Deploying and Configuring cnSGW-C through Operations Center

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

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

Revision History

Table 2: Revision History

Revision Details	Release
The following enhancements were introduced: • Multiple entitlement tags • cnSGW-C deployment on bare metal server	2021.02.0

Revision Details	Release
First introduced.	2020.07.0

Feature Description

cnSGW-C deployment process involves deploying cnSGW-C through Subscriber Microservices Infrastructure (SMI) Cluster Deployer. You can perform configurations or customizations through the cnSGW-C Ops Center which is based on the Confd CLI.

cnSGW-C Ops Center

The Ops Center is a system-level infrastructure that provides the following user interface to:

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

The following screenshot is a sample of the web-based CLI.

Figure 1: Web-based Ops Center

The cnSGW-C Ops Center allows you to configure the features, such as licensing, cnSGW-C engine, EGPT and PFCP endpoint, and CDL.

Prerequisites

Before deploying cnSGW-C on the SMI layer:

- Ensure that all the virtual network functions (VNFs) are deployed.
- Run the SMI synchronization operation for the cnSGW-C Ops Center and Cloud Native Common Execution Environment (CN-CEE).

cnSGW-C Service Configuration

The cnSGW-C service requires the basic configuration to process Call Setup, Modify, and Delete Request.

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 cnSGW-C 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
```

Deploying and Accessing cnSGW-C

This section describes how to deploy cnSGW-C and access the cnSGW-C Ops Center.

Deploying cnSGW-C

The Subscriber Microservices Infrastructure (SMI) platform is responsible for deploying and managing the cnSGW-C application and other network functions.

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

Accessing the cnSGW-C Ops Center

You can connect to the cnSGW-C Ops Center through SSH or the web-based CLI console.

- SSH:

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

- Web-based console:

  1. Log in 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 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 cnSGW-C.

Day 0 Configuration

To view the Day 0 configuration, run the following command.

show running-config

The following is a sample Day 0 configuration:

```
system mode shutdown
helm default-repository base-repos
helm repository base-repos
 url https://charts.209.165.201.1.nip.io/ccg.2021.01.0.i60
exit
k8s name          2nd-a18-kub-cluster
k8s namespace     cn-cn3
k8s nf-name       smf
k8s registry      docker.209.165.201.1.nip.io/ccg.2021.01.0.i60
```

```
k8s single-node   false
k8s use-volume-claims false
k8s ingress-host-name 209.165.201.2.nip.io
k8s nodes 2nd-a18-kub-cluster-master-11
 node-type   master
 worker-type master
exit
k8s nodes 2nd-a18-kub-cluster-master-22
 node-type   master
 worker-type master
exit
k8s nodes 2nd-a18-kub-cluster-master-33
 node-type   master
 worker-type master
exit
aaa authentication users user admin
 uid        1117
 gid        1117
 password   $1$XNGJOr.C$iZZvQbNfmPN15qG4GpQa8/
 ssh_keydir /tmp/admin/.ssh
 homedir    /tmp/admin
exit
aaa ios level 0
 prompt "\h> "
exit
aaa ios level 15
 prompt "\h# "
exit
aaa ios privilege exec
 level 0
  command action
  exit
  command autowizard
  exit
  command enable
  exit
  command exit
  exit
  command help
  exit
  command startup
  exit
 exit
 level 15
  command configure
  exit
 exit
exit
nacm write-default deny
nacm groups group LI
 user-name [ liadmin ]
exit
nacm groups group admin
 user-name [ admin ]
exit
nacm rule-list admin
 group [ admin ]
 rule li-deny-tap
  module-name       lawful-intercept
  path              /lawful-intercept
  access-operations *
  action            deny
 exit
 rule li-deny-clear
```

```
  module-name       tailf-mobile-smf
  path              /clear/lawful-intercept
  access-operations *
  action            deny
 exit
 rule any-access
  action permit
 exit
exit
nacm rule-list confd-api-manager
 group [ confd-api-manager ]
 rule any-access
  action permit
 exit
exit
nacm rule-list ops-center-security
 group [ * ]
 rule change-self-password
  module-name       ops-center-security
  path              /smiuser/change-self-password
  access-operations exec
  action            permit
 exit
 rule smiuser
  module-name       ops-center-security
  path              /smiuser
  access-operations exec
  action            deny
 exit
exit
nacm rule-list lawful-intercept
 group [ LI ]
 rule li-accept-tap
  module-name       lawful-intercept
  path              /lawful-intercept
  access-operations *
  action            permit
 exit
 rule li-accept-clear
  module-name       tailf-mobile-smf
  path              /clear/lawful-intercept
  access-operations *
  action            permit
 exit
exit
nacm rule-list any-group
 group [ * ]
 rule li-deny-tap
  module-name       lawful-intercept
  path              /lawful-intercept
  access-operations *
  action            deny
 exit
 rule li-deny-clear
  module-name       tailf-mobile-smf
  path              /clear/lawful-intercept
  access-operations *
  action            deny
 exit
exit
```

Loading Day 1 Configuration

The cnSGW-C configuration is provided using the Ops Center infrastructure. To load the Day 1 configuration, run the following command:

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

Note The Day1config.cli, on page 7 file contains the necessary parameters required for the Day 1 configuration.

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

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

Day1config.cli

The following is a sample `Day1config.cli` file, which contains the Day 1 configuration for the cnSGW-C.

```
ipam
instance 1
source local
address-pool poolv4
vrf-name ISP
tags
dnn intershat
dnn starent.com
exit
ipv4
split-size
per-cache 1024
per-dp    256
exit
address-range 209.165.200 209.165.200.224
exit
exit
address-pool poolv4DNN2
vrf-name ISP
tags
dnn intershat1
exit
ipv4
split-size
per-cache 1024
per-dp    256
exit
address-range 209.165.100 209.165.201.0
exit
exit
address-pool poolv4DNN3
static
vrf-name ISP
tags
dnn intershat2
```

```
exit
ipv4
split-size
per-cache 512
per-dp    512
exit
address-range 209.165.202 209.165.202.128
exit
ipv6
prefix-ranges
split-size
per-cache 8192
per-dp    8192
exit
prefix-range 2002:db0:: length 48
exit
exit
exit
address-pool poolv4vDNN
vrf-name ISP
tags
dnn intershat1
exit
ipv4
split-size
per-cache 1024
per-dp    256
exit
address-range 209.165.200 209.165.202.128
exit
exit
address-pool poolv6
vrf-name ISP
tags
dnn intershat
exit
ipv6
prefix-ranges
split-size
per-cache 8192
per-dp    1024
exit
prefix-range 2001:db0:: length 48
exit
exit
exit
address-pool poolv6DNN2
vrf-name ISP
tags
dnn intershat1
exit
ipv6
prefix-ranges
split-size
per-cache 8192
per-dp    1024
exit
prefix-range 2001:ef0:: length 48
exit
exit
exit
address-pool poolv6vDNN
vrf-name ISP
tags
```

```
dnn intershat1
exit
ipv6
prefix-ranges
split-size
per-cache 8192
per-dp    1024
exit
prefix-range 2001:ab0:: length 48
exit
exit
exit
exit
cdl deployment-model small
cdl zookeeper replica 1
cdl datastore session
 slice-names 1
index map    1
index write-factor 1
slot replica 1
slot map     1
slot write-factor 1
exit
cdl kafka replica 1
etcd replicas 1
instances instance 1
 slice-name 1
 system-id  DCNAME001
 cluster-id CLUSTER0001
exit
local-instance instance 1
instance instance-id 1
endpoint sbi
replicas 1
vip-ip 209.165.201.3 vip-port 1234

  interface nrf
   loopbackPort 9001
   sla response 1000
   sla procedure 1000
   vip-ip 209.165.201.3 vip-port 9002 offline
  exit
  interface n11
   loopbackPort 9011
   sla response 1000
   sla procedure 1000
   vip-ip 209.165.201.3 vip-port 8090
  exit
  interface n7
   loopbackPort 9007
   sla response 1000
   sla procedure 1000
   vip-ip 209.165.201.3 vip-port 8090
  exit
  interface n10
   loopbackPort 9010
   sla response 1000
   sla procedure 1000
   vip-ip 209.165.201.3 vip-port 8090
  exit
  interface n40
   loopbackPort 9040
   sla response 1000
   sla procedure 1000
```

```
   vip-ip 209.165.201.3 vip-port 8090
  exit


exit
endpoint li
replicas 1
vip-ip 209.165.201.3
exit
endpoint nodemgr
replicas 1
nodes    1
exit
endpoint gtp
replicas 1
interface s5
vip-ip 209.165.200.225
exit
interface s2b
vip-ip 209.165.200.225
exit
interface s5e
vip-ip 209.165.201.3
exit
interface s11
vip-ip 209.165.200.226
exit
exit
endpoint pfcp
replicas 1
enable-cpu-optimization true
interface sxa
heartbeat
interval               5
retransmission-timeout 3
max-retransmissions    5
exit
interface n4
heartbeat
interval               0
retransmission-timeout 3
max-retransmissions    5
exit
exit
exit
#endpoint radius-dns
#replicas 1
#vip-ip 209.165.201.3
#interface radius-client
#vip-ip 209.165.201.3
#exit
#exit
endpoint service
replicas 1
nodes 1
exit
endpoint protocol
vip-ip 209.165.201.3
replicas 1
interface n4
vip-ip 209.165.200.225
exit
interface sxa
vip-ip 209.165.201.3
```

```
exit
exit
endpoint sgw-service
replicas 1
node 1
exit
exit
logging level application debug
logging level transaction debug
logging level tracing debug
logging name infra.config.core level application trace
logging name infra.config.core level transaction trace
logging name infra.config.core level tracing off
logging name infra.message_log.core level transaction trace
deployment
 model small
 app-name     SMF
 cluster-name Local
 dc-name      DC
exit
k8 label protocol-layer key disktype value ssd
#k8 label service-layer key radnaik_key value mine
#k8 label service-layer key smi.cisco.com/node-type value oam
exit
system mode running
helm default-repository cn
helm repository cn
#access-token smf-deployer.gen:Mitg_123
#access-token dev-deployer.gen:Mitg_123
#access-token
dev-deployer.gen:AKCp5ekcXA7TknM9DbLASNBw4jwVEsx9Z9WpQwEvCvCQ2mJhLymcz6BfbH38YJiWC6fn1cKmw
access-token
smf-deployer.gen:AKCp5ekcX7DcBhuAmMZYfGLaHvH3E4Syr9TQDp1gjzcSjYrqsrGbXSYs5X2XYij3d9n9VfWQe
#url
https://engci-maven-master.cisco.com/artifactory/smi-fuse-internal-snapshot/mobile-cnat-cn/cn-products/dev-cn-stage
url
https://engci-maven-master.cisco.com/artifactory/smi-fuse-internal-snapshot/mobile-cnat-cn/cn-products/dev-cn-stage
exit
profile nf-client nf-type udm
udm-profile UP1
locality LOC1
priority 30
service name type nudm-sdm
endpoint-profile EP1
capacity   30
uri-scheme http
version
uri-version v2
exit
exit
endpoint-name EP1
primary ip-address ipv4 209.165.201.3
primary ip-address port 8001
exit
exit
exit
service name type nudm-uecm
endpoint-profile EP1
capacity   30
uri-scheme http
endpoint-name EP1
primary ip-address ipv4 209.165.201.3
primary ip-address port 8001
exit
```

```
exit
exit
service name type nudm-ee
endpoint-profile EP1
capacity       30
api-uri-prefix PREFIX
api-root       ROOT
uri-scheme     http
endpoint-name EP1
priority 56
primary ip-address ipv4 209.165.201.3
primary ip-address port 8001
exit
exit
exit
exit
exit
exit
profile nf-client nf-type pcf
pcf-profile PP1
locality LOC1
priority 30
service name type npcf-am-policy-control
endpoint-profile EP1
capacity   30
uri-scheme http
endpoint-name EP1
priority 56
primary ip-address ipv4 209.165.201.3
primary ip-address port 8003
exit
exit
exit
service name type npcf-smpolicycontrol
endpoint-profile EP1
capacity   30
uri-scheme http
endpoint-name EP1
priority 56
primary ip-address ipv4 209.165.201.3
primary ip-address port 8003
exit
exit
exit
exit
exit
exit
profile nf-client nf-type amf
amf-profile AP1
locality LOC1
priority 30
service name type namf-comm
endpoint-profile EP2
capacity   30
uri-scheme http
endpoint-name EP1
priority 56
primary ip-address ipv4 209.165.201.3
primary ip-address port 8002
exit
exit
exit
exit
exit
```

```
exit
profile nf-client nf-type chf
chf-profile CP1
locality LOC1
priority 30
service name type nchf-convergedcharging
endpoint-profile EP1
capacity   30
uri-scheme http
version
uri-version v2
exit
exit
endpoint-name EP1
priority 56
primary ip-address ipv4 209.165.201.3
primary ip-address port 8004
exit
exit
exit
exit
exit
chf-profile CP2
locality LOC1
priority 31
service name type nchf-convergedcharging
endpoint-profile EP1
capacity   30
uri-scheme http
version
uri-version v2
exit
exit
endpoint-name EP1
priority 56
primary ip-address ipv4 209.165.201.3
primary ip-address port 9040
exit
exit
exit
exit
exit
exit
profile nf-pair nf-type UDM
nrf-discovery-group udmdiscovery
locality client  LOC1
locality preferred-server LOC1
locality geo-server GEO
exit
profile nf-pair nf-type AMF
nrf-discovery-group udmdiscovery
locality client  LOC1
locality preferred-server LOC1
locality geo-server GEO
exit
profile nf-pair nf-type PCF
nrf-discovery-group udmdiscovery
locality client  LOC1
locality preferred-server LOC1
locality geo-server GEO
exit
profile nf-pair nf-type UPF
nrf-discovery-group udmdiscovery
locality client  LOC1
```

```
locality preferred-server LOC1
locality geo-server GEO
exit
profile nf-pair nf-type CHF
nrf-discovery-group udmdiscovery
locality client  LOC1
locality preferred-server LOC1
locality geo-server GEO
exit
profile nf-client-failure nf-type udm
profile failure-handling FH4
service name type nudm-sdm
message type UdmSdmGetUESMSubscriptionData
status-code httpv2 403
retry  3
action retry-and-ignore
exit
status-code httpv2 404
action continue
exit
status-code httpv2 413
retry  3
action retry-and-continue
exit
status-code httpv2 501
retry  3
action retry-and-terminate
exit
status-code httpv2 503
action terminate
exit
status-code httpv2 504
retry  3
action retry-and-terminate
exit
exit
message type UdmSdmSubscribeToNotification
status-code httpv2 403
retry  3
action retry-and-ignore
exit
status-code httpv2 404
action continue
exit
status-code httpv2 413
retry  3
action retry-and-continue
exit
status-code httpv2 501
retry  3
action retry-and-terminate
exit
status-code httpv2 503
action terminate
exit
status-code httpv2 504
retry  3
action retry-and-terminate
exit
exit
exit
service name type nudm-uecm
message type UdmUecmRegisterSMF
status-code httpv2 403
```

```
retry  3
action retry-and-ignore
exit
status-code httpv2 404
action continue
exit
status-code httpv2 413
retry  3
action retry-and-continue
exit
status-code httpv2 501
retry  3
action retry-and-terminate
exit
status-code httpv2 503
action terminate
exit
status-code httpv2 504
retry  3
action retry-and-terminate
exit
exit
exit
exit
exit
profile nf-client-failure nf-type pcf
profile failure-handling FH1
service name type npcf-smpolicycontrol
message type PcfSmpolicycontrolCreate
status-code httpv2 0
action retry-and-ignore
exit
status-code httpv2 400
action continue
exit
status-code httpv2 403
action retry-and-ignore
exit
status-code httpv2 404
action terminate
exit
status-code httpv2 500
retry  2
action retry-and-ignore
exit
status-code httpv2 503
retry  2
action retry-and-continue
exit
exit
message type PcfSmpolicycontrolUpdate
status-code httpv2 0
action retry-and-ignore
exit
status-code httpv2 400
action continue
exit
status-code httpv2 403
action retry-and-ignore
exit
status-code httpv2 404
action terminate
exit
status-code httpv2 500
```

```
retry  2
action retry-and-ignore
exit
status-code httpv2 503
retry  2
action retry-and-continue
exit
exit
message type PcfSmpolicycontrolDelete
status-code httpv2 0
action retry-and-ignore
exit
status-code httpv2 400
action continue
exit
status-code httpv2 403
action retry-and-ignore
exit
status-code httpv2 404
action terminate
exit
status-code httpv2 500
retry  2
action retry-and-ignore
exit
status-code httpv2 503
retry  2
action retry-and-continue
exit
exit
exit
exit
exit
profile nf-client-failure nf-type chf
profile failure-handling FH2
service name type nchf-convergedcharging
message type ChfConvergedchargingCreate
status-code httpv2 0
action continue
exit
status-code httpv2 400
retry  3
action retry-and-terminate
exit
status-code httpv2 403
retry  3
action retry-and-ignore
exit
status-code httpv2 404
retry  3
action retry-and-terminate
exit
status-code httpv2 500
action continue
exit
status-code httpv2 503
action terminate
exit
status-code httpv2 504
action continue
exit
exit
message type ChfConvergedchargingUpdate
status-code httpv2 0
```

```
action continue
exit
status-code httpv2 400
retry  3
action retry-and-terminate
exit
status-code httpv2 403
retry  3
action retry-and-ignore
exit
status-code httpv2 404
retry  3
action retry-and-terminate
exit
status-code httpv2 500
action continue
exit
status-code httpv2 503
action terminate
exit
status-code httpv2 504
action continue
exit
exit
message type ChfConvergedchargingDelete
status-code httpv2 0
action continue
exit
status-code httpv2 400
retry  3
action retry-and-terminate
exit
status-code httpv2 403
retry  3
action retry-and-ignore
exit
status-code httpv2 404
retry  3
action retry-and-terminate
exit
status-code httpv2 500
action continue
exit
status-code httpv2 503
action terminate
exit
status-code httpv2 504
action continue
exit
exit
exit
exit
exit
profile sgw sgw1
 locality          LOC2
 fqdn              cisco.com.apn.epc.mnc456.mcc123
 #subscriber-policy polSub
exit
profile smf smf1
node-id       abcdef
locality      LOC1
fqdn          cisco.com.apn.epc.mnc456.mcc123
allowed-nssai [ slice1 ]
plmn-id mcc 123
```

```
plmn-id mnc 456
service name nsmf-pdu
type               pdu-session
schema             http
service-id         1
version            1.Rn.0.0
http-endpoint base-url http://smf-service
icmpv6-profile     icmpprf1
compliance-profile comp1
access-profile     access1
subscriber-policy  polSub
exit
exit
profile sgw sgw1
locality      LOC2
fqdn          cisco.com.apn.epc.mnc456.mcc123
plmn-id mcc 123
plmn-id mnc 456
#subscriber-policy  polSub
exit
profile dnn starent.com
 network-element-profiles chf chf1
 network-element-profiles amf amf1
 network-element-profiles pcf pcf1
 network-element-profiles udm udm1
 charging-profile chgprf1
 virtual-mac      b6:6d:47:47:47:47
 ssc-mode 2 allowed [ 3 ]
 session type IPV4 allowed [ IPV6 IPV4V6 ]
 upf apn starent.com
 #dcnr true
exit

profile dnn default-profile
 network-element-profiles chf chf1
 network-element-profiles amf amf1
 network-element-profiles pcf pcf1
 network-element-profiles udm udm1
 charging-profile chgprf1
 virtual-mac      b6:6d:47:47:47:47
 ssc-mode 2 allowed [ 3 ]
 session type IPV4 allowed [ IPV6 IPV4V6 ]
 upf apn starent.com
 #dcnr true
exit

profile dnn intershat
network-element-profiles chf chf1
network-element-profiles amf amf1
network-element-profiles pcf pcf1
network-element-profiles udm udm1
charging-profile chgprf1
virtual-mac      b6:6d:47:47:47:47
ssc-mode 2 allowed [ 3 ]
session type IPV4 allowed [ IPV6 IPV4V6 ]
upf apn intershat
dcnr             true
exit
profile dnn intershat1
network-element-profiles chf chf1
network-element-profiles amf amf1
network-element-profiles pcf pcf1
network-element-profiles udm udm1
charging-profile chgprf1
```

```
virtual-mac      b6:6d:47:47:47:48
pcscf-profile    PCSCF_Prof_2
ssc-mode 1
session type IPV4
exit
profile dnn intershat2
network-element-profiles chf chf
network-element-profiles amf amf
network-element-profiles pcf pcf
network-element-profiles udm udm
charging-profile chgprf1
virtual-mac      b6:6d:47:47:47:49
ssc-mode 2 allowed [ 3 ]
session type IPV4 allowed [ IPV6 IPV4V6 ]
upf apn intershat2
exit
profile qos abc
ambr ul "250 Kbps"
ambr dl "500 Kbps"
qi5      7
arp priority-level 14
arp preempt-cap NOT_PREEMPT
arp preempt-vuln PREEMPTABLE
priority 120
max data-burst 2000
exit
profile failure-handling FH1
interface pfcp message N4SessionEstablishmentReq
cause-code pfcp-entity-in-congestion action retry-terminate max-retry 2
cause-code system-failure action terminate
cause-code service-not-supported action terminate
cause-code no-resource-available action retry-terminate max-retry 3
cause-code no-response-received action retry-terminate max-retry 1
cause-code reject action terminate
exit
interface pfcp message N4SessionModificationReq
cause-code mandatory-ie-incorrect action terminate
cause-code session-ctx-not-found action terminate
cause-code reject action terminate
exit
exit
profile failure-handling gtp1
interface gtpc message S5S8CreateBearerReq
cause-code temp-fail
action retry timeout 1000 max-retry 2
exit
exit
interface gtpc message S5S8UpdateBearerReq
cause-code temp-fail
action retry timeout 1000 max-retry 2
exit
exit
interface gtpc message S5S8DeleteBearerReq
cause-code temp-fail
action retry timeout 1000 max-retry 2
exit
exit
exit
profile network-element amf amf1
nf-client-profile        AP1
failure-handling-profile FH3
query-params [ dnn ]
exit
profile network-element pcf pcf1
```

```
nf-client-profile        PP1
failure-handling-profile FH1
query-params [ dnn ]
rulebase-prefix          cbn#
predefined-rule-prefix   crn#
exit
profile network-element udm udm1
nf-client-profile        UP1
failure-handling-profile FH4
query-params [ dnn ]
exit
profile network-element upf upf226
node-id upf226@sgw.com
n4-peer-address ipv4 209.165.201.4
n4-peer-port 8805
dnn-list     [ intershat intershat1 intershat2 cisco.com starent.com ]
capacity     2000
priority     10
exit
profile network-element upf upf1
node-id upf1@sgw.com
n4-peer-address ipv4 209.165.201.5
n4-peer-port 8805
dnn-list     [ intershat intershat1 intershat2 cisco.com starent.com ]
capacity     2000
priority     10
exit
profile network-element upf upf2
node-id upf2@sgw.com
n4-peer-address ipv4 209.165.201.6
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 cisco.com starent.com ]
capacity     2000
priority     1
exit
profile network-element upf upf76
node-id upf3@sgw.com
n4-peer-address ipv4 209.165.201.7
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     1000
priority     10
exit
profile network-element upf upf70
node-id upf4@sgw.com
n4-peer-address ipv4 209.165.201.8
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     1000
priority     10
exit
profile network-element upf upf71
node-id upf5@sgw.com
n4-peer-address ipv4 209.165.201.9
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     1000
priority     10
exit
profile network-element upf upf72
n4-peer-address ipv4 209.165.201.10
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     2000
```

```
priority     10
exit
profile network-element upf upf79
n4-peer-address ipv4 209.165.201.11
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     2000
priority     10
exit
profile network-element upf upf131
n4-peer-address ipv4 209.165.201.12
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     2000
priority     10
exit
profile network-element upf upf132
n4-peer-address ipv4 209.165.201.13
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     2000
priority     10
exit
profile network-element upf upf133
n4-peer-address ipv4 209.165.201.14
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     2000
priority     10
exit
profile network-element upf upf134
n4-peer-address ipv4 209.165.201.15
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     2000
priority     10
exit
profile network-element upf upf135
n4-peer-address ipv4 209.165.201.16
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     2000
priority     10
exit
profile network-element upf upf136
n4-peer-address ipv4 209.165.201.17
n4-peer-port 8805
dnn-list     [ intershat1 intershat2 starent.com cisco.com ]
capacity     2000
priority     10
exit
profile network-element chf chf1
nf-client-profile         CP1
failure-handling-profile  FH2
query-params [ dnn ]
nf-client-profile-offline CP2
exit
profile network-element chf chgser1
exit
profile compliance comp1
service nsmf-pdusession
version uri v1
version full 1.0.0
version spec 15.4.0
```

```
exit
service namf-comm
version uri v1
version full 1.0.0
version spec 15.4.0
exit
service n1
version uri v1
version full 1.0.0
version spec 15.4.0
exit
service n2
version uri v1
version full 1.0.0
version spec 15.4.0
exit
service nudm-sdm
version uri v1
version full 1.0.0
version spec 15.4.0
exit
service nudm-uecm
version uri v1
version full 1.0.0
version spec 15.4.0
exit
service nnrf-disc
version uri v1
version full 1.0.0
version spec 15.4.0
exit
service nnrf-nfm
version uri v1
version full 1.0.0
version spec 15.4.0
exit
service npcf-smpolicycontrol
version uri v1
version full 1.0.0
version spec 15.4.0
exit
service nchf-convergedcharging
version uri v1
version full 1.0.0
version spec 15.3.0
exit
exit
profile upf-group group1
failure-profile FH1
exit
profile access access1
n26 idft enable timeout 15
n2 idft enable timeout 15
gtpc gtpc-failure-profile gtp1
exit
profile icmpv6 icmpprf1
options virtual-mac b6:6d:57:45:45:45
exit
profile charging chgprf1
method [ offline ]
exit
profile charging-characteristics 1
charging-profile chgprf1
exit
```

```
nssai name slice1
sst 2
sdt Abf123
dnn [ dnn1 intershat intershat1 intershat2 ]
exit
policy subscriber polSub
precedence 1
sst              02
sdt              Abf123
serving-plmn mcc 123
serving-plmn mnc 456
supi-start-range 100000000000001
supi-stop-range  999999999999999
gpsi-start-range 1000000000
gpsi-stop-range  9999999999
operator-policy  opPol1
exit
precedence 511
operator-policy defOprPol1
exit
exit
policy operator defOprPol1
policy dnn         defPolDnn
policy network-capability nc1
exit
policy operator opPol1
policy dnn         polDnn
policy network-capability nc1
exit
policy dnn defPolDnn
profile default-profile
dnn dnn2 profile profile2
dnn intershat profile intershat
dnn intershat1 profile intershat1
dnn starent.com profile starent.com
exit
policy dnn polDnn
profile default-profile
dnn dnn2 profile profile2
dnn intershat profile intershat
dnn intershat1 profile intershat1
dnn intershat2 profile intershat2
dnn starent.com profile starent.com
exit
policy network-capability nc1
nw-support-local-address-tft true
exit
nacm groups group LI2
user-name [ liadmin2 ]
exit
nacm groups group LI3
user-name [ liadmin3 ]
exit
nacm groups group admin
user-name [ admin ]
exit
commit
end
```