Oracle® Communications
Network Slice Selection Function (NSSF) Cloud Native Installation Guide

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NSSF Overview

This section includes information about NSSF Installation in 5G environment.

Network Slice Selection Function (NSSF) selects the network slicing instance (NSI), determines the allowed network slice selection assistance information (NSSAI) and sets AMF to serve the UE. AMF can retrieve NRF, NSI ID, and target AMFs as part of UE initial registration and PDU establishment procedure.

Oracle NSSF interaction with NRF allows retrieving specific NF services to be used for the registration request. It also allows mechanism for registration and subsequent notification Function Instance Discovery.

The NSSF supports the following services:

Nnssf_NSSelection Service

Nnssf_NSSAIAvailability

This service is used by NF Service Consumer (AMF) to retrieve the information related to network slice. It also enables the NSSF to provide the AMF, the Allowed NSSAI and the Configured NSSAI for the Serving PLMN.

This service supports GET request during the following procedures by UE:

- **Initial Register**: When the NSSF is able to detect authorized network slice information for the requested network slice selection information, the response body includes a payload body containing at least the allowed NSSAI, the target AMF Set or the list of candidate AMF(s).

- **PDU session establishment**: When NSSF receives PDU-Session establishment request from NF consumer, NSSF determines network slice which can serve the requested S-NSSAI, based on operator configured policies, and responds with URL of NRF which manages to the Slice and/or Slice ID of the matching Network Slice computed.

- **UE-Config-Update:**When the UDM updates the Subscribed S-NSSAI(s) to the serving AMF, based on configuration in this AMF, the NSSF determines the mapping of the configured NSSAI for the serving PLMN and ALLOWED NSSAI to the Subscribed SNSSAI(s)

Nnssf_NSSAIAvailability

NS-Availability service supports the following operations:

- **Update:** AMF uses this feature to update the NSSF with the S-NSSAIs that AMF supports per TA basis.

   NSSF authorizes the list based on NssaiAuth rules and responds with the list of the allowed S-NSSAI/s per TA, which the specific AMF is authorized to support.

- **Delete:** The Delete service operation is used by the AMF to delete the NSSAI availability information stored for the NF service consumer in the NSSF.

- **Subscribe:** The Subscribe operation is used by the AMF to subscribe the notification of any changes in the status of the NSSAI availability information, such as the S-NSSAIs

available per TA and the restricted S-NSSAI(s) per PLMN in that TA in the serving PLMN of the UE.

- **Unsubscribe:** The Unsubscribe operation is used by an NF Service Consumer (such as AMF) to unsubscribe the notification of any previously subscribed changes to the NSSAI availability information.

- **Notify:** The Notify Service operation shall be used by the NSSF to update the NF Service Consumer (such as the AMF) with any change in status, on a per TA basis, of the S-NSSAIs available per TA (unrestricted) and the S-NSSAIs restricted per PLMN in that TA in the serving PLMN of the UE.

NSSF References

- CNE Installation Guide
- NSSF User's Guide

Acronyms and Terminologies

The following table provides information about the acronyms and terminologies used within the document.

Table 1-1   Acronyms and Terminologies

Field	Description
AMF	Access and Mobility Management Function
Allowed NSSAI	NSSAI provided by the Serving PLMN during e.g. a Registration procedure, indicating the S-NSSAIs values the UE could use in the Serving PLMN for the current registration area.
Configured NSSAI	NSSAI provisioned in the UE applicable to one or more PLMNs.
OHC	Oracle Help Center
OSDC	Oracle Software Delivery Cloud
NEF	Network Exposure Function
Network Slice	A logical network that provides specific network capabilities and network characteristics
NF	Network Function
NF service	A functionality exposed by a NF through a service based interface and consumed by other authorized NFs.
NRF	Network Repository Function
NSI	Network Slice instance. A set of Network Function instances and the required resources (such as, compute, storage and networking resources) which form a deployed Network Slice
NSI ID	Network Slice Instance Identifier
NSSAI	Network Slice Selection Assistance Information
NSSF	Network Slice Selection Function
NSSP	Network Slice Selection Policy
PLMN	Public Land Mobile Network
Requested NSSAI	NSSAI provided by the UE to the Serving PLMN during registration.
SD	Slice Differentiator

Table 1-1   (Cont.) Acronyms and Terminologies

SEPP	Security Edge Protection Proxy
S-NSSAI	Single Network Slice Selection Assistance Information
SST	Slice/Service type

Documentation Admonishments

Admonishments are icons and text throughout this manual that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage.

Table 1-2   Admonishments

Icon	Description
DANGER	Danger: (This icon and text indicate the possibility of *personal injury*.)
WARNING	Warning: (This icon and text indicate the possibility of *equipment damage*.)
CAUTION	Caution: (This icon and text indicate the possibility of *service interruption*.)
TOPPLE	Topple: (This icon and text indicate the possibility of *personal injury* and *equipment damage*.)

Locate Product Documentation on the Oracle Help Center Site

Oracle Communications customer documentation is available on the web at the Oracle Help Center site, http://docs.oracle.com. You do not have to register to access these documents. Viewing these files requires Adobe Acrobat Reader, which can be downloaded at http://www.adobe.com.

1. Access the Oracle Help Center site at http://docs.oracle.com.

2. Click **Industries**.

3. Under the Oracle Communications subheading, click **Oracle Communications documentation** link.

    The Communications Documentation page displays.

4. Click on your product and then the release number.

A list of the documentation set for the selected product and release displays.

5. To download a file to your location, right-click the **PDF** link, select **Save target as** (or similar command based on your browser), and save to a local folder.

Customer Training

Oracle University offers training for service providers and enterprises. Visit our web site to view, and register for, Oracle Communications training:

http://education.oracle.com/communication

To obtain contact phone numbers for countries or regions, visit the Oracle University Education web site:

www.oracle.com/education/contacts

My Oracle Support (MOS)

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

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

1. Select 2 for New Service Request

2. Select 3 for Hardware, Networking and Solaris Operating System Support

3. Select one of the following options:

   • For Technical issues such as creating a new Service Request (SR), Select 1

   • For Non-technical issues such as registration or assistance with MOS, Select 2

You will be connected to a live agent who can assist you with MOS registration and opening a support ticket.

MOS is available 24 hours a day, 7 days a week, 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the Customer Access Support (CAS) main number at 1-800-223-1711 (toll-free in the US), or by calling the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

• A total system failure that results in loss of all transaction processing capability

• Significant reduction in system capacity or traffic handling capability

- Loss of the system's ability to perform automatic system reconfiguration

- Inability to restart a processor or the system

- Corruption of system databases that requires service affecting corrective actions

- Loss of access for maintenance or recovery operations

- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

2
NSSF Prerequisites

This section includes information about the necessary prerequisites for NSSF deployment.

Following are the prerequisites to install and configure NSSF:

NSSF Software

The NSSF software includes:

- NSSF Helm charts
- NSSF docker images

The following software must be installed:

Software	Version
Kubernetes	v1.14.3
HELM	v2.11.0

The Performance Service must be installed before initiating the deployment.

To install the Performance Service, execute:

```
helm install <Helm-Registry>/perf_info_chart/ --name perf-info --namespace
ocnssf-infra
```

Additional software that needs to be deployed as per the requirement of the services:

Software	Chart Version	Notes
elasticsearch	1.21.1	Needed for Logging Area
elastic-curator	1.2.1	Needed for Logging Area
elastic-exporter	1.1.2	Needed for Logging Area
logs	2.0.7	Needed for Logging Area
kibana	1.5.2	Needed for Logging Area
grafana	2.2.0	Needed for Metrics Area
prometheus	8.8.0	Needed for Metrics Area
prometheus-node-exporter	1.3.0	Needed for Metrics Area
metallb	0.8.4	Needed for External IP
metrics-server	2.4.0	Needed for Metric Server
tracer	0.8.3	Needed for Tracing Area

> **Note:**
>
> Install the specified software items before proceeding if any of the above services are needed and the respective software is not already installed in CNE.

Network access

The Kubernetes cluster host must have network access to:

- Local docker image repository where the NSSF images are available.
- Local helm repository where the NSSF helm charts are available.

> **Note:**
>
> All the kubectl and helm related commands that are used in this document must be executed on a system depending on the infrastructure of the deployment. It could be a client machine such as a VM, server, local desktop and so on.

Laptop/Desktop Client software

Following are the requirements for the client machine where the deployment commands need to be executed:

- It should have network access to the helm repository and docker image repository.
- Helm repository must be configured on the client.
- It should have network access to the Kubernetes cluster.
- It should have necessary environment settings to run the `kubectl` commands. The environment should have privileges to create namespace in the Kubernetes cluster.
- It should have helm client installed. The environment should be configured so that the `helm install` command deploys the software in the Kubernetes cluster.

3
NSSF Installation Sequence

This section informs about the sequence in which NSSF must be installed.

Table 3-1   Installation Sequence

Sl.No	Phase	Description
1	Installation Preparation	Download the required files and load the files to the system.
2	Configure **custom_values.yaml** file.	This includes configuring the following based on the deployment: **1.** Repository path **2.** Primary and Secondary node **3.** NSSF details **Note:** Other configurations might be changed based on the deployment.
3	NSSF deployment	NSSF can be deployed in either of the following ways: • With HELM repository • With HELM tar
4	Verify NSSF deployment	Check if the services and pods are up and running.

NSSF Images

Following are the NSSF images:

Table 3-2   NSSF Images

Services	Image
ocnssf-nsconfig	ocnssf-nsconfig
ocnssf-nspolicy	ocnssf-nspolicy
ocnssf-nsregistration	ocnssf-nsregistration
ocnssf-nsselection	ocnssf-nsselection
ocnssf-nsavailability	ocnssf-nsavailability
ocnssf-nssubscription	ocnssf-nssubscription

4
NSSF Installation Preparation

The following procedure describes the steps to download the NSSF Images and Helm files from OSDC.

For more information about configuring docker image and registry, see chapter OCCNE Docker Image Registry Configuration in OCCNE Installation Guide.

Table 4-1   NSSF Installation Preparation

Step	Procedure	Description

1 ☐	Download the NSSF package file	Customers are required to download the NSSF package file from Oracle Software Delivery Cloud (OSDC). Package is named as follows:
		
		`<nfname>-pkg-<marketing-release-number>`
		
		`For example: ocnssf-pkg-1.2.0.0.0.tgz`

2 ☐	Untar the NSSF Package File	Untar the NSSF package to the specific repository: `tar -xvf <<nfname>-pkg-<marketing-release-number>>` The package file consists of following: **1.** NSSF Docker Images File ocnssf-images-1.2.0.tar **2.** Helm File ocnssf-1.2.0.tgz **3.** Readme txt file `Readme.txt` (Contains cksum and md5sum of tarballs)
3 ☐	Check the checksums	Check the checksums of tarballs mentioned in `Readme.txt`. Refer to the `Readme.txt` file for commands and checksum details.
4 ☐	Load the tarball to system	Execute the following command to push the Docker images to docker registry: `docker load --input ocnssf-images-1.2.0.tar`
5 ☐	Check if all the images are loaded	Execute the following command to check: `docker images` Refer table **NSSF Images** in section NSSF Installation Sequence for the list of images.

6 ☐	Push docker images to docker registry	Execute the following commands to push the docker images to docker registry:
		`docker tag <image-name>:<image-tag> <docker-repo>/`
		`<image-name>:<image-tag>`
		`docker push <docker-repo>/<image-name>:<image-tag>`

Table 4-1   (Cont.) NSSF Installation Preparation

Step	Procedure	Description
7 ☐	Untar Helm Files	Untar the helm files: `tar -xvzf ocnssf-1.2.0.tgz`

8 ☐	Download the Native Network Slice Selection Function (NSSF) Custom Template ZIP file	Download the **Native Network Slice Selection Function (NSSF) Custom Template** ZIP file from OHC:
		• Go to the URL, docs.oracle.com
		• Navigate to **Industries->Communications->Diameter Signaling Router->Cloud Native Network Elements**
		• Click the **Native Network Slice Selection Function (NSSF) Custom Template** link to download the zip file.
		• Unzip the template to get the following files:
		   – `ocnssf-custom-values-1.2.0.yaml`
		   – `onssfDashboard.json`

5
NSSF Installation

This section includes information about NSSF deployment.

Following are the Parameters and Definitions used during NSSF deployment.

Table 5-1   Parameters and Definitions

Parameters	Definitions
`<helm chart>`	It is the name of the chart that is of the form `<helm repo>/ocnssf`
`<OCNSSF version>`	It is the software version (helm chart version) of the NSSF. This is optional, if omitted, the default version is the latest version available in helm repository.
`<release>`	It is a name provided by the user to identify the helm deployment
`<k8s namespace>`	It is a name provided by the user to identify the kubernetes namespace of the NSSF. All the NSSF micro services are deployed in this kubernetes namespace.
`<mysql host>`	It is the hostname of the `mysql` service and can be provided as, `<release>-mysql.<k8s namespace>`

NSSF Deployment on Kubernetes

> **Note:**
>
> • To configure the parameters, see section NSSF Configuration.

Create Database User/Group

The NSSF uses a MySQL database to store the configuration and run time data.

The NSSF deployment using MySQL NDB cluster requires the database administrator to create a user in the MYSQL DB and to provide the user with necessary permissions to access the tables in the NDB cluster.

1. Login to the server where the ssh keys are stored and the SQL nodes are accessible.

2. Connect to the SQL nodes.

3. Login to the Database as a root user.

4. Create a user and assign it to a group having necessary permission to access the tables on all the SQL nodes:

```
CREATE USER '<username>'@'%' IDENTIFIED BY '<password>';
DROP DATABASE if exists nssfdb;
CREATE DATABASE nssfdb CHARACTER SET utf8;
GRANT SELECT, INSERT, CREATE, ALTER, DROP, LOCK TABLES, CREATE TEMPORARY
TABLES, DELETE, UPDATE,
```

```
EXECUTE ON nssfdb.* TO '<username>'@'%';
USE nssfdb;
```

> **Note:**
>
> The `<username>` and `<password>` is created by the Database Administrator.

5. Exit from database and logout from SQL node.

Table 5-2   NSSF Deployment

Step #	Procedure	Description
1 ☐	Create customized `ocnssf-custom-values-1.2.0.yaml` file	Create the customized `ocnssf-custom-values-1.2.0.yaml` with the required input parameters. To configure the `ocnssf-custom-values-1.2.0.yaml`, see section NSSF Configuration or, The `ocnssf-custom-values-1.2.0.yaml` template can be downloaded from OHC. Download the package `ocnssf-custom-configTemplates-1.2.0.0.0.zip` and Unzip to get `ocnssf-custom-values-1.2.0.yaml` file.

2 ☐	Deploy OCNSSF	Execute the following command:
		`helm install ocnssf/ --version <chart-version> --name <helm-release> --namespace <k8s namespace> -f <ocnssf_customized_values.yaml>`
		
		For example:
		
		`helm install ocnssf/ --version 1.2.0 --name ocnssf --namespace ocnssf -f nssf-values-1.2.0.yaml`

3 ☐	Check status of the deployment	`helm status <helm-release>` For example: `helm status ocnssf`

4 ☐	Check status of the services	Execute the following command:
		`kubectl get services -n <namespace>`
		For example:
		
		`kubectl get services -n ocnssf`
		Note: If `metallb` is used, `EXTERNAL-IP` is assigned to `ocnssf-nsgateway`.

Table 5-2   (Cont.) NSSF Deployment

Step #	Procedure	Description
| 5 ☐ | Check status of the pods | Execute the following command:<br>`kubectl get pods -n <ocnssf_namespace>`<br>Status column of all the pods should indicate 'Running'.<br>Ready column of all the pods should be n/n, where n is number of containers in the pod.<br>For example:<br>`kubectl get pods -n ocnssf`<br><br>```
NAME                                        READY  STATUS    RESTARTS  AGE
ocnssf-nsavailability-77bd694597-q4s7g      1/1    Running   0         37s
ocnssf-nsavailability-77bd694597-xvknb      1/1    Running   0         37s
ocnssf-nsconfig-558b8858d8-rp18t            1/1    Running   0         37s
ocnssf-nsdb-78d45c4785-xwdlg                0/1    Running   0         37s
ocnssf-nsgateway-64f774d69-4pbr8            2/2    Running   0         37s
ocnssf-nsgateway-64f774d69-5cwh8            1/2    Running   0         37s
ocnssf-nsgateway-64f774d69-m5fsx            2/2    Running   0         37s
ocnssf-nspolicy-c4d558485-2rqwk             1/1    Running   0         37s
ocnssf-nspolicy-c4d558485-hv9vt             1/1    Running   0         37s
ocnssf-nsregistration-7f58dd559c-7jlpf      1/1    Running   0         37s
ocnssf-nsselection-57cff5665c-mv59p         1/1    Running   0         37s
ocnssf-nsselection-57cff5665c-skk4l         1/1    Running   0         37s
ocnssf-nssubscription-584f6fd54c-gqk8h      1/1    Running   0         37s
ocnssf-nssubscription-584f6fd54c-16wkv      1/1    Running   0         37s
``` |

6
NSSF Uninstallation

Deleting the NSSF deployment

To completely delete or remove the NSSF deployment, execute:

```
helm del --purge <helm-release>
```

For example:

```
helm del --purge ocnssf
```

Delete kubernetes namespace

```
kubectl delete namespace <ocnssf kubernetes namespace>
```

For example:

```
kubectl delete namespace ocnssf
```

7
NSSF Configuration

NSSF supports the following configuration:

> **Note:**
>
> Perform the provided configurations, once docker platform is configured for NSSF. Check if the Registry folders are in place having the latest helm charts and jar files for NSSF node.

Prepare `values.yaml` file and update configuration parameters for each micro service. Refer sample_values.yaml for further details.

NSSF Configurable Parameters

This section includes information about configurable parameters required during NSSF installation.

Table 7-1   Global Parameters

Helm Parameter	Classification	Description	Default Value	Accepted Values	Notes
mysql.primary.host	Static	Primary MYSQL Host IP or Hostname	ocnssf-mysql	Primary Mysql HostName or IP	OCNSSF will connect Primary MYSQL if not available then it will connect secondary host. For MYSQL Cluster use respective IP Address or Mysql Host or Service
mysql.secondary.host	Static	Secondary MYSQL Host IP or Hostname	ocnssf-mysql	Secondary Mysql HostName or IP	For MYSQL Cluster use respective Secondary IP Address or Mysql Host or Service
mysql.port	Static	Port of MYSQL Database	3306	Port of MySQL Database	
mysql.database	Static	MSQL Database for OCNRF	nssfdb	Name of OCNSSF Database	
mysql.username	Static	OCNSSF MYSQL UserName	nssfuser	User Name of OCNRF Database	User Name of OCNRF Database decided by DBA while creating User in Mysql Cluster
mysql.password	Static	OCNSSF MYSQL Password	nssfpasswd	Password of OCNRF Database	Password of OCNRF Database decided by DBA while creating User in Mysql Cluster

Table 7-2   Common parameters for NS-Selection, NS-Policy, NS-Availability, NS-Config, NS-Register, NS-Subscription

Helm Parameter	Classification	Description	Default Value	Accepted Values	Notes
image.repository	Static	Full Image Path	ocnssf/ocnssf-nfregistration	Full image path of image	
log.level	Dynamic	Logging level	INFO	INFO, DEBUG, FATAL, ERROR, WARN	Logging level
ambassador:id	Static	Ambassador Id to uniquely identify the Ambassador instance in cluster	ocnssf-nsgateway	NAME-endpoint	Format:- NAME-endpoint

Table 7-3   NS-Policy

Helm Parameter	Description	Default Value	Accepted Values	Notes
homeMcc	MCC of PLMN of Home network		3 digit integer value	Used when Ns-Selection GET request comes without TAI
homeMnc	MNC of PLMN of Home network		2/3 digit integer value	Used when Ns-Selection GET request comes without TAI
reqnftime	When set to true AMF can send current time as Http Header	FALSE	TRUE/FALSE	This field is used when time based network slice is enabled , If set to true time sent by AMF is used to get time profile based slice When not then current local time of NSSF is used to get Slice.
outboundProxy	Value of outbound proxy for NSSF		Host-name/IP address:port of outbound proxy	
features.nrfdiscovery	Flag to enable / disable NRF discovery for each GET request on NS-Selection Initial Register and Update Config request	FALSE	TRUE/FALSE	
features.relevance	Flag to enable / disable Relevance feature	FALSE	TRUE/FALSE	

Table 7-3   (Cont.) NS-Policy

Helm Parameter	Description	Default Value	Accepted Values	Notes
features.candidateResolution	Flag to enable / disable Candidate Resolution feature	FALSE	TRUE/FALSE	When this feature is set to false NSSF returns TargetAMFSetId and TargetAMFRegionId for NS-Selection GET request for Initial Register message Otherwise NSSF computes and returns Candidate AMF list
nrfDiscoveryProperties.disclimit	Max Number of AMFs set on NRF discovery request	5	2-10	This is accepted only when nrfDiscovery is set to true
nrfDiscoveryProperties.Max-Reties	Number of retrys to be done when NRF does not respond to discovery request, before shifting to secondary NRF for discovery	3	2-5	This is accepted only when nrfDiscovery is set to true
candidateResolutionProperties.maxcandidates:	Maximum number of candidate AMFs	3	2-10	This value makes sense only when candidateResolution is enabled

Table 7-4   NS-Register

Helm Parameter	Description	Default Value	Accepted Values	Notes
configFiles:nf.profile	NF-Profile of NSSF		NF-Profile in Json format	NF-Profile is used to register to NRF
nrf: primaryUrl	URL of primary NRF		Valid URL	
nrf: secondaryUrl	URL of secondary NRF		Valid URL	
outboundProxy	Value of outbound proxy for NSSF			Host-name/IP address:port of outbound proxy
httpMaxRetries	Number of retry to be done when NRF does not respond to request, before shifting to secondary NRF for discovery	3	2-5	

Table 7-5   NS-Availability

Helm Parameter	Description	Default Value	Accepted Values	Notes
maxExpiryDuration	Max duration (in Hours) upto which AMF can subscribe to NSSF	240	100-1000	Max Expiry duration should be more than Min Expiry duration. Requesting more than max expiry duration will be granted the value which is configured
minExpiryDuration	Min duration (in Hours) of a valid subscription towards NSSF	0	0-100	Request lesser than configured value shall be rejected

Table 7-6   NS-Config

Helm Parameter	Description	Default Value	Accepted Values	Notes
nrf: subscription	Flag to enable subscription to NRF based on Target AMF set and Region Id	TRUE	TRUE/ FALSE	When set to true, NSSF subscribes to get all the AMFs added/deleted on Target AMF set and Target AMF region is configured to NRF. NS-Policy: nrfDiscovery and NS-Config: nrf: Subscription are mutually exclusive.
ambassador. fqdn	FQDN of ambassador	URL of ambassador	Valid URL	This is the URL where NRF sends notifications when nrf:subscription is set to true

Table 7-7   NS-Subscription

Helm Parameter	Description	Default Value	Accepted Values
httpMaxRetries	Number of retries to be done when AMF does not respond to Notification.	3	2-5

A

Sample values.yaml file

This section provides information about the configurable parameters and values defined in the custom values.yaml template file.

The following sample illustrates the values.yaml file:

```
# Copyright 2019 (C), Oracle and/or its affiliates. All rights reserved.


# This yaml file could be supplied in helm install command when deploying OCNSSF
v1.x.y


# e.g. helm install <helm-repo>/ocnssf --name ocnssf --namespace ocnssf -f <this
file>


# Compatible with OCNSSF CHART VERSION 1.x.y


# - Set the docker registry (repository) in:

#     nsselection.image.repository

#     nspolicy.image.repository

#     nsconfig.image.repository

#     nsregistration.image.repository


# - Override (if needed) the ambassador id in:

#     ambassador.ambassador.id

#     ambassador.service.annotations.getambassador.io/config

#     nsselection.ambassador.id

#     nspolicy.ambassador.id

#     nsconfig.ambassador.id

#     nsregistration.ambassador.id


# - Set the MetalLB pool name in:

#     ambassador.service.annotations.metallb.universe.tf/address-pool


# - To integrate with NDB DB-Tier cluster,
```

```
#     set the hostname of the primary sql node in:

#        nspolicy.mysql.primary.host

#        nsconfig.mysql.primary.host

#     AND

#     set the hostname of the secondary sql node in

#        nspolicy.mysql.secondary.host

#        nsconfig.mysql.secondary.host

#     AND

#     set the username and password in

#        nsconfig.mysql.username

#        nsconfig.mysql.password

#     (note: the username and password can be provided in an alternative way by
creating a kubernetes secret

#           with the following properties:

#              name: ocnssf-creds

#              namespace: same as ocnssf deployment

#              data:

#                mysql-username: <username>

#                mysql-password: <password>

#

# - To connect to the PLMN level NRF to utilize registration services

#     set the fqdn and port of NRF in:

#        nsregistration.nrf.host and nsregistration.nrf.port

#     AND

#     configure the NSSF profile in

#        nsregistration.configFiles.nssf.profile

#     AND

#     set the NSSF fqdn in

#        nsregistration.nssf.fqdn


# - To connect to the PLMN level NRF to utilize discovery serrvice for AMF
candidates
```

```
#     set the fqdn and port of NRF in:

#       nspolicy.nrf.host and nspolicy.nrf.port

#     AND

#     set nspolicy.nsp.nrfdisc to true


# - To turn on logging

#     set the appropriate logging level (one of: OFF, INFO, DEBUG, ERROR, ALL)
in one or more of the following:

#       nsselection.nss.loglevel

#       npolicy.nsp.loglevel

#       nsregistration.nsr.loglevel

#       nsconfig.nsc.loglevel

ambassador:

  ambassador:

    id: ocnssf-nsgateway

  service:

    annotations :

      metallb.universe.tf/address-pool: signaling1

      getambassador.io/config: |

          ---

          apiVersion: ambassador/v1

          kind: Module

          name: ambassador

          ambassador_id: ocnssf-nsgateway

          config:

            service_port: 8080


nsselection:

  image:

    repository: reg-1:5000

  loglevel: "OFF"
```

```
    ambassador:

      id: ocnssf-nsgateway

  nspolicy:

    image:

      repository: reg-1:5000

    mysql:

      primary:

        host: "ocnssf-nsdb.ocnssf"

      secondary:

        host: "ocnssf-nsdb.ocnssf"

      port: 3306

    nrf:

      primaryUrl: http://ocnrf.oracle.com:80

      secondaryUrl: http://ocnrf.oracle.com:80

    homeMcc: "100"

    homeMnc: "101"

    loglevel: "OFF"

    reqnftime: false

    outboundProxy: disabled

    features:

      nrfdiscovery: true

      relevance: true

      candidateResolution: true

    nrfDiscoveryProperties:

      disclimit: 5

      httpMaxRetries: 3

    candidateResolutionProperties:

      maxcandidates: 3

    ambassador:

      id: ocnssf-nsgateway
```

```
nsavailability:

  image:

    repository: reg-1:5000

  mysql:

    primary:

      host: "ocnssf-nsdb.ocnssf"

    secondary:

      host: "ocnssf-nsdb.ocnssf"

    port: 3306

  loglevel: "OFF"

  ambassador:

    id: ocnssf-nsgateway

  maxExpiryDuration: 240

  minExpiryDuration: 0

nsconfig:

  image:

    repository: reg-1:5000

  mysql:

    primary:

      host: "ocnssf-nsdb.ocnssf"

    secondary:

      host: "ocnssf-nsdb.ocnssf"

    port: 3306

    username: changeme

    password: changeme

  loglevel: "OFF"

  nrf:

    subscription: true

  ambassador:

    id: ocnssf-nsgateway

    fqdn: http://ocnssf-nsgateway:80
```

```
nsregistration:

  configFiles:

    nf.profile: |-

      {

          "plmnList": [{"mcc": "310", "mnc": "14"}],

          "fqdn": "ocnssf-nsgateway.ocnssf.svc.us.lab.oracle.com",

          "interPlmnFqdn": "ocnssf-nsgateway.ocnssf.svc.us.lab.oracle.com",

          "ipv4Addresses": [ "127.0.0.1", "10.0.0.1" ],

          "ipv6Addresses": [ "::1", "::2" ],

          "priority": 5,

          "locality": "us-east",

          "nfServices": [{

                  "serviceName": "nssf-nsselection",

                  "versions": [{

                          "apiVersionInUri": "v1",

                          "apiFullVersion": "1.15.3.0",

                          "expiry": "2019-12-31T23:59:59.000+0000"

                  }],

                  "scheme": "http",

                  "allowedNfTypes": [ "AMF" ],

                  "fqdn": "ocnssf-nsgateway.ocnssf.svc.us.lab.oracle.com",

                  "interPlmnFqdn": "ocnssf-nsgateway.ocnssf.svc.us.lab.oracle.com",

                  "ipEndPoints": [{

                          "ipv4Address": "127.0.0.1",

                          "transport": "TCP",

                          "port": 80

                  }]

          }]

      }
```

```
     image:

        repository: reg-1:5000

     nrf:

        primaryUrl: http://ocnrf.oracle.com:80

        secondaryUrl: http://ocnrf.oracle.com:80

     nf:

        fqdn: ocnssf-nsgateway.ocnssf.svc.us.lab.oracle.com

     httpMaxRetries: 0

     loglevel: "OFF"

     outboundProxy: disabled

     ambassador:

        id: ocnssf-nsgateway


nssubscription:

  image:

     repository: reg-1:5000

  mysql:

     primary:

        host: "ocnssf-nsdb.ocnssf"

     secondary:

        host: "ocnssf-nsdb.ocnssf"

     port: 3306

  httpMaxRetries: 3

  loglevel: "OFF"

  ambassador:

     id: ocnssf-nsgateway
```