



Service Configuration Enhancements

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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
Support added for DNN List	2021.02.3
First introduced	2020.01.0

Feature Description

cnSGW-C supports Subscriber Map and Operator Policy configurations.

SGW profile represents SGW-service or node. The operator policy is decided based on subscriber policy association.

Feature Configuration

Configuring this feature involves the following steps:

- SGW profile. For more information, see [Configuring the SGW Profile, on page 2](#).
- Subscriber policy. For more information, see [Configuring the Subscriber Policy, on page 3](#).
- Operator policy. For more information, see [Configuring the Operator Policy, on page 4](#).
- Policy DNN. For more information, see [Configuring the Policy DNN, on page 4](#).

Configuring the SGW Profile

To configure this feature, use the following configuration:

```
config
  profile sgw sgw_name
    locality locality_code
    fqdn dnn_name
    subscriber-policy policy_name
  end
```

NOTES:

- **locality** *locality_code*—Specify the locality code. Must be a string.
- **fqdn** *dnn_name*—Specify the cnSGW-C FQDN.
- **subscriber-policy** *policy_name*—Specify the subscriber policy name. Must be a string.

Configuration Example

The following is an example configuration.

```
config
  profile sgw sgw-data
    locality LOC1
    fqdn 209.165.200.254
    subscriber-policy subpoll
  end
```

Configuration Verification

To verify the configuration:

```
show running-config profile sgw
profile sgw sgw-data
locality LOC1
fqdn 209.165.200.254
subscriber-policy subpoll
```

Configuring the Subscriber Policy



Note The maximum number of supported subscriber map profiles is 64.

To configure this feature, use the following configuration:

```

config
  policy subscriber subscriber_name
    precedence precedence_value
    imsi
      mcc mcc_value
      mnc mnc_value
      msin first_value last_value
    serving-plmn
      mcc mcc_value
      mnc mnc_value
    imsi-start-range range_value
    imsi-stop-range range_value
    supi-start-range range_value
    supi-stop-range range_value
    operator-policy policy_name
  end

```



Note All parameters are optional.

NOTES:

- **precedence** *precedence_value*—Specify the precedence for entry. Must be an integer in the range of 1-2048.
- **mcc** *mcc_value*—Specify the Mobile Country Code (MCC). Must be a three digit integer.
- **mnc** *mnc_value*—Specify the Mobile Network code (MNC). Must be a two or three digit integer.
- **msin** *first_value last_value*—Specify the mobile subscriber identification number (MSIN) range.
first_value—Specify starting value of the MSIN range. Must be an integer in the range of 1-9999999999.
last_value—Specify the ending value of the MSIN range. Must be an integer in the range of 1-9999999999.
- **operator-policy** *policy_name*—Specify the operator policy name. Must be a string.
- **imsi-start-range** *range_value*—Specify the IMSI start range. Must be an integer in the range of 10000000000000-99999999999999.
- **imsi-stop-range** *range_value*—Specify the IMSI stop range. Must be an integer in the range of 10000000000000-99999999999999.
- **supi-start-range** *range_value*—Specify the SUPI start range. Must be an integer in the range of 10000000000000-99999999999999.

- **supi-stop-range** *range_value*—Specify the SUPI stop range. Must be an integer in the range of 100000000000000-999999999999999.

Configuration Example

The following is an example configuration.

```
config
  policy subscriber subl
    precedence 2
      imsi mcc 123 mnc 456
      imsi msin first 99 last 100
    serving-plmn mcc 404 mnc 678
    supi-start-range 100000000000001
    supi-stop-range 199999999999999
    imsi-start-range 200000000000001
    imsi-stop-range 299999999999999
  operator-policy opl
end
```

Configuring the Operator Policy



Note The maximum number of supported operator policy profiles is 1000.

To configure this feature, use the following configuration:

```
config
  policy operator operator_name
  policy dnn dnn_policy_name
end
```

NOTES:

- **policy operator** *operator_name*—Specify the operator policy name. Must be a string.
- **policy dnn** *dnn_policy_name*—Specify the DNN policy name. Must be a string.

Configuration Example

The following is an example configuration.

```
config
  policy operator opl
  policy dnn poll
end
```

Configuring the Policy DNN

This section describes how to configure Policy DNN and adding it to cnSGW-C. The DNN support enables you to determine the exact APN profile as per the APN name, APN network-identifier and APN operator-identifier.



Note The maximum number of supported DNN policies is 1000.

To configure this feature, use the following configuration:

```

config
  policy dnn dnn_policy_name
    dnn dnn_name
      dnn-list dnn_list
      profile profile_name
      dnn network-identifier network_identifier_name operator-identifier
operator_identifier_name profile profile_name
      dnn operator-identifier operator_identifier_name profile profile_name
      dnn operator-identifier profile profile_name
    end

```

NOTES:

- **dnn** *dnn_name*—Specify the DNN name.
- **network-identifier** *network_identifier_name*—Specify the network identifier. Must be a string.
- **profile** *profile_name*—Specify the profile name. Must be a string.
- **operator-identifier** *operator_identifier_name*—Specify the operator identifier. Must be a string.
- **profile** *default_dnn_profile*—Specify the default DNN profile name.
- **dnn-list** *dnn_list*—Specify the DNN list for selecting a DNN profile. It helps in minimizing the entries needed for pointing multiple DNN to a single profile.



Note With present evaluation criteria, following is the matching order to select the associated profile:

- DNN/DNN List
- NI+OI
- NI
- OI
- Default

Don't configure overlapping criteria.

Configuration Example

The following is an example configuration.

```

config
  policy dnn polsub1
    dnn network-identifier ims profile ims1
    dnn network-identifier ims operator-identifier ims.com profile ims
    dnn network-identifier voice operator-identifier volte profile voiceprofile

```

```

    dnn operator-identifier data profile data-profile
    profile default-dnn-profile
    end

config
  policy dnn polsub1
    dnn intershat dnn-list [ intershat1 intershat2 intershat3 ]
    profile profile_name
      dnn network-identifier ims operator-identifier ims.com profile ims
      dnn operator-identifier volte profile voiceprofile
      dnn operator-identifier data profile profile_name
    end

```

Configuration Modification Impact

This section describes the impact or behavior of configuration change on existing call, new PDN, or new subscriber.

Modification	cnSGW-C Existing Call	cnSGW-C New PDN or New subscriber
Define a new SGW-profile and delete the old profile (with or without the pod restart)	When the new transaction happens, the call gets loaded on cn-SGW-C from CDL. <i>Observation:</i> Change in the cnSGW-C profile configuration and termination of the call.	Rejects the new PDN and deletes the existing call. New subscriber uses new SGW profile.
Delete the subscriber map	No impact	Applies modified configuration for the following: <ul style="list-style-type: none"> • subscriber policy • operator policy • dnn policy • dnn profile
Modify the subscriber map in SGW-service	No impact	Applies modified configuration for the following: <ul style="list-style-type: none"> • subscriber policy • operator policy • dnn policy • dnn profile

Modification	cnSGW-C Existing Call	cnSGW-C New PDN or New subscriber
Delete the operator policy	No impact	Applies modified configuration for the following: <ul style="list-style-type: none"> • subscriber policy • operator policy • dnn policy • dnn profile
Add the deleted or new operator policy	No impact	Applies modified configuration for the following: <ul style="list-style-type: none"> • subscriber policy • operator policy • dnn policy • dnn profile
Modify the operator policy name in the subscriber map	No impact	Applies modified configuration for the following: <ul style="list-style-type: none"> • subscriber policy • operator policy • dnn policy • dnn profile

Troubleshooting Information

This section describes the troubleshooting information that enables you to resolve the service configuration issues.

Configuration Errors

This section describes the errors that cnSGW-C reports during the service configuration.

Subscriber Policy Configuration Errors

```
show config-error
ERROR
COMPONENT ERROR DESCRIPTION
-----
SGWProfile Subscriber policy name : polSubSgw in profile sgw1 is not configured
```

Operator Policy Configuration Errors

```
show config-error
ERROR COMPONENT ERROR DESCRIPTION
```

SubscriberPolicy Operator policy : op2 under subscriber policy polSubSgw is not configured

DNN Policy Configuration Errors

show config-error

ERROR COMPONENT ERROR DESCRIPTION

OperatorPolicy Dnn policy name : dnn_1 in operator policy opl is not configured