

# Deploying and Configuring SMF through Ops Center


- Feature Summary and Revision History, on page 1
- Feature Description, on page 2
- Deploying and Accessing SMF, on page 3
- SMF Service Configuration, on page 4
- Loading Day 1 Configuration, on page 5


# Feature Summary and Revision History

## Summary Data

***Table 1: Summary Data***

| | |
|---|---|
| Applicable Product(s) or Functional Area | SMF |
| Applicable Platform(s) | SMI |
| Feature Default Setting | Disabled - Configuration Required |
| Related Changes in this Release | Not Applicable |
| Related Documentation | Not Applicable |

## Revision History

***Table 2: Revision History***

| Revision Details | Release |
|---|---|
| SMF deployment on bare metal server is supported and fully qualified in this release. | 2021.01.0 |
| First introduced. | Pre-2020.02.0 |

# Feature Description

The SMF deployment and configuration procedure involves deploying the SMF through the Subscriber Microservices Infrastructure (SMI) Cluster Deployer and configuring the settings or customizations through the SMF Operations (Ops) Center. The Ops Center is based on the ConfD CLI. The SMF configuration includes the NRF profile data configuration and the externally visible IP addresses and ports.

## SMF Ops Center

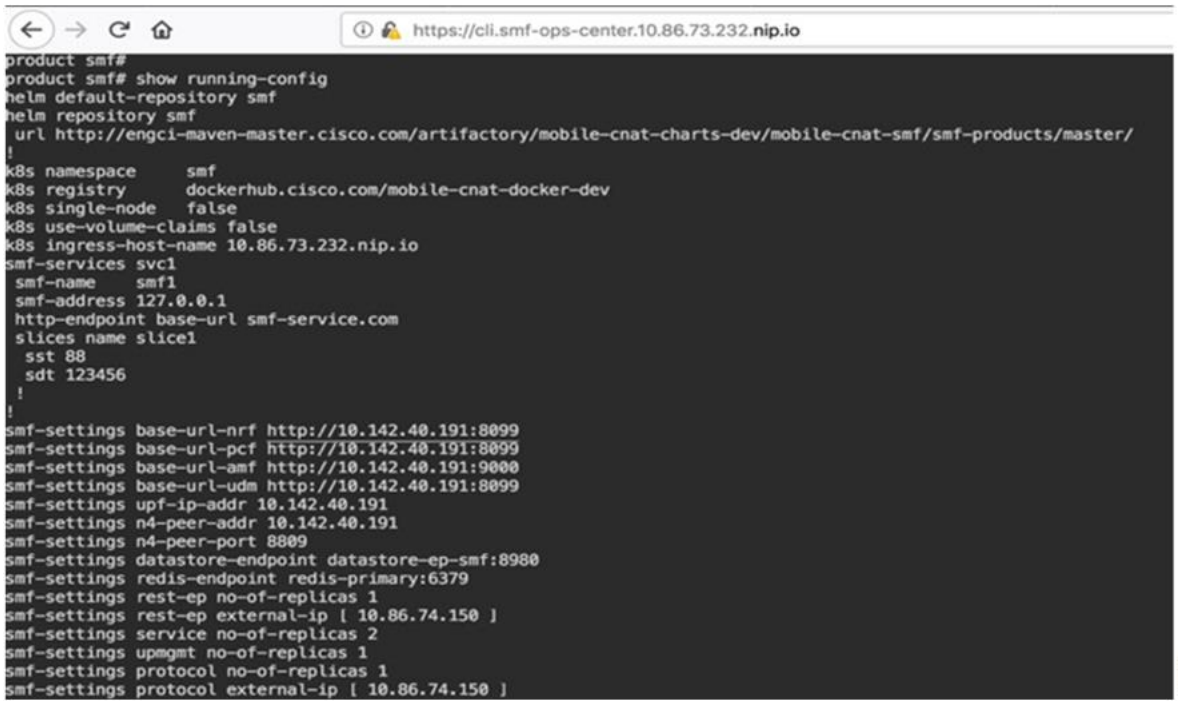
The Ops Center is a system-level infrastructure that provides the following functionality:

- A user interface to trigger a deployment of microservices with the flexibility of providing variable helm chart parameters to control the scale and properties of Kubernetes objects (deployment, pod, services, and so on) associated with the deployment.
- A user interface to push application-specific configuration to one or more microservices through Kubernetes configuration maps.
- A user interface to issue application-specific execution commands (such as show and clear commands). These commands:
  - Invoke some APIs in application-specific pods
  - Display the information returned on the user interface application

The SMF Ops Center allows you to configure the features such as licensing, SMF engine, REST Endpoint, and CDL.

The following screenshot shows the sample web-based command line interface:

*Figure 1: Web-based CLI of Ops Center*




## Prerequisites

Before deploying SMF on the SMI layer:

- Ensure that all the virtual network functions (VNFs) are deployed.
- Run the SMI synchronization operation for the SMF Ops Center and Cloud Native Common Execution Environment (CN-CEE).
- Ensure that the node labels are configured as per the recommended pod deployment layout.
- Configure the external VIPs as per the NF requirement
- Enable Istio for pod-to-pod traffic load balancing

# Deploying and Accessing SMF

This section describes how to deploy SMF and access the SMF Ops Center.

## Deploying SMF

The Subscriber Microservices Infrastructure (SMI) platform is responsible for deploying and managing the Cloud Native 5G SMF application and other network functions.

For information on how to deploy SMF Ops Center on a vCenter environment, see *Deploying and Upgrading the Product* section in the *Ultra Cloud Core Subscriber Microservices Infrastructure—Operations Guide*.

For information on how to deploy SMF Ops Center on bare metal servers (currently Cisco UCS-C servers) environment, see *Operating the SMI Cluster Manager on Bare Metal* section in *Ultra Cloud Core Subscriber Microservices Infrastructure — Operations Guide*.

## Accessing the SMF Ops Center

You can connect to the SMF Ops Center through one of the following options:

- SSH
- Web-based console

To connect to the SMF Ops Center through SSH, use the following command:

**ssh admin**@*ops_center_pod_ip* **-p 2024**

Use the same user name and password as configured through the SMI Ops Center. For more information on the user management for access control, see the *CEE Configuration and Administration Guide*.

To connect to the Ops Center through Web-based console, perform the following steps:

1. Log on to the Kubernetes master node.
2. Run the following command:

   **kubectl get ingress** <*namespace*>

   The available ingress connections get listed.
3. Select the appropriate ingress and access the SMF Ops Center.
4. Access the following URL from your web browser:

   **cli**.<*namespace*>**-ops-center**.<*ip_address*>.**nip.io**

By default, the Day 0 configuration is loaded into the SMF.

To connect to the Ops center using FQDN and path-based URL routing, see the Configuring Hostname and URL-based Routing for Ingress section in the *Ultra Cloud Core Subscriber Microservices Infrastructure - Deployment Guide*.

# SMF Service Configuration

The SMF service requires the basic configuration to process PDU Session Management API calls.

## Mapping Pods with Node Labels

**Prerequisites**

- Ensure that the node labels are according to the pod deployment layout.
- Ensure that the external VIPs are according to the requirement of NF.
- Enable Istio for pod to pod traffic load balancing.

Node Labels are key and value pairs that are attached to nodes at cluster synchronization. Each node can have a set of key and value labels defined. Each key must be unique for a node. With labels, users can map their NF pods onto nodes in a loosely coupled manner.

**Important**

- The pod-level labeling configuration is applicable only when the SMF is deployed on a bare metal server.
- Ensure to configure the node label on the SMI cluster deployer before mapping the pods. Following is the sample command for master-1 labeling:

```
[cndp-clpnc-cm-cm-primary] SMI Cluster Deployer (config-nodes-master-1)# k8s node-labels
smi.cisco.com/svc-type smf-node
```

To map the pods with node labels, use the following sample configuration:

```
config
   k8 label protocol-layer key label_key value label_value
   k8 label service-layer key label_key value label_value
   k8 label cdl-layer key label_key value label_value
   k8 label oam-layer key label_key value label_value
   end
```

Following is an example configuration of pod to node-label mapping:

```
k8 label protocol-layer key smi.cisco.com/node-type value smf-proto
exit
k8 label service-layer key vm-type value smf-svc
exit
k8 label cdl-layer key smi.cisco.com/node-type value smf-cdl
exit
k8 label oam-layer key smi.cisco.com/node-type value oam
exit
```

# Loading Day 1 Configuration

To load the Day 1 configuration for SMF, run the following command:

```
ssh admin@ops_center_pod_ip -p 2024  < Day1config.cli
```

Alternatively, you can copy the Day 1 configuration and paste it in the SMF Ops Center CLI to load the Day 1 configuration.

```
config
  <Paste the Day 1 configuration here>
  commit
  exit
```

To view the Day 1 configuration for SMF, see the Sample SMF Configuration chapter.