



# 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 100000000000000-99999999999999.

## 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 1000000000000001
    supi-stop-range 1999999999999999
    imsi-start-range 2000000000000001
    imsi-stop-range 2999999999999999
    operator-policy opl
end
```

## Configuring the Operator Policy




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

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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
    end
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
  end
end
```

```

        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
  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.<br><br><i>Observation:</i><br>Change in the cnSGW-C profile configuration and termination of the call. | Rejects the new PDN and deletes the existing call.<br><br>New subscriber uses new SGW profile.                                                                                                  |
| Delete the subscriber map                                                             | No impact                                                                                                                                                                           | Applies modified configuration for the following: <ul style="list-style-type: none"> <li>• subscriber policy</li> <li>• operator policy</li> <li>• dnn policy</li> <li>• dnn profile</li> </ul> |
| Modify the subscriber map in SGW-service                                              | No impact                                                                                                                                                                           | Applies modified configuration for the following: <ul style="list-style-type: none"> <li>• subscriber policy</li> <li>• operator policy</li> <li>• dnn policy</li> <li>• dnn profile</li> </ul> |

| 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"> <li>• subscriber policy</li> <li>• operator policy</li> <li>• dnn policy</li> <li>• dnn profile</li> </ul> |
| Add the deleted or new operator policy                | No impact             | Applies modified configuration for the following: <ul style="list-style-type: none"> <li>• subscriber policy</li> <li>• operator policy</li> <li>• dnn policy</li> <li>• dnn profile</li> </ul> |
| Modify the operator policy name in the subscriber map | No impact             | Applies modified configuration for the following: <ul style="list-style-type: none"> <li>• subscriber policy</li> <li>• operator policy</li> <li>• dnn policy</li> <li>• dnn profile</li> </ul> |

## 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