

Enhanced Whitelisting in MME

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Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	MME
Applicable Platform(s)	• ASR 5500 • VPC-DI • VPC-SI
Default Setting	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	• *Command Line Interface Reference* • *MME Administration Guide* • *Statistics and Counters Reference*

Revision History

Revision Details	Release
First introduced.	21.16

Feature Description

Enhancement to the whitelisting feature enables the MME to use IMSI or MSISDN subscriber identity to restrict network access to group of subscribers. This feature caters to operator requirements of more than 10000 subscriber identities (IMSI/MSISDN) configuration.

Subscriber whitelisting is done in one of the following ways:

- Whitelist based on IMSI in TAC level.
- Whitelist based on MSISDN in TAC level.

This feature supports both IMSI group and MSISDN group configurations which can contain discrete and range of IMSI and MSISDN.

How it Works

This section describes how this feature works.

IMSI Group

IMSI-based configuration supports IMSI groups. An IMSI group can contain upto 500 elements of either individual IMSI or range of IMSI.

Up to 50 IMSI groups can be configured per MME and once an IMSI group is created, each group can be configured with up to 500 unique IMSI values and/or up to 20 IMSI ranges, which can overlap.

The operator policy to whitelist or blacklist IMSI is configured using MME. The restriction considers the handover (TAU) process as well as the attach process.

The IMSI group or IMSI+IMEI-TAC groups are created and associated with operator policies in the CLI.

MSISDN Group

Whitelisting in MME is enhanced to support specific MSISDN and ranges of MSISDN. The operator policy to whitelist or blacklist MSISDN is configured using MME. The restriction considers the handover (TAU) process as well as the attach process.

MSISDN-based configuration supports MSISDN groups. An MSISDN group can contain upto 500 elements of either individual MSISDN or range of MSISDN. Up to 50 MSISDN groups can be configured per MME and once an MSISDN group is created, each group can be configured with up to 500 unique MSISDN values and/or up to 20 MSISDN ranges, which can overlap.

The MSISDN group or MSISDN+IMEI-TAC groups are created and associated with operator policies in the CLI.

The following table lists the whitelist enhancement for MME.

Table 1: Whitelist Enhancement

White List	TAC

Specific IMSI	Supported
Range of IMSI	Supported
Group of IMSI (discrete + range)	Supported from Release 21.16 onwards
Group of MSISDN (discrete + range)	Supported from Release 21.16 onwards

Configuring IMSI Group

Use the following configuration to create the IMSI group.

```
configure
  lte-policy
    imsi-group group_name
    end
```

NOTES:

- 50 IMSI groups and a combination of discrete IMSI and range of IMSIs with a maximum of 500 IMSI values and 20 lines per group are supported.

Configuring Discrete IMSI Numbers

Use the following configuration to configure discrete IMSI numbers.

```
configure
  lte-policy
    imsi-group group_name
      imsi mcc mcc_value mnc mnc_value msin msin_value
      exit
```

NOTES:

- **mcc** *mcc_value*: Specifies the mobile country code (MCC) portion of the IMSI identifier.
- **mnc** *mnc_value*: Specifies the mobile network code (MNC) portion of the IMSI identifier.
- **msin** *msin_value*: Specifies the Mobile Subscriber Identification Number of the IMSI identifier.
- If previously configured, use the **no imsi mcc** *mcc_value* **mnc mnc_value msin** *msin_value* CLI command to delete the discrete IMSI values.

Configuring IMSI Range

Use the following configuration to configure IMSI range.

```
configure
  lte-policy
    imsi-group group_name
      range mcc mcc_value mnc mnc_value msin first start_range last end_range
      exit
```

NOTES:

- **mcc** *mcc_value*: Specifies the mobile country code (MCC) portion of the IMSI identifier.
- **mnc** *mnc_value*: Specifies the mobile network code (MNC) portion of the IMSI identifier.
- **msin first** *start_range* **last** *end_range*: Specifies the range of Mobile Subscriber Identification Number of the IMSI identifier.
- If previously configured, use the **no range mcc** *mcc_value* **mnc** *mnc_value* **msin first** *start_range* **last** *end_range* CLI command to delete the IMSI range.

Associating IMSI Group and IMEI-TAC Group with Operator Policy

Use the following configuration to associate IMSI-group and IMEI-TAC group with operator policy.

```
configure
  lte-policy
    subscriber-map subscriber_map_name
      precedence number match-criteria imei-tac group imeitac_group_name
imsi-group imsi_group_name operator-policy-name op_name
      end
```

NOTES:

- *number*: Specifies the order of precedence for the subscriber map. 1 (the lowest number) takes the highest precedence.
- **match-criteria** : Specifies that the keyword following this keyword is the criteria to be used to match a UE.
- **imei-tac group** *imeitac_group_name*: Identifies a previously configured IMEI-TAC group (with imei-tac-group command LTE-Policy configuration mode) to associate with this precedence definition.
- **operator-policy-name** *op_name*: Sets the operator policy with which the matching criteria is associated.

Verifying IMSI Group Configuration

Use the following show commands to display details related to IMSI group.

- **show lte-policy imsi-group name** *group_name*
- **show lte-policy imsi-group summary**

Configuring MSISDN Group

Use the following configuration to create a new MSISDN group.

```
configure
  msisdn-group group_name
  end
```

NOTE:

- MSISDN is a subscriber number which provides the functionality with TAC and it decides whether to allow or block the subscribers based on the subscriber number. The MSISDN group name is used to create a new MSISDN group and it can have a maximum of 50 groups.

Configuring Discrete MSISDN Numbers

Use the following configuration to configure discrete MSISDN numbers.

```
configure
  msisdn-group group_name
    msisdn cc cc_value number value
    exit
```

NOTES:

- **msisdn** : Specifies the discrete list of MSISDN numbers (Combination of discrete and range line is 20 per group).

Configuring MSISDN Range

Use the following configuration to configure MSISDN range.

```
configure
  msisdn-group group_name
    range cc cc_value number first start_range last end_range
    exit
```

NOTES:

- **number first** *start_range* **last** *end_range*: Specifies the MSISDN range.

Associating MSISDN Group and IMEI-TAC Group with Operator Policy

Use the following configuration to associate MSISDN group and IMEI-TAC group with operator policy.

```
configure
  lte-policy
    subscriber-map subscriber_map_name
      precedence number match-criteria msisdn-group namemsisdn_group name
operator-policy-name op_name
      end
```

NOTES:

- *number*: Specifies the order of precedence for the subscriber map. 1 (the lowest number) takes the highest precedence.
- **match-criteria** : Specifies that the keyword following this keyword is the criteria to be used to match a UE.
- **msisdn-group name** *msisdn_group_name*: Identifies a previously configured IMEI-TAC group (with imei-tac-group command LTE-Policy configuration mode) to associate with this precedence definition.
- **operator-policy-name** *op_name*: Sets the operator policy with which the matching criteria is associated.

Verifying MSISDN Group Configuration

Use the following show commands to display details related to MSISDN group.

- **show config msisdn-group name** *group_name*
- **show config msisdn-group summary**

Configuring Operator Policy based on IMSI Group and MSISDN Group

The match-criteria in precedence command is enhanced to take parameter that is "matched-to" the configure selection based on IMSI group and MSISDN group. It supports the selection of operator policy based on a combination of IMEI-TAC group and IMSI group (IMEI-TAC + IMSI group) or of IMEI-TAC group and MSISDN group (IMEI-TAC + MSISDN group). The configuration involves:

- IMSI-group
- MSISDN group
- IMEI-TAC + IMSI-group
- IMEI-TAC + MSISDN group

Associating IMSI Group with Operator Policy

Use the following configuration to associate IMSI group with operator policy.

```
configure
  lte-policy
    subscriber-map map_name
      precedence precedence_number match-criteria [ imsi-group group_name ]
 [ operator-policy-name policy_name ]
      end
```

For information about these commands and keywords, refer to the *Command Line Interface Reference*.

Associating IMSI Group in Combination with IMEI-TAC with Operator Policy

Use the following configuration to associate IMSI group in combination with IMEI-TAC with operator policy.

```
configure
  lte-policy
    subscriber-map map_name
      precedence precedence_number match-criteria imei-tac group group_name
[ imsi-group group_name ]  [ operator-policy-name policy_name ]
      end
```

For information about these commands and keywords, refer to the *Command Line Interface Reference*.

Associating MSISDN Group with Operator Policy

Use the following configuration to associate MSISDN group with operator policy.

```
configure
  lte-policy
    subscriber-map map_name
      precedence precedence_number match-criteria [ msisdn-group group_name
]  [ operator-policy-name policy_name ]
      end
```

For information about these commands and keywords, refer to the *Command Line Interface Reference*.

Associating MSISDN Group in Combination with IMEI-TAC with Operator Policy

Use the following configuration to associate IMSI group in combination with IMEI-TAC with operator policy.

```
configure
  lte-policy
    subscriber-map map_name
      precedence precedence_number match-criteria imei-tac group group_name
[ msisdn-group group_name ]  [ operator-policy-name policy_name ]
      end
```

For information about these commands and keywords, refer to the *Command Line Interface Reference*.