Pods and Services Reference

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	AMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled - Always-on
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced.	2021.04.0

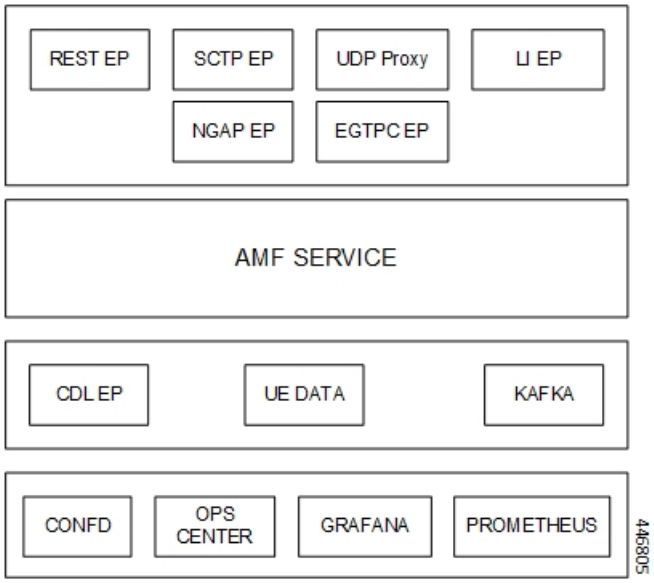
Feature Description

The AMF is built on the Kubernetes cluster strategy, which implies that it has adopted the native concepts of containerization, high availability, scalability, modularity, and ease of deployment. To achieve the benefits offered by Kubernetes, AMF uses the construct that includes the components such as pods and services.

Depending on your deployment environment, the AMF deploys the pods on the virtual machines that you have configured. Pods operate through the services that are responsible for the intrapod communications. If the machine hosting the pods fail or experiences network disruption, the pods are terminated or deleted. However, this situation is transient and AMF spins new pods to replace the invalid pods.

The following workflow provides a high-level visibility into the host machines, and the associated pods and services. It also represents how the pods interact with each other. The representation might defer based on your deployment infrastructure.

Figure 1: Communication Workflow of Pods



Note Currently, LI endpoint is not supported.

Pods

A pod is a process that runs on your Kubernetes cluster. Pod encapsulates a granular unit known as a container. A pod contains one or multiple containers.

Kubernetes deploys one or multiple pods on a single or multiple nodes which can be a physical or virtual machine. Each pod has a discrete identity with an internal IP address and port space. However, the containers within a pod can share the storage and network resources.

The following tables list the AMF pod names and the Kubernetes node names on which they are deployed depending on the labels that you assign. For information on how to assign the labels, see Associating Pods to the Nodes, on page 8.

Note Maximum number of pods that can be configured per node is 256.

Note In case of separate CDL deployment, CDL pods are visible under CDL namespace.

Table 3: AMF Pods

Pod Name	Description	Kubernetes Node Name
base-entitlement-amf	Supports Smart Licensing feature.	OAM
cache-pod	Operates as the pod to cache any sort of system information that will be used by other pods as applicable.	Protocol
cdl-ep-session-c1	Provides an interface to the CDL.	Session
cdl-index-session-c1	Preserves the mapping of keys to the session pods.	Session
cdl-slot-session-c1	Operates as the CDL Session pod to store the session data.	Session
documentation	Contains the documentation.	OAM
etcd-amf-etcd-cluster	Hosts the etcd for the AMF application to store information, such as pod instances, leader information, NF-UUID, endpoints, and so on.	OAM
georeplication	Contains business logic for Geographic Redundancy (Currently, GR is not fully supported in AMF).	Protocol
grafana-dashboard-app-infra	Contains the default dashboard of app-infra metrics in Grafana.	OAM
grafana-dashboard-cdl	Contains the default dashboard of CDL metrics in Grafana.	OAM
grafana-dashboard-amf	Contains the default dashboard of AMF-service metrics in Grafana.	OAM
gtpc-ep-n0	Operates as GTPC endpoint of AMF.	Protocol
kafka	Hosts the Kafka details for the CDL replication.	Protocol

Pod Name	Description	Kubernetes Node Name
nodemgr-n0	Performs node level interactions, such as N4 link establishment, management (heart-beat). It also generates unique identifiers, such as UE IP address, SEID, CHF-ID, Resource URI.	Service
oam-pod	Operates as the pod to facilitate Ops Center actions, such as show commands, configuration commands, monitor protocol monitor subscriber, and so on.	OAM
ops-center-amf-ops-center	Acts as the AMF Ops Center.	OAM
smart-agent-amf-ops-center	Operates as the utility pod for the AMF Ops Center.	OAM
amf-amf-service-0	Contains main business logic of AMF.	Service
amf-amf-rest-ep-0	Operates as REST endpoint of AMF for HTTP2 communication.	Protocol
amf-amf-protocol-ep	Processes NGAP/NAS Protocol Messages.	Protocol
amf-amf-sctp-lb	Operates as SCTP end point for AMF.	Protocol
amf-udp-proxy-0	Operates as proxy for all UDP messages. Owns UDP client and server functionalities.	Protocol
swift-amf-ops-center	Operates as the utility pod for the AMF Ops Center.	OAM
zookeeper	Assists Kafka for topology management.	OAM

Services

The AMF configuration is composed of several microservices that run on a set of discrete pods. Microservices are deployed during the AMF deployment. AMF uses these services to enable communication between the pods. When interacting with another pod, the service identifies the pod's IP address to initiate the transaction and acts as an endpoint for the pod.

The following table describes the AMF services and the pod on which they run.

Note In case of separate CDL deployment, CDL related services are visible under CDL namespace.

Table 4: AMF Services and Pods

Service Name	Pod Name	Description
alert-frwd-ops-center	ops-center-amf-ops-center	Responsible for forwarding SNMP alerts.
amf-gosctp-lb	amf-gosctp-lb	Responsible for receving incoming traffic over SCTP from N1 interface.
amf-nrf-service	amf-rest-ep	Responsible for providing API for NRF CLIs.
amf-protocol-ep	amf-protocol-ep	Responsible for inter-pod communication with amf-protocol-ep pod.
amf-rest-ep	amf-rest-ep	Responsible for inter-pod communication with amf-rest-ep pod.
amf-sbi-service	amf-rest-ep	Responsible for routing incoming SBI messages to REST-EP pods.
amf-service	amf-service	Responsible for inter-pod communication with amf-service pod.
base-entitlement-amf	ops-center-amf-ops-center	Supports Smart Licensing feature.
bgpspeaker-pod	georeplication-pod-0	Responsible for providing Geo replication support.
datastore-ep-session	cdl-ep-session	Responsible for the CDL session.
datastore-notification-ep	amf-rest-ep	Responsible for sending the notifications from the CDL to the smf-service through amf-rest-ep.
datastore-tls-ep-session	cdl-ep-session	Responsible for the secure CDL connection.
documentation	documentation	Responsible for the AMF documents.
etcd	etcd-cluster	Responsible for pod discovery within the namespace.
etcd-amf-ins1-etcd-cluster-0	etcd-cluster	Responsible for synchronization of data among the ETCD cluster.
etcd-amf-ins1-etcd-cluster-1	etcd-cluster	Responsible for synchronization of data among the ETCD cluster.

Service Name	Pod Name	Description
etcd-amf-ins1-etcd-cluster-2	etcd-cluster	Responsible for synchronization of data among the ETCD cluster.
grafana-dashboard-amf	grafana-dashboard-amf	Responsible for the default dashboard of AMF-service metrics in Grafana.
grafana-dashboard-app-infra-amf	grafana-dashboard-app-infra	Responsible for the default dashboard of App-Infra metrics in Grafana.
grafana-dashboard-cdl-cdl-amf	grafana-dashboard-cdl	Responsible for the default dashboard of CDL metrics in Grafana.
grafana-dashboard-etcd-amf	grafana-dashboard-etcd	Responsible for the default dashboard of ETCD metrics in Grafana.
gtpc-ep	gtpc-ep	Responsible for inter-pod communication with GTP-C pod.
kafka	kafka	Processes the Kafka messages.
local-ldap-proxy-amf-ins1-ops-center	ops-center-amf-ops-center	Responsible for leveraging Ops Center credentials by other applications, such as Grafana.
netconf-ops-center-amf-ins1-ops-center	ops-center-amf-ops-center	Responsible for providing/exposing netconf interface to configure AMF.
nodemgr	nodemgr	Responsible for inter-pod communication with nodemgr pod.
oam-pod	oam-pod	Responsible to facilitate Exec commands on the Ops Center.
ops-center-amf-ops-center	ops-center-amf-ops-center	Operates as the utility pod for the SMF Ops Center.
prometheus-rules-etcd	prometheus-rules-etcd	Responsible for the default Prometheus rules of ETCD in Prometheus.
smart-agent-amf-ops-center	smart-agent-amf-ops-center	Responsible for smart licensing.
ssh-ops-center-amf-ops-center	ops-center-amf-ops-center	To access AMF Ops Center using SSH IP.
zookeeper	zookeeper	Assists Kafka for topology management.

Service Name	Pod Name	Description
zookeeper-service	zookeeper	Assists Kafka for topology management.

Open Ports and Services

The AMF uses different ports for communication. The following table describes the default open ports and the associated services.

Table 5: Open Ports and Services

Port	Service	Usage
22	SSH	SMI uses TCP port to communicate with the virtual machines.
443	SSL/HTTP	SMI uses TCP port for providing Web access to CLI, Documentation, and TAC.
6443	HTTP	SMI uses port to communicate with the Kubernetes API server.
9100	jetdirect	SMI uses TCP port to communicate with the Node Exporter. Node Exporter is a Prometheus exporter for hardware and OS metrics with pluggable metric collectors. It allows you to measure various machine resources, such as memory, disk, and CPU utilization.
10250	SSL/HTTP	SMI uses TCP port to communicate with Kubelet. Kubelet is the lowest level component in Kubernetes. It is responsible for what is running on an individual machine. It is a process watcher or supervisor focused on active container. It ensures the specified containers are up and running.
10256	HTTP	SMI uses TCP port to interact with the Kube proxy. Kube proxy is a network proxy that runs on each node in your cluster. Kube proxy maintains network rules on nodes. These network rules allow network communication to your pods from network sessions inside or outside of your cluster.
2024	SSH	AMF Ops Center uses this port to provide the ConfD CLI access.
9090	HTTP	AMF REST endpoint pods use this port to expose the APIs to support NRF interface specific CLIs.
8090	HTTP	AMF REST endpoint pods use this port for routing incoming SBI messages to REST-EP pods.
8890	gRPC/HTTP	AMF REST endpoint pods use this port to receive timer notification from CDL.

Port	Service	Usage
3179	Tcpwrapped	SMI uses this TCP port for Calico(Kubernetes networking). Calico is used for routing the networking packets to pods.

Associating Pods to the Nodes

This section describes how to associate a pod to the node based on their labels.

After you have configured a cluster, you can associate pods to the nodes through labels. This association enables the pods to get deployed on the appropriate node based on the key-value pair.

Labels are required for the pods to identify the nodes where they must get deployed and to run the services. For example, when you configure the protocol-layer label with the required key-value pair, the pods are deployed on the nodes that match the key-value pair.

To associate pods to the nodes through the labels, use the following configuration:

```
config
  k8 label
    cdl-layer
      key key_value
      value value
    oam-layer
      key key_value
      value value
    protocol-layer
      key key_value
      value value
    service-layer
      key key_value
      value value
    sctp-layer
      key key_value
      value value
      end
```

NOTES:

- label { cdl-layer { key key_value | value value }—Specify the key value pair for CDL.
- oam-layer { key key_value | value value }—Specify the key value pair for OAM layer.
- protocol-layer { key key_value | value value }—Specify the key value pair for protocol layer.
- service-layer { key key_value | value value }—Specify the key value pair for the service layer.
- sctp-layer { key key_value | value value }—Specify the key value pair for the SCTP layer.

Note If you opt not to configure the labels, then AMF assumes the labels with the default key-value pair.

Viewing the Pod Details and Status

If the service requires additional pods, AMF creates and deploys the pods. You can view the list of pods that are participating in your deployment through the AMF Ops Center. You can run the kubectl command from the master node to manage the Kubernetes resources.

- To view the comprehensive pod details, use the following command.

  kubectl get pods -n *amf_namespace pod_name* **-o yaml**

  The pod details are available in YAML format. The output of this command results in the following information:

  - The IP address of the host where the pod is deployed.
  - The service and application that is running on the pod.
  - The ID and name of the container within the pod.
  - The IP address of the pod.
  - The current state and phase in which the pod is.
  - The start time from which pod is in the current state.

  Sample Output:

```
kubectl get pod -n amf-ins1 cache-pod-0 -o yaml
apiVersion: v1
kind: Pod
metadata:
  annotations:
    cni.projectcalico.org/podIP: 41.41.13.51/32
    cni.projectcalico.org/podIPs: 41.41.13.51/32,4141:4141::d32/128
    prometheus.io/port: "10080"
    prometheus.io/scrape: "true"
    sidecar.istio.io/inject: "false"
  creationTimestamp: "2021-10-16T18:03:32Z"
  generateName: cache-pod-
  labels:
    component: cache-pod
    controller-revision-hash: cache-pod-56dc45d7df
    release: amf-ins1-infra-charts
    statefulset.kubernetes.io/pod-name: cache-pod-0
  name: cache-pod-0
  namespace: amf-ins1
  ownerReferences:
  - apiVersion: apps/v1
    blockOwnerDeletion: true
    controller: true
    kind: StatefulSet
    name: cache-pod
    uid: 18dfdb38-ca20-47ab-b525-770be9ace57c
  resourceVersion: "5770907"
  uid: 088c4f8d-143b-4096-ad03-f95409c16db9
spec:
  affinity:
    nodeAffinity:
      requiredDuringSchedulingIgnoredDuringExecution:
        nodeSelectorTerms:
        - matchExpressions:
```

```
          - key: smi.cisco.com/node-type-2
            operator: In
            values:
            - protocol
.
.
.
status:
  conditions:
  - lastProbeTime: null
    lastTransitionTime: "2021-10-16T18:03:47Z"
    status: "True"
    type: Initialized
  - lastProbeTime: null
    lastTransitionTime: "2021-10-16T18:04:52Z"
    status: "True"
    type: Ready
  - lastProbeTime: null
    lastTransitionTime: "2021-10-16T18:04:52Z"
    status: "True"
    type: ContainersReady
  - lastProbeTime: null
    lastTransitionTime: "2021-10-16T18:03:32Z"
    status: "True"
    type: PodScheduled
  containerStatuses:
  - containerID: docker://68f5c45ed73ee311a05a32be4fadca0cb9fda0742a01d303fe5115dfa7573a48

    image:
docker.171.11.189.41.nip.io/amf.2021.04.m0.i80/mobile-cnat-app-infra/cache-pod/main/cache_pod:0.1.0-32e359a

    imageID:
docker-pullable://docker.171.11.189.41.nip.io/amf.2021.04.m0.i80/mobile-cnat-app-infra/cache-pod/main/cache_pod@sha256:d2c82e1af506cf92c04b93f40ef8a1dfcf830d457bfeab4dc8aba763ce894

    lastState: {}
    name: cache-pod
    ready: true
    restartCount: 0
    started: true
    state:
      running:
        startedAt: "2021-10-16T18:03:49Z"
  hostIP: 171.11.189.42
  phase: Running
  podIP: 41.41.13.51
  podIPs:
  - ip: 41.41.13.51
  - ip: 4141:4141::d32
  qosClass: Burstable
  startTime: "2021-10-16T18:03:47Z"
```

- To view the summary of the pod details, use the following command.

  kubectl get pods -n *amf_namespace* **-o wide**

  Sample Output:

```
kubectl get pod -n amf-ins1 -o wide
NAME                                                  READY   STATUS    RESTARTS   AGE
    IP              NODE                       NOMINATED NODE   READINESS GATES
amf-ins1-amf-gosctp-lb-0                              1/1     Running   0          37h
   171.11.189.42   amf-cndp-b19-4-master-1   <none>           <none>
amf-ins1-amf-gosctp-lb-1                              1/1     Running   0          37h
   171.11.189.43   amf-cndp-b19-4-master-2   <none>           <none>
amf-ins1-amf-protocol-ep-0                            2/2     Running   1          37h
```

```
   41.41.13.137    amf-cndp-b19-4-master-1   <none>           <none>
amf-ins1-amf-protocol-ep-1                                  2/2     Running   1          37h
   41.41.43.4      amf-cndp-b19-4-master-2   <none>           <none>
amf-ins1-amf-rest-ep-0                                      2/2     Running   1          37h
   41.41.13.189    amf-cndp-b19-4-master-1   <none>           <none>
amf-ins1-amf-rest-ep-1                                      2/2     Running   1          37h
   41.41.43.46     amf-cndp-b19-4-master-2   <none>           <none>
amf-service-n0-0                                            2/2     Running   1          37h
   41.41.13.135    amf-cndp-b19-4-master-1   <none>           <none>
amf-service-n0-1                                            2/2     Running   1          37h
   41.41.13.49     amf-cndp-b19-4-master-1   <none>           <none>
amf-service-n1-0                                            2/2     Running   0          37h
   41.41.59.62     amf-cndp-b19-4-master-3   <none>           <none>
amf-service-n1-1                                            2/2     Running   1          37h
   41.41.59.19     amf-cndp-b19-4-master-3   <none>           <none>
base-entitlement-amf-6cf5fb484d-4w7cg                       1/1     Running   0          37h
   41.41.59.51     amf-cndp-b19-4-master-3   <none>           <none>
cache-pod-0                                                 1/1     Running   0          37h
   41.41.13.51     amf-cndp-b19-4-master-1   <none>           <none>
cache-pod-1                                                 1/1     Running   0          36h
   41.41.43.49     amf-cndp-b19-4-master-2   <none>           <none>
documentation-556f8dcc5c-pnlnn                              1/1     Running   0          37h
   41.41.59.61     amf-cndp-b19-4-master-3   <none>           <none>
etcd-amf-ins1-etcd-cluster-0                                2/2     Running   2          37h
   41.41.13.173    amf-cndp-b19-4-master-1   <none>           <none>
etcd-amf-ins1-etcd-cluster-1                                2/2     Running   0          37h
   41.41.43.5      amf-cndp-b19-4-master-2   <none>           <none>
etcd-amf-ins1-etcd-cluster-2                                2/2     Running   0          37h
   41.41.59.8      amf-cndp-b19-4-master-3   <none>           <none>
georeplication-pod-0                                        1/1     Running   0          37h
   171.11.189.43   amf-cndp-b19-4-master-2   <none>           <none>
grafana-dashboard-amf-695457b77d-gdhf5                      1/1     Running   0          37h
   41.41.13.52     amf-cndp-b19-4-master-1   <none>           <none>
grafana-dashboard-app-infra-amf-ins1-cfb8b656d-54s9z   1/1     Running   0          37h
   41.41.13.150    amf-cndp-b19-4-master-1   <none>           <none>
grafana-dashboard-etcd-amf-ins1-5c7d9d75db-729sl       1/1     Running   0          37h
   41.41.13.191    amf-cndp-b19-4-master-1   <none>           <none>
gtpc-ep-n0-0                                                2/2     Running   1          37h
   41.41.13.160    amf-cndp-b19-4-master-1   <none>           <none>
li-ep-n0-0                                                  2/2     Running   0          37h
   41.41.13.30     amf-cndp-b19-4-master-1   <none>           <none>
li-ep-n0-1                                                  2/2     Running   0          37h
   41.41.43.29     amf-cndp-b19-4-master-2   <none>           <none>
nodemgr-n0-0                                                2/2     Running   1          37h
   41.41.13.144    amf-cndp-b19-4-master-1   <none>           <none>
nodemgr-n0-1                                                2/2     Running   1          37h
   41.41.59.36     amf-cndp-b19-4-master-3   <none>           <none>
oam-pod-0                                                   2/2     Running   1          37h
   41.41.13.133    amf-cndp-b19-4-master-1   <none>           <none>
ops-center-amf-ins1-ops-center-5bf9df44b6-pn5ds         5/5     Running   0          36h
   41.41.59.41     amf-cndp-b19-4-master-3   <none>           <none>
prometheus-rules-etcd-796ffd6cdf-w48rj                      1/1     Running   0          37h
   41.41.13.169    amf-cndp-b19-4-master-1   <none>           <none>
smart-agent-amf-ins1-ops-center-8475b6559d-q9gb2        1/1     Running   0          37h
   41.41.13.152    amf-cndp-b19-4-master-1   <none>           <none>
udp-proxy-0                                                 1/1     Running   0          37h
   171.11.189.42   amf-cndp-b19-4-master-1   <none>           <none>
udp-proxy-1                                                 1/1     Running   0          37h
   171.11.189.43   amf-cndp-b19-4-master-2   <none>           <none>
```

States

Understanding the pod's state lets you determine the current health and prevent the potential risks. The following table describes the pod's states.

Table 6: Pod States

State	Description
Running	The pod is healthy and deployed on a node. It contains one or more containers
Pending	The application is in the process of creating the container images for the pod
Succeeded	Indicates that all the containers in the pod are successfully terminated. These pods cannot be restarted.
Failed	One ore more containers in the pod have failed the termination process. The failure occurred as the container either exited with non zero status or the system terminated the container.
Unknown	The state of the pod could not be determined. Typically, this could be observed because the node where the pod resides was not reachable.

Viewing the Service Details

To view service summary, use the following command.

kubectl get svc -n *amf_namespace*

Sample Output:

```
kubectl get svc -n amf-ins1
NAME                                 TYPE        CLUSTER-IP      EXTERNAL-IP    PORT(S)
 AGE
alert-frwd-ops-center                ClusterIP   46.46.34.111    <none>         8080/TCP
29d
amf-gosctp-lb                        ClusterIP   46.46.149.12    <none>         7084/TCP
36h
amf-nrf-service                      ClusterIP   46.46.227.164   172.16.186.4   9090/TCP
36h
amf-protocol-ep                       ClusterIP   46.46.155.167   <none>
9003/TCP,8080/TCP                            36h
amf-rest-ep                           ClusterIP   46.46.171.99    <none>
9003/TCP,8080/TCP,9201/TCP                   36h
amf-sbi-service                      ClusterIP   46.46.241.2     172.16.186.4   8070/TCP
36h
amf-service                           ClusterIP   46.46.168.108   <none>
9003/TCP,8080/TCP                            36h
base-entitlement-amf                 ClusterIP   46.46.114.105   <none>         8000/TCP
29d
bgpspeaker-pod                        ClusterIP   46.46.238.2     <none>
9008/TCP,7001/TCP,8879/TCP                   36h
datastore-notification-ep            ClusterIP   46.46.82.153    172.16.184.4   8012/TCP
```

```
                                          36h
documentation                            ClusterIP   46.46.73.219    <none>         8080/TCP
                                          29d
etcd                                      ClusterIP   None            <none>
2379/TCP,7070/TCP                                36h
etcd-amf-ins1-etcd-cluster-0              ClusterIP   46.46.167.73    <none>
2380/TCP,2379/TCP                                36h
etcd-amf-ins1-etcd-cluster-1              ClusterIP   46.46.144.110   <none>
2380/TCP,2379/TCP                                36h
etcd-amf-ins1-etcd-cluster-2              ClusterIP   46.46.51.186    <none>
2380/TCP,2379/TCP                                36h
grafana-dashboard-amf                    ClusterIP   46.46.124.50    <none>         9418/TCP
                                          36h
grafana-dashboard-app-infra-amf-ins1      ClusterIP   46.46.72.66     <none>         9418/TCP
                                          36h
grafana-dashboard-etcd-amf-ins1          ClusterIP   46.46.152.59    <none>         9418/TCP
                                          36h
gtpc-ep                                   ClusterIP   46.46.197.81    <none>
9003/TCP,8080/TCP                                36h
ldap-proxy-amf-ins1-oam-pod               ClusterIP   46.46.71.103    <none>
636/TCP,389/TCP                                  36h
li-ep                                     ClusterIP   46.46.225.162   <none>
9003/TCP,8080/TCP                                36h
local-ldap-proxy-amf-ins1-ops-center      ClusterIP   46.46.178.218   <none>
636/TCP,369/TCP                                  29d
netconf-ops-center-amf-ins1-ops-center   ClusterIP   46.46.239.155   10.84.125.82   2024/TCP
                                          29d
nodemgr                                   ClusterIP   46.46.232.17    <none>
9003/TCP,8884/TCP,8879/TCP,9201/TCP,8080/TCP    36h
oam-pod                                   ClusterIP   46.46.178.171   <none>
9008/TCP,7001/TCP,8879/TCP,10080/TCP,8080/TCP   36h
ops-center-amf-ins1-ops-center            ClusterIP   46.46.230.116   <none>
8008/TCP,8080/TCP,2024/TCP,2022/TCP,7681/TCP    29d
prometheus-rules-etcd                    ClusterIP   None            <none>         9419/TCP
                                          36h
smart-agent-amf-ins1-ops-center          ClusterIP   46.46.9.52      <none>         8888/TCP
                                          29d
ssh-ops-center-amf-ins1-ops-center       ClusterIP   46.46.97.118    10.84.125.82   2025/TCP
                                          29d
```

To view the comprehensive service details, use the following command.

kubectl get svc -n *amf_namespace service_name* **-o yaml**

Sample Output:

```
kubectl get svc amf-rest-ep -n amf-ins1 -o yaml
apiVersion: v1
kind: Service
metadata:
  annotations:
    meta.helm.sh/release-name: amf-ins1-amf-rest-ep
    meta.helm.sh/release-namespace: amf-ins1
  creationTimestamp: "2021-10-16T18:00:23Z"
  labels:
    app: amf-rest-ep
    app.kubernetes.io/managed-by: Helm
    chart: amf-rest-ep-0.1.0-main-2464-211014124230-2d34ce7
    component: amf-rest-ep
    heritage: Helm
    release: amf-ins1-amf-rest-ep
  name: amf-rest-ep
  namespace: amf-ins1
  resourceVersion: "5768444"
  uid: 65cb4204-8914-4b71-aa3c-809238dd755e
```

```
spec:
  clusterIP: 46.46.171.99
  clusterIPs:
  - 46.46.171.99
  ipFamilies:
  - IPv4
  ipFamilyPolicy: SingleStack
  ports:
  - name: grpc
    port: 9003
    protocol: TCP
    targetPort: 9003
  - name: metrics
    port: 8080
    protocol: TCP
    targetPort: 8080
  - name: nrfrestep
    port: 9201
    protocol: TCP
    targetPort: 9201
  selector:
    component: amf-rest-ep
    release: amf-ins1-amf-rest-ep
  sessionAffinity: None
  type: ClusterIP
status:
  loadBalancer: {}
```