



Pods and Services Reference

- [Feature Summary and Revision History, on page 1](#)
- [Feature Description, on page 2](#)
- [Associating Pods to the Nodes, on page 8](#)
- [Viewing the Pod Details and Status, on page 9](#)
- [Viewing the Service Details, on page 12](#)

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

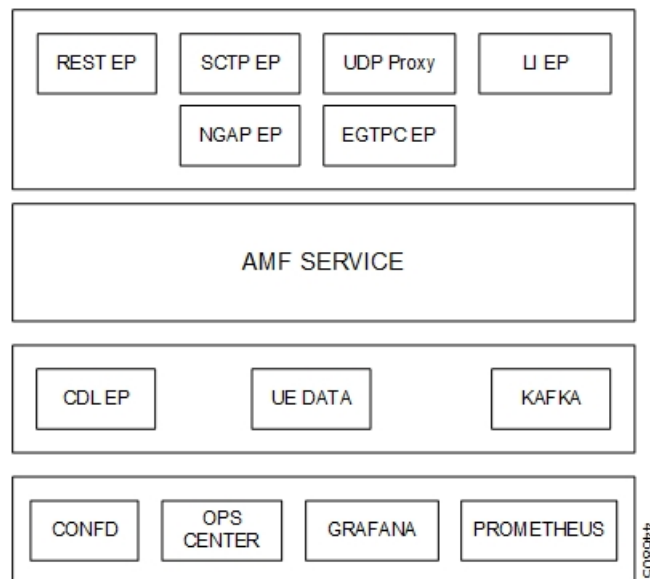
Feature Description

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 receiving 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.
80	HTTP	SMI uses TCP port for providing Web access to CLI, Documentation, and TAC.
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.
10251	SSL/HTTP	SMI uses TCP port to interact with the Kube scheduler. Kube scheduler is the default scheduler for Kubernetes and runs as part of the control plane. A scheduler watches for newly created pods that have no node assigned. For every pod that the scheduler discovers, the scheduler becomes responsible for finding the best node for that pod to run on.
10252	apollo-relay	SMI uses this TCP port to interact with the Kube controller. The Kubernetes controller manager is a daemon that embeds the core control loops shipped with Kubernetes. The controller is a control loop that watches the shared state of the cluster through the API server and makes changes to move the current state to the desired state.

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

In addition to the preceding ports, AMF uses the ports that are destined for SMI for routing information between hosts. For more information on SMI ports, see *Ultra Cloud Core Subscriber Microservices Infrastructure Operations Guide*.

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: 209.165.201.3/32
    cni.projectcalico.org/podIPs: 209.165.201.3/32,4141:4141::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.209.165.201.29.nip.io/amf.2021.04.m0.i80/mobile-cnat-app-infra/cache-pod/main/
      cache_pod:0.1.0-32e359a
      imageID:
        docker-pullable://docker.209.165.201.29.nip.io/amf.2021.04.m0.i80/mobile-cnat-app-infra/
        cache-pod/main/cache_pod@sha256:d2c82e1af506cf92c04d93f40ef8caldfcf830d457bfeabd4dc8aba7b63ce894
    lastState: {}
    name: cache-pod
    ready: true
    restartCount: 0
    started: true

```

```

state:
  running:
    startedAt: "2021-10-16T18:03:49Z"
hostIP: 209.165.201.29
phase: Running
podIP: 209.165.201.3
podIPs:
- ip: 209.165.201.3
- 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
  209.165.201.29   amf-cndp-b19-4-master-1   <none>          <none>
amf-ins1-amf-gosctp-lb-1             1/1    Running   0           37h
  209.165.201.30   amf-cndp-b19-4-master-2   <none>          <none>
amf-ins1-amf-protocol-ep-0           2/2    Running   1           37h
  209.165.201.8    amf-cndp-b19-4-master-1   <none>          <none>
amf-ins1-amf-protocol-ep-1           2/2    Running   1           37h
  209.165.201.16   amf-cndp-b19-4-master-2   <none>          <none>
amf-ins1-amf-rest-ep-0               2/2    Running   1           37h
  209.165.201.15   amf-cndp-b19-4-master-1   <none>          <none>
amf-ins1-amf-rest-ep-1               2/2    Running   1           37h
  209.165.201.19   amf-cndp-b19-4-master-2   <none>          <none>
amf-service-n0-0                     2/2    Running   1           37h
  209.165.201.7    amf-cndp-b19-4-master-1   <none>          <none>
amf-service-n0-1                     2/2    Running   1           37h
  209.165.201.2    amf-cndp-b19-4-master-1   <none>          <none>
amf-service-n1-0                     2/2    Running   0           37h
  209.165.201.27   amf-cndp-b19-4-master-3   <none>          <none>
amf-service-n1-1                     2/2    Running   1           37h
  209.165.201.22   amf-cndp-b19-4-master-3   <none>          <none>
base-entitlement-amf-6cf5fb484d-4w7cg 1/1    Running   0           37h
  209.165.201.25   amf-cndp-b19-4-master-3   <none>          <none>
cache-pod-0                          1/1    Running   0           37h
  209.165.201.3    amf-cndp-b19-4-master-1   <none>          <none>
cache-pod-1                          1/1    Running   0           36h
  209.165.201.20   amf-cndp-b19-4-master-2   <none>          <none>
documentation-556f8dcc5c-pnlmn       1/1    Running   0           37h
  209.165.201.26   amf-cndp-b19-4-master-3   <none>          <none>
etcd-amf-ins1-etcd-cluster-0         2/2    Running   2           37h
  209.165.201.14   amf-cndp-b19-4-master-1   <none>          <none>
etcd-amf-ins1-etcd-cluster-1         2/2    Running   0           37h
  209.165.201.17   amf-cndp-b19-4-master-2   <none>          <none>
etcd-amf-ins1-etcd-cluster-2         2/2    Running   0           37h
  209.165.201.21   amf-cndp-b19-4-master-3   <none>          <none>
georeplication-pod-0                 1/1    Running   0           37h
  209.165.201.30   amf-cndp-b19-4-master-2   <none>          <none>
grafana-dashboard-amf-695457b77d-gdhf5 1/1    Running   0           37h
  209.165.201.4    amf-cndp-b19-4-master-1   <none>          <none>
grafana-dashboard-app-infra-amf-ins1-cfb8b656d-54s9z 1/1    Running   0           37h
  209.165.201.10   amf-cndp-b19-4-master-1   <none>          <none>
grafana-dashboard-etcd-amf-ins1-5c7d9d75db-729sl 1/1    Running   0           37h
  209.165.201.5    amf-cndp-b19-4-master-1   <none>          <none>
gtpc-ep-n0-0                         2/2    Running   1           37h
  209.165.201.12   amf-cndp-b19-4-master-1   <none>          <none>

```

li-ep-n0-0			2/2	Running	0	37h
209.165.201.1	amf-cndp-b19-4-master-1	<none>		<none>		
li-ep-n0-1			2/2	Running	0	37h
209.165.201.18	amf-cndp-b19-4-master-2	<none>		<none>		
nodemgr-n0-0			2/2	Running	1	37h
209.165.201.9	amf-cndp-b19-4-master-1	<none>		<none>		
nodemgr-n0-1			2/2	Running	1	37h
209.165.201.23	amf-cndp-b19-4-master-3	<none>		<none>		
oam-pod-0			2/2	Running	1	37h
209.165.201.6	amf-cndp-b19-4-master-1	<none>		<none>		
ops-center-amf-ins1-ops-center-5bf9df44b6-pn5ds			5/5	Running	0	36h
209.165.201.24	amf-cndp-b19-4-master-3	<none>		<none>		
prometheus-rules-etcd-796ffd6cdf-w48rj			1/1	Running	0	37h
209.165.201.13	amf-cndp-b19-4-master-1	<none>		<none>		
smart-agent-amf-ins1-ops-center-8475b6559d-q9gb2			1/1	Running	0	37h
209.165.201.11	amf-cndp-b19-4-master-1	<none>		<none>		
udp-proxy-0			1/1	Running	0	37h
209.165.201.29	amf-cndp-b19-4-master-1	<none>		<none>		
udp-proxy-1			1/1	Running	0	37h
209.165.201.30	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:

```

kubect1 get svc -n amf-ins1
NAME                                     TYPE          CLUSTER-IP      EXTERNAL-IP
PORT(S)                                AGE
alert-frwd-ops-center                   ClusterIP     209.165.202.130 <none>
8080/TCP                                29d
amf-gosctp-lb                            ClusterIP     209.165.202.140 <none>
7084/TCP                                36h
amf-nrf-service                          ClusterIP     209.165.202.151 209.165.200.241
9090/TCP                                36h
amf-protocol-ep                          ClusterIP     209.165.202.142 <none>
9003/TCP,8080/TCP                       36h
amf-rest-ep                              ClusterIP     209.165.202.145 <none>
9003/TCP,8080/TCP,9201/TCP              36h
amf-sbi-service                           ClusterIP     209.165.202.156 209.165.200.241
8070/TCP                                36h
amf-service                              ClusterIP     209.165.202.144 <none>
9003/TCP,8080/TCP                       36h
base-entitlement-amf                      ClusterIP     209.165.202.137 <none>
8000/TCP                                  29d
bgpspeaker-pod                           ClusterIP     209.165.202.154 <none>
9008/TCP,7001/TCP,8879/TCP              36h
datastore-notification-ep                ClusterIP     209.165.202.135 209.165.200.240
8012/TCP                                  36h
documentation                            ClusterIP     209.165.202.134 <none>
8080/TCP                                  29d
etcd                                       ClusterIP     None              <none>
2379/TCP,7070/TCP                       36h
etcd-amf-ins1-etcd-cluster-0              ClusterIP     209.165.202.143 <none>
2380/TCP,2379/TCP                       36h
etcd-amf-ins1-etcd-cluster-1              ClusterIP     209.165.202.139 <none>
2380/TCP,2379/TCP                       36h
etcd-amf-ins1-etcd-cluster-2              ClusterIP     209.165.202.131 <none>
2380/TCP,2379/TCP                       36h
grafana-dashboard-amf                     ClusterIP     209.165.202.138 <none>
9418/TCP                                  36h
grafana-dashboard-app-infra-amf-ins1      ClusterIP     209.165.202.133 <none>
9418/TCP                                  36h
grafana-dashboard-etcd-amf-ins1           ClusterIP     209.165.202.141 <none>
9418/TCP                                  36h
gtpc-ep                                   ClusterIP     209.165.202.149 <none>
9003/TCP,8080/TCP                       36h
ldap-proxy-amf-ins1-oam-pod                ClusterIP     209.165.202.132 <none>
636/TCP,389/TCP                          36h
li-ep                                      ClusterIP     209.165.202.150 <none>
9003/TCP,8080/TCP                       36h
local-ldap-proxy-amf-ins1-ops-center       ClusterIP     209.165.202.148 <none>
636/TCP,369/TCP                          29d
netconf-ops-center-amf-ins1-ops-center     ClusterIP     209.165.202.155 209.165.200.231
2024/TCP                                  29d
nodemgr                                   ClusterIP     209.165.202.153 <none>
9003/TCP,8884/TCP,8879/TCP,9201/TCP,8080/TCP 36h
oam-pod                                    ClusterIP     209.165.202.147 <none>
9008/TCP,7001/TCP,8879/TCP,10080/TCP,8080/TCP 36h
ops-center-amf-ins1-ops-center             ClusterIP     209.165.202.152 <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     209.165.202.129 <none>
8888/TCP                                  29d
ssh-ops-center-amf-ins1-ops-center         ClusterIP     209.165.202.136 209.165.200.231
2025/TCP                                  29d

```

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

```
kubect1 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: 209.165.202.145
  clusterIPs:
  - 209.165.202.145
  ipFamilies:
  - IPv4
  ipFamilyPolicy: SingleStack
  ports:
  - name: grpc
    port: 9003
    protocol: TCP
    targetPort: 9003
  - name: metrics
    port: 8080
    protocol: TCP
    targetPort: 8080
  - name: nrffrestep
    port: 9201
    protocol: TCP
    targetPort: 9201
  selector:
    component: amf-rest-ep
    release: amf-ins1-amf-rest-ep
  sessionAffinity: None
  type: ClusterIP
status:
  loadBalancer: {}
```