier, and CNE installation and upgrade guides for postrollback task details after rolling back respective components.

3

CNC Upgrade with Non-Oracle Cloud Native Environment

This chapter provides information about Cloud Native Core (CNC) upgrade in a non-Oracle cloud native environment.

3.1 Overview

This section provides an overview of how to perform an upgrade of Oracle CNC with non-Oracle cloud native environment. You must complete the preupgrade procedures described in each subsection to ensure that system is ready for an upgrade.

You can upgrade each Cloud Native Core (CNC) related network function (and its components) from the specified source release to the target release. Once the required network function is up and running, upgrade non-Oracle cloud native environment or infrastructure.

3.2 Planning Upgrade

This section explains the planning for upgrading CNC with non-Oracle cloud native environment.

3.2.1 General Guidelines

Oracle recommends the following guidelines:

- Perform upgrade testing in sandbox or lab deployment before testing in production sites.
- Upgrade all components to their target release, as per the compatibility matrix provided in the CNC release notes.
- In a multisite deployment model, perform the upgrade of one site at a time. Follow the sequence mentioned in upgrade sequence to upgrade all the components in the specific site and then proceed to the next site.
  Refer to cnDBTier and NF-specific installation, upgrade, and fault recovery guide for post upgrade steps to verify the health of cnDBTier services and NF components.
- Perform an upgrade of CNC Console, OCCM, NF, and cnDBTier in a single maintenance window. If upgrade takes longer than a single maintenance window, individual components can be upgraded in multiple maintenance windows. Ensure that the upgrade order is followed as per the sequence mentioned in upgrade sequence.
- Ensure that CNC Console and NF versions are compatible with OCCM before integration.
- If multiple NFs share a cnDBTier, upgrade all the instances of CNC Console, OCCM, and NFs sharing that cnDBTier of the specific site, before upgrading the cnDBTier of the site.
- Rollback is the reverse order of upgrade.

3.2.2 Preupgrade Checklist

Go through the following checklist before performing an upgrade.

3.2.2.1 Resource Requirement

This section details about the resources required to upgrade a non-Oracle cloud native environment and Oracle Network Functions.

3.2.2.1.1 Cloud Native Environment

Ensure that the number of planned resources required for NF, CNC Console, and cnDBTier are available during the non-Oracle cloud native environment upgrade.

For more information on non-Oracle cloud native environment resource requirements, see the installation and upgrade guide provided by the non-Oracle cloud native environment vendor.

3.2.2.1.2 Network Functions

For CNC Console, OCCM, NF, OSO, and cnDBTier upgrade, reevaluate resource requirement before performing the upgrade. It is possible that CNC Console, OCCM, NF, OSO, or cnDBTier requires additional resources due to changes in architecture or service model.

For more information on NF resource requirements, see NF-specific installation, upgrade, and fault recovery guides.

3.2.2.2 Prerequisites

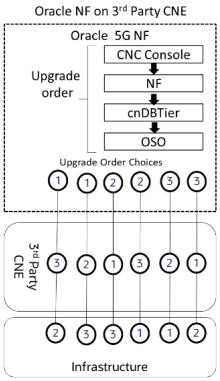
Ensure that you have the following prerequisites before performing an upgrade:

- Keep the backup of the following artifacts from your recent successful installation handy:
  - custom values.yaml file
  - servicemesh-config-custom-values.yaml file, if any
  - Updated helm charts
  - Secrets
  - Certificates
  - Keys used
- See CNC Console, OCCM, NF, cnDBTier, and OSO guides for preupgrade task details before upgrading respective components.
- Refer to customer-specific non-Oracle cloud native environment Upgrade document for preupgrade tasks.

3.2.3 Upgrade Workflow

The following diagram details the upgrade sequence if you are using a non-Oracle CNE.

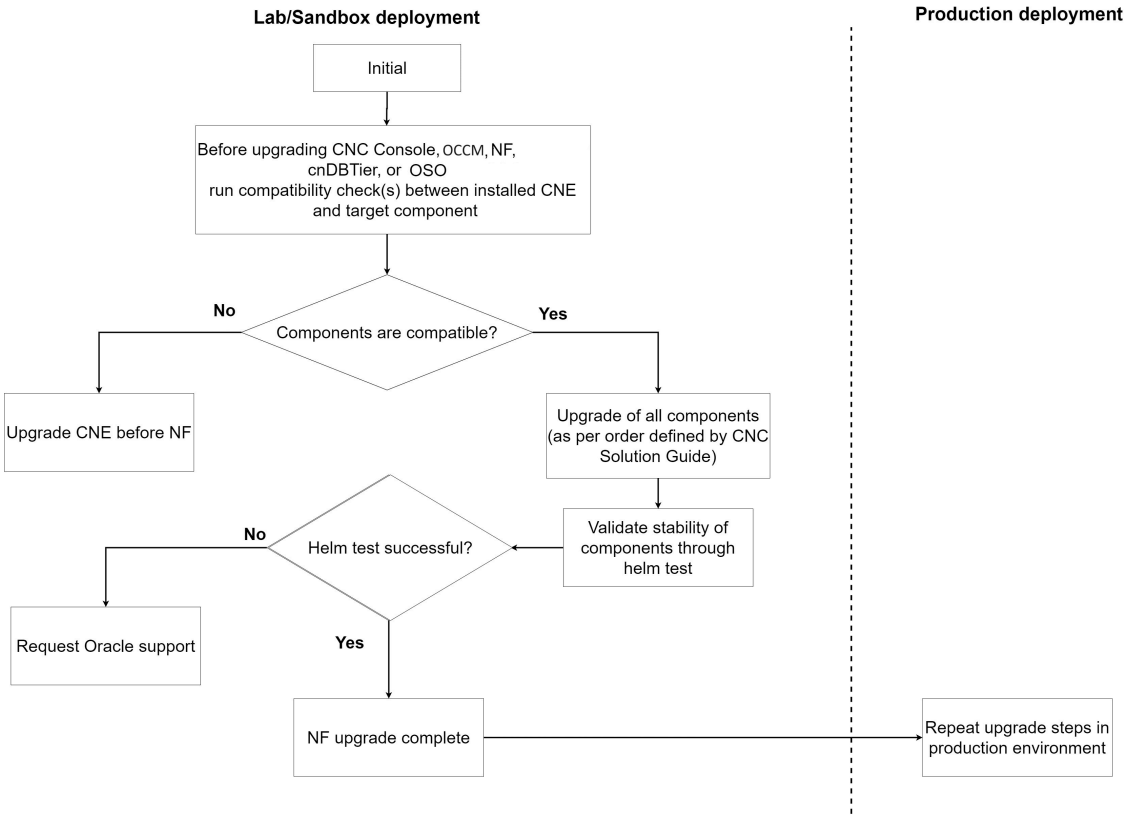
Figure 3-1 CNC Upgrade Order on Non-Oracle CNE



See CNC Console, OCCM, NF, OSO and cnDBTier installation and upgrade guides for details on upgrading the respective components.

3.2.3.1 CNC Console, OCCM, NF, and cnDBTier Upgrade

Figure 3-2 CNC Console, OCCM, NF, and cnDBTier Upgrade with Non-Oracle cloud native environment



The following procedure explains the upgrade workflow for Oracle NFs:

1. Check the supported upgrade path for each NF. To know the upgrade path, see *Oracle Communications Cloud Native Core Release Notes*.

> **Note**
>
> It is recommended to upgrade in the similar supported upgrade path of the Upgrade Workflow.

2. Check for the compatibility of the target NF component. See Compatibility check of target NF component with installed CNE section for the procedure.
3. If the NFs are not compatible, upgrade non-Oracle cloud native environment.
4. If all NFs are compatible, upgrade the components based on the upgrade sequence mentioned in Upgrade Workflow section.
5. Run the Helm test command to check the upgrade status. In case of any failure, contact My Oracle Support.
6. Once the Helm test is successful, then the upgrade is complete.
7. Perform the above upgrade steps in the production environment.

3.2.3.2 Compatibility Check of Target NF Component with Installed Non-Oracle cloud native environment

Follow the procedure to check the compatibility of target NF component with installed Non-Oracle cloud native environment:

1. Run the following command to get the list of resource versions for the installed non-Oracle cloud native environment release:

```
kubectl api-resources --sort-by='name' (or kubectl api-versions)
```

Sample output:

```
serviceaccounts                   sa
v1                                     true         ServiceAccount
serviceentries                    se           networking.istio.io/
v1beta1            true         ServiceEntry
servicemonitors
monitoring.coreos.com/v1               true         ServiceMonitor
services                          svc
v1                                     true         Service
sidecars                                            networking.istio.io/
v1beta1            true         Sidecar ...
...
...
...
```

2. Run the following command to get the list of target CNC Console, OCCM, NF, cnDBTier, and OSO resources and their versions:

   ```
   helm upgrade <helm release> <chart tarball> -f <ASM Custom File> -n <helm
   release> --dry-run | egrep -i "^apiVersion:|^kind:" |sed 's/\r$//' | awk
   '{ ORS = (NR%2 ? ", " : RS) } 1' | sort | uniq
   ```

   For example:

   ```
   helm upgrade ocpcf-lp  occnp-23.2.0-od-20230210.tgz -f occnp-23.2.0-
   nb-20230127-custom-values-pcf-ASM.yaml -n ocpcf-lp --dry-run | egrep -i
   "^apiVersion:|^kind:" |sed 's/\r$//' | awk '{ ORS = (NR%2 ? ", " : RS) }
   1' | sort | uniq
   ```

   Sample output:

   ```
   apiVersion: apps/v1, kind: Deployment
   apiVersion: apps/v1, kind: StatefulSet
   apiVersion: autoscaling/v1, kind: HorizontalPodAutoscaler
   apiVersion: autoscaling/v2beta1, kind: HorizontalPodAutoscaler
   apiVersion: autoscaling/v2beta2, kind: HorizontalPodAutoscaler
   apiVersion: batch/v1, kind: Job
   apiVersion: policy/v1beta1, kind: PodDisruptionBudget
   apiVersion: rbac.authorization.k8s.io/v1beta1, kind: RoleBinding
   apiVersion: rbac.authorization.k8s.io/v1, kind: Role
   apiVersion: rbac.authorization.k8s.io/v1, kind: RoleBinding
   apiVersion: v1, kind: ConfigMap
   apiVersion: v1, kind: Service
   apiVersion: v1, kind: ServiceAccount
   ```

3. Verify that installed non-Oracle cloud native environment has all Kubernetes resources and their versions required by CNC Console, OCCM, NF, cnDBTier, and OSO.

3.3 Performing the NF Upgrade

See the following documents for detailed procedures to upgrade the respective components:

Table 3-1 CNC Components Document Reference

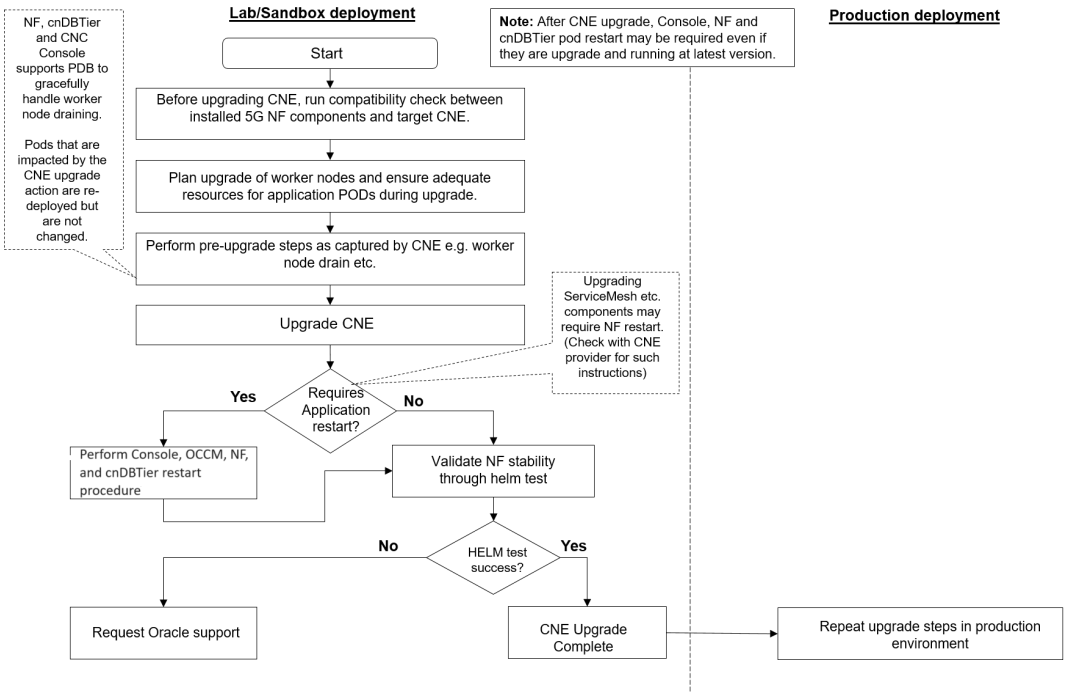
CNC Components	Document Reference
Oracle Communications Cloud Native Core, Binding Support Function (BSF)	*Oracle Communications Cloud Native Core, Binding Support Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Configuration Console (CNC Console)	*Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, cnDBTier (cnDBTier)	*Oracle Communications Cloud Native Core, cnDBTier Installation, Upgrade, and Fault Recovery Guide*

Table 3-1 (Cont.) CNC Components Document Reference

CNC Components	Document Reference
Oracle Communications Cloud Native Core, Network Exposure Function (NEF)	*Oracle Communications Cloud Native Core Network Exposure Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Repository Function (NRF)	*Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Slice Selection Function (NSSF)	*Oracle Communications Cloud Native Core, Network Slice Selection Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Converged Policy (Policy)	*Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Security Edge Protection Proxy (SEPP)	*Oracle Communications Cloud Native Core, Security Edge Protection Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Service Communication Proxy (SCP)	*Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Unified Data Repository (UDR)	*Oracle Communications Cloud Native Core, Unified Data Repository Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Certificate Manager (OCCM)	*Oracle Communications Cloud Native Core, Certificate Manager Installation, Upgrade, and Fault Recovery Guide*

3.3.1 Non-Oracle Cloud Native Environment Upgrade

Figure 3-3 Non-Oracle CNE Upgrade



The following procedure explains the upgrade workflow for non-Oracle cloud native environment:

1. Check for the compatibility of the target NF component. Refer to Compatibility check of target NF component with installed CNE section for compatibility check procedure.
2. Check for resource requirements detail for worker nodes upgrade in vendor-specific cloud native core documentation.
3. Upgrade cloud native core and restart the applications, if required.
4. Run the Helm test command to check the upgrade status.
5. Once the Helm test is successful, the upgrade is complete.
6. Perform the above steps in the production environment.

3.3.2 Compatibility Check of NF Component with Target Cloud Native Environment

Perform the following compatibility checks:

1. Run the following commands to get the list of deployed resources and their versions from a given CNC Console, OCCM, NF, cnDBTier and OSO release:

   ```
   helm get manifest <helm release>  -n <namespace> | egrep -i "^apiVersion:|
   ^kind:" |sed 's/\r$//' | awk '{ ORS = (NR%2 ? ", " : RS) } 1' | sort | uniq
   ```

   Sample Output:

   ```
   apiVersion: apps/v1, kind: Deployment
   apiVersion: apps/v1, kind: StatefulSet
   apiVersion: autoscaling/v1, kind: HorizontalPodAutoscaler
   apiVersion: autoscaling/v2beta1, kind: HorizontalPodAutoscaler
   apiVersion: autoscaling/v2beta2, kind: HorizontalPodAutoscaler
   apiVersion: policy/v1beta1, kind: PodDisruptionBudget
   apiVersion: rbac.authorization.k8s.io/v1beta1, kind: RoleBinding
   apiVersion: rbac.authorization.k8s.io/v1, kind: Role
   apiVersion: rbac.authorization.k8s.io/v1, kind: RoleBinding
   apiVersion: v1, kind: ConfigMap
   apiVersion: v1, kind: Service
   apiVersion: v1, kind: ServiceAccount
   ```

2. Run the following command to get the list of resource versions for the target cloud native environment release:

> **Note**
>
> - See Kubernetes release documentation for supported resources and versions.
> - Alternate approach: From any installed target cloud native environment release, run the following command to get a list of all supported api-versions:

```
kubectl api-resources --sort-by='name' (or kubectl api-versions)
```

Sample output:

```
serviceaccounts                   sa
v1                                     true         ServiceAccount
serviceentries                    se           networking.istio.io/
v1beta1            true         ServiceEntry
servicemonitors
monitoring.coreos.com/v1               true         ServiceMonitor
services                          svc
v1                                     true         Service
sidecars                                       networking.istio.io/
v1beta1            true         Sidecar ...
...
...
...
```

3. Manually ensure that all installed CNC Console, OCCM, NF, cnDBTier, and OSO resources and their versions are available in the target cloud native environment.

3.4 Performing the Postupgrade Tasks

This section explains the postupgrade tasks.

3.4.1 NF Postupgrade

- Verify postupgrade of all the components by running the "`helm test`" provided by CNC Console, OCCM, NF, and cnDBTier to verify the deployment health and status.
- See CNC Console, OCCM, NF, and cnDBTier installation and upgrade guides for postupgrade task details after upgrading respective components.

3.4.2 Cloud Native Environment Postupgrade

- Re-validate the stability of all the components by running "`helm test`" provided by CNC Console, OCCM, NF, and cnDBTier to verify the deployment health and status.
- For procedures to perform any restart required by CNC Console, OCCM, NF, cnDBTier, or any other external component, see the component-specific guides or documents.

3.5 Performing the Rollback

Once a rollback is triggered for a component, this section of the guide helps you to decide the order of the rollback for other components that were upgraded successfully. For example, a rollback is triggered if the cnDBTier upgrade fails (or validation after an upgrade fails) for any reason, and this guide provides the information to perform the rollback of NFs and CNC Console in a given order.

The following diagram details the rollback sequence:

Figure 3-4 Rollback Sequence with Non-Oracle CNE

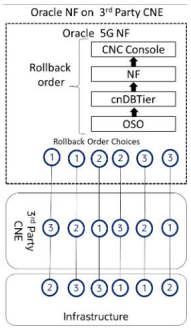


Table 3-2 CNC Components Document Reference

CNC Components	Document Reference
Oracle Communications Cloud Native Core, Binding Support Function (BSF)	*Oracle Communications Cloud Native Core, Binding Support Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Configuration Console (CNC Console)	*Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, cnDBTier (cnDBTier)	*Oracle Communications Cloud Native Core, cnDBTier Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Exposure Function (NEF)	*Oracle Communications Cloud Native Core Network Exposure Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Repository Function (NRF)	*Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Slice Selection Function (NSSF)	*Oracle Communications Cloud Native Core, Network Slice Selection Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Converged Policy (Policy)	*Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Security Edge Protection Proxy (SEPP)	*Oracle Communications Cloud Native Core, Security Edge Protection Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Service Communication Proxy (SCP)	*Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*

Table 3-2 (Cont.) CNC Components Document Reference

CNC Components	Document Reference
Oracle Communications Cloud Native Core, Unified Data Repository (UDR)	*Oracle Communications Cloud Native Core, Unified Data Repository Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Certificate Manager (OCCM)	*Oracle Communications Cloud Native Core, Certificate Manager Installation, Upgrade, and Fault Recovery Guide*

3.6 Performing the Postrollback Tasks

Perform the following postrollback tasks:

- Verify the rollback of all the components by running the "`helm test`" provided by CNC Console, OCCM, NF, and cnDBTier to verify the deployment health and status.
- See CNC Console, OCCM, NF, and cnDBTier installation and upgrade guides for postrollback task details after rolling back respective components.

4
CNC Upgrade with OCI

This section provides an overview of how to perform an upgrade of Oracle CNC in Oracle Cloud Infrastructure (OCI) environment.

4.1 Planning Upgrade

This section explains the planning for upgrading CNC with OCI Environment (OKE).

4.1.1 Guidelines

Oracle recommends the following guidelines:

- Perform upgrade testing in sandbox or lab deployment before testing in production sites.
- Upgrade all components to their target release, as per the compatibility matrix provided in the CNC release notes.
- In a multisite deployment model, perform the upgrade of one site at a time. Follow the sequence mentioned in upgrade sequence to upgrade all the components in the specific site and then proceed to the next site.
  Refer to cnDBTier and NF-specific installation, upgrade, and fault recovery guide for post upgrade steps to verify the health of cnDBTier services and NF components.
- Perform an upgrade of CNC Console, NF, and cnDBTier in a single maintenance window. If upgrade takes longer than a single maintenance window, individual components can be upgraded in multiple maintenance windows. Ensure that the upgrade order is followed as per the sequence mentioned in upgrade sequence.
- If multiple NFs share a cnDBTier, upgrade all the instances of CNC Console and NFs sharing that cnDBTier of the specific site, before upgrading the cnDBTier of the site.
- Rollback is the reverse order of upgrade.

4.1.2 Preupgrade Checklist

Go through the following checklist before performing an upgrade.

4.1.2.1 Resource Requirement

This section details about the resources required to upgrade Oracle Network Functions in OCI environment.

4.1.2.1.1 OCI

Ensure that the number of planned resources required for NF, CNC Console, and cnDBTier are available during the upgrade.

4.1.2.1.2 Network Functions

For CNC Console, NF, and cnDBTier upgrade, reevaluate resource requirement before performing the upgrade. It is possible that CNC Console, NF, or cnDBTier requires additional resources due to changes in architecture or service model.

For more information on NF resource requirements, see NF-specific installation, upgrade, and fault recovery guides.

4.1.2.2 Prerequisites

Ensure that you have the following prerequisites before performing an upgrade:

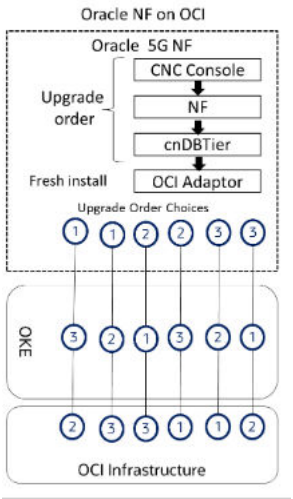
- Keep the backup of the following artifacts from your recent successful installation handy:
  - custom values.yaml file
  - Updated helm charts
  - Secrets
  - Certificates
  - Keys used
- See CNC Console, NF, and cnDBTier guides for preupgrade task details before upgrading respective components.

4.1.3 Upgrade Workflow

The following diagram details the upgrade sequence if you are using OCI.

> **Note**
>
> OCI Adaptor doesn't support upgrade. Since OCI Adaptor requires reinstall, metrics scrapping is impacted during that period.

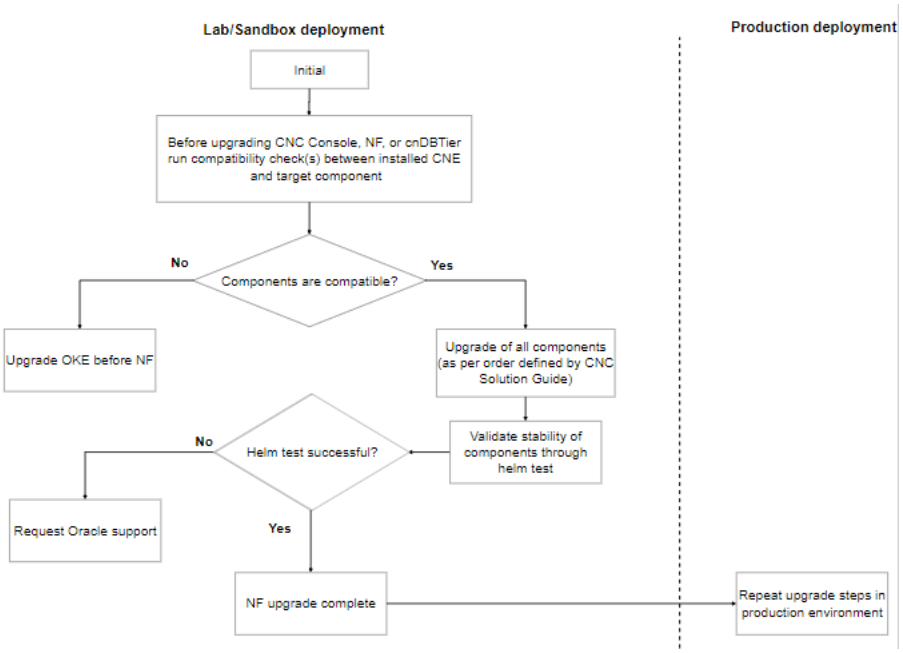
Figure 4-1 CNC Upgrade Order on OCI Environment



See CNC Console, NF, and cnDBTier installation, upgrade, and fault recovery guides for details on upgrading the respective components.

4.1.3.1 CNC Console, NF, and cnDBTier Upgrade

Figure 4-2 CNC Console, OCCM, NF, and cnDBTier Upgrade on OCI Environment



The following procedure explains the upgrade workflow for Oracle NFs:

1. Check the supported upgrade path for each NF. To know the upgrade path, see *Oracle Communications Cloud Native Core Release Notes*.

> **Note**
>
> It is recommended to upgrade in the similar supported upgrade path of the Upgrade Workflow.

2. Check for the compatibility of the target NF component. See Compatibility check of target NF component with installed CNE section for the procedure.
3. If the NFs are not compatible, upgrade non-Oracle cloud native environment.
4. If all NFs are compatible, upgrade the components based on the upgrade sequence mentioned in Upgrade Workflow section.
5. Run the Helm test command to check the upgrade status. In case of any failure, contact My Oracle Support.
6. Once the Helm test is successful, then the upgrade is complete.
7. Perform the above upgrade steps in the production environment.

4.1.4 Compatibility Check of Target NF Component with Installed OCI

1. Run the following command to get the list of resource versions for the installed OCI:

   ```
   kubectl api-versions
   ```

   Sample output:

   ```
   admissionregistration.k8s.io/v1 apiextensions.k8s.io/v1
   apiregistration.k8s.io/v1 apps/v1
   authentication.k8s.io/v1 authorization.k8s.io/v1
   autoscaling/v1
   autoscaling/v2 autoscaling/v2beta2
   batch/v1 certificates.k8s.io/v1 coordination.k8s.io/v1
   discovery.k8s.io/v1 events.k8s.io/v1
   flowcontrol.apiserver.k8s.io/v1beta1
   flowcontrol.apiserver.k8s.io/v1beta2 metrics.k8s.io/v1beta1
   networking.k8s.io/v1 node.k8s.io/v1 policy/v1 rbac.authorization.k8s.io/v1
   scheduling.k8s.io/v1 storage.k8s.io/v1 storage.k8s.io/v1beta1 v1
   ```

2. Run the following command to get the list of target CNC Console, NF, and cnDBTier resources and their versions:

   ```
   helm upgrade <helm release> <chart tarball> -f <Custom File> -n <helm
   release> --dry-run | egrep -i "^apiVersion:|^kind:" |sed 's/\r$//' | awk
   '{ ORS = (NR%2 ? ", " : RS) } 1' | sort | uniq
   ```

   For example:

   ```
   helm upgrade ocudr  ocudr-23.4.0.tgz -f ocudr_custom_values_23.4.0.yaml -n
   ocudr --dry-run | egrep -i "^apiVersion:|^kind:" |sed 's/\r$//' | awk
   '{ ORS = (NR%2 ? ", " : RS) } 1' | sort | uniq
   ```

   Sample output:

   ```
   apiVersion: apps/v1 # for versions before 1.9.0 use apps/v1beta2 ,
   kind: Deployment apiVersion: apps/v1 # for versions before 1.9.0 use apps/
   v1beta2,
   kind: Deployment apiVersion: apps/v1,
   kind: Deployment apiVersion: apps/v1,
   kind: StatefulSet apiVersion: autoscaling/v2,
   kind: HorizontalPodAutoscaler apiVersion: batch/v1,
   kind: Job apiVersion: policy/v1,
   kind: PodDisruptionBudget
   apiVersion: rbac.authorization.k8s.io/v1,
   kind: Role apiVersion: rbac.authorization.k8s.io/v1,
   kind: RoleBinding apiVersion: v1,
   kind: ConfigMap apiVersion: v1,
   kind: Pod apiVersion: v1,
   kind: Service apiVersion: v1,
   kind: ServiceAccount
   kind: Service, apiVersion: v1
   ```

3. Verify that installed OCI has all resources and their versions required by CNC Console, NF, and cnDBTier.

4.2 Performing the NF Upgrade

See the following documents for detailed procedures to upgrade the respective components:

Table 4-1 CNC Components Document Reference

CNC Components	Document Reference
Oracle Communications Cloud Native Core, Binding Support Function (BSF)	*Oracle Communications Cloud Native Core, Binding Support Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Configuration Console (CNC Console)	*Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, cnDBTier (cnDBTier)	*Oracle Communications Cloud Native Core, cnDBTier Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Exposure Function (NEF)	*Oracle Communications Cloud Native Core Network Exposure Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Repository Function (NRF)	*Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Slice Selection Function (NSSF)	*Oracle Communications Cloud Native Core, Network Slice Selection Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Converged Policy (Policy)	*Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Security Edge Protection Proxy (SEPP)	*Oracle Communications Cloud Native Core, Security Edge Protection Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Service Communication Proxy (SCP)	*Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Unified Data Repository (UDR)	*Oracle Communications Cloud Native Core, Unified Data Repository Installation, Upgrade, and Fault Recovery Guide*

Table 4-2 OCI Components Document Reference

OCI Components	Document Reference
OCI Adaptor	• *Oracle Communications Cloud Native Core, OCI Adaptor NF Deployment on OCI Guide* • *Oracle Communications Cloud Native Core, Reference Architecture for CNC deployment on OCI*

> **Note**
>
> OCI Adaptor doesn't support upgrade.

4.2.1 OCI Environment Upgrade Workflow

The following procedure explains the upgrade workflow for CNC components in OCI environment:

1. Check for the compatibility of the target NF component. Refer to Compatibility check of target NF component with installed CNE section for compatibility check procedure.
2. Upgrade cloud native core and restart the applications, if required.
3. Run the Helm test command to check the upgrade status.
4. Once the Helm test is successful, the upgrade is complete.
5. Perform the above steps in the production environment.

4.2.2 Compatibility Check of NF Component with Target OCI Environment

Perform the following compatibility checks:

1. Run the following commands to get the list of deployed resources and their versions from a given CNC Console, NF, and cnDBTier release:

   ```
   helm get manifest ocudr -n ocudr | egrep -i "^apiVersion:|^kind:" |sed
   's/\r$//' | awk '{ORS = (NR%2 ? ", " : RS) } 1' | so  rt | uniq
   ```

   Sample output:

   ```
   apiVersion: apps/v1    # for versions before 1.9.0 use apps/v1beta2 ,
   kind: Deployment
   apiVersion: apps/v1    # for versions before 1.9.0 use apps/v1beta2, kind:
   Deployment
   apiVersion: apps/v1, kind: Deployment
   apiVersion: apps/v1, kind: StatefulSet
   apiVersion: autoscaling/v2, kind: HorizontalPodAutoscaler
   apiVersion: policy/v1, kind: PodDisruptionBudget
   apiVersion: rbac.authorization.k8s.io/v1, kind: Role
   apiVersion: rbac.authorization.k8s.io/v1, kind: RoleBinding
   apiVersion: v1, kind: ConfigMap
   apiVersion: v1, kind: Service
   apiVersion: v1, kind: ServiceAccount
   ```

2. Run the following command to get the list of resource versions for the target cloud native environment release:

   Note

   - See OKE release documentation for supported resources and versions.
   - Alternate approach: From any installed target cloud native environment release, run the following command to get a list of all supported api-versions:

     ```
     kubectl api-versions
     ```

Sample output:

```
admissionregistration.k8s.io/v1 apiextensions.k8s.io/v1
apiregistration.k8s.io/v1 apps/v1
authentication.k8s.io/v1 authorization.k8s.io/v1
autoscaling/v1
autoscaling/v2 autoscaling/v2beta2
batch/v1 certificates.k8s.io/v1 coordination.k8s.io/v1
discovery.k8s.io/v1 events.k8s.io/v1
flowcontrol.apiserver.k8s.io/v1beta1
flowcontrol.apiserver.k8s.io/v1beta2 metrics.k8s.io/v1beta1
networking.k8s.io/v1 node.k8s.io/v1 policy/v1 rbac.authorization.k8s.io/v1
scheduling.k8s.io/v1 storage.k8s.io/v1 storage.k8s.io/v1beta1 v1
```

3. Manually ensure that all installed CNC Console, NF, and cnDBTier resources and their versions are available in the target OCI environment.

4.3 Performing the Postupgrade Tasks

This section explains the postupgrade tasks.

4.3.1 NF Postupgrade

Perform the following NF postupgrade tasks:

- Verify postupgrade of all the components by running the "`helm test`" provided by CNC Console, NF, and cnDBTier to verify the deployment health and status.
- See CNC Console, NF, and cnDBTier installation, upgrade, and fault recovery guides for postupgrade task details after upgrading respective components.

4.3.2 OCI Environment Postupgrade

Perform the following postupgrade tasks:

- Re-validate the stability of all the components by running "`helm test`" provided by CNC Console, NF, and cnDBTier to verify the deployment health and status.
- For procedures to perform any restart required by CNC Console, NF, or cnDBTier, see the NF-specific installation, upgrade, and fault recovery guides.

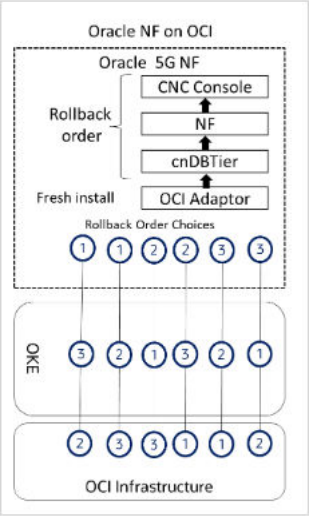
4.4 Performing the Rollback

Once a rollback is triggered for a component, this section of the guide helps you to decide the order of the rollback for other components that were upgraded successfully. For example, a rollback is triggered if the cnDBTier upgrade fails (or validation after an upgrade fails) for any reason, and this guide provides the information to perform the rollback of NFs and CNC Console in a given order.

> **Note**
>
> OCI Adaptor doesn't support rollback.

The following diagram details the rollback sequence:

Figure 4-3 Performing the Rollback



> **Note**
>
> OCI Adaptor rollback is not supported. The user must use OCI Resource Manager to remove the OCI Adapters stack.

Table 4-3 CNC Components Document Reference

CNC Components	Document Reference
Oracle Communications Cloud Native Core, Binding Support Function (BSF)	*Oracle Communications Cloud Native Core, Binding Support Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Configuration Console (CNC Console)	*Oracle Communications Cloud Native Configuration Console Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, cnDBTier (cnDBTier)	*Oracle Communications Cloud Native Core, cnDBTier Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Exposure Function (NEF)	*Oracle Communications Cloud Native Core Network Exposure Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Repository Function (NRF)	*Oracle Communications Cloud Native Core, Network Repository Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Network Slice Selection Function (NSSF)	*Oracle Communications Cloud Native Core, Network Slice Selection Function Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Converged Policy (Policy)	*Oracle Communications Cloud Native Core, Converged Policy Installation, Upgrade, and Fault Recovery Guide*

Table 4-3 (Cont.) CNC Components Document Reference

CNC Components	Document Reference
Oracle Communications Cloud Native Core, Security Edge Protection Proxy (SEPP)	*Oracle Communications Cloud Native Core, Security Edge Protection Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Service Communication Proxy (SCP)	*Oracle Communications Cloud Native Core, Service Communication Proxy Installation, Upgrade, and Fault Recovery Guide*
Oracle Communications Cloud Native Core, Unified Data Repository (UDR)	*Oracle Communications Cloud Native Core, Unified Data Repository Installation, Upgrade, and Fault Recovery Guide*

Table 4-4 OCI Components Document Reference

OCI Components	Document Reference
OCI Adaptor	• *Oracle Communications Cloud Native Core, OCI Adaptor NF Deployment on OCI Guide* • *Oracle Communications Cloud Native Core, Reference Architecture for CNC deployment on OCI*

4.5 Performing the Postrollback Tasks

Perform the following postrollback tasks:

- Verify the rollback of all the components by running the "`helm test`" provided by CNC Console, NF, and cnDBTier to verify the deployment health and status.
- See CNC Console, NF, and cnDBTier installation, upgrade, and fault recovery guides for postrollback task details after rolling back respective components.

A

Frequently Asked Questions (FAQs)

This section lists the most commonly asked questions while upgrading a Network Function (NF).

What is the upgrade sequence for NFs and cnDBTier when there are multiple NFs in a network?

You can perform upgrade of an NF followed by cnDBTier in a site. This is the only recommended upgrade sequence. There's no fixed order of upgrade between multiple NFs.

For Example: NRF, SCP, or SEPP are deployed in the network, if the NFs are 3GPP compliant, upgrade sequence between NFs isn't dependent. If you upgrade NRF first, then follow the upgrade of cnDBTier connected to NRF. For more information about the upgrade sequence, see the Overview section.

What if during the upgrade of a site, the upgrade fails? What should be the upgrade sequence?

There's no change in the upgrade sequence. You can perform upgrade of an NF followed by cnDBTier. This is the only recommended upgrade sequence. In case the upgrade fails, perform fault recovery procedures for the site. For more information about the upgrade sequence, see the Overview section.

If it's a NF, then follow the fault recovery procedure provided in NF-specific *Installation, Upgrade, and Fault Recovery Guide*.

If it's the cnDBTier, then follow the fault recovery procedure provided in *Oracle Communications Cloud Native Core DBTier Installation, Upgrade, and Fault Recovery Guide*.

During the upgrade, if georeplication fails then what are recommended upgrade procedures to recover the sites?

In case the replication fails during upgrade or postupgrade, then resync the replication after upgrade completion using cnDBTier procedures. For more information about the resync, see *Oracle Communications Cloud Native Core DBTier Installation, Upgrade, and Fault Recovery Guide*. If the issue persists, contact My Oracle Support.

What is the upgrade impact if the NF schema version changes when georeplication is enabled?

NF upgrade takes care of any schema changes automatically. If any NF requires an alternate update strategy due to non-backward compatibility issues, it will be documented in NF-specific *Installation, Upgrade, and Fault Recovery Guide*.

If I want all the NFs to be at the same version before upgrading cnDBTier, does this impact the upgrade strategy?

It isn't suggested upgrading a layer of same NFs across all sites, before moving to the next. There's a higher risk of rollback scenarios of all the sites, which can impact the service. The recommended upgrade sequence is provided in the Overview section.

For Example: In three-site georedundancy, if NRF, SCP, and cnDBTier are deployed, upgrade cnDBTier and the NFs in the specific site, instead of first upgrading cnDBTier across all the sites and then the NFs.

What should I do if I see an error while upgrading?

If you see any upgrade or rollback error, see NF-specific *Troubleshooting Guide*. In case the error persists, collect the log and report it to My Oracle Support.

How do I verify if the upgrade is successful?

Perform verification tasks provided in NF-specific *Installation, Upgrade, and Fault Recovery Guide*. For more information about the upgrade, see the "Upgrade Tasks" section in the NF-specific *Installation, Upgrade, and Fault Recovery Guide*.

When I have a non-Oracle CNE, how do I check if the NFs are compatible or not?

Perform compatibility check between the NFs and non-Oracle CNE. For more information about the procedure, see Compatibility Check of Target NF Component with Installed Non-Oracle cloud native environment.