

# LTE Paging Map Configuration Mode Commands

The LTE Paging Map Configuration Mode is used to create and manage the LTE paging maps supporting MME configurations on the system.

**Command Modes**

Exec > Global Configuration > LTE Policy Configuration > LTE Paging Map Configuration

**configure > lte-policy > paging-map** *map_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(paging-map)#
```

**Important** The commands or keywords/variables that are available are dependent on platform type, product version, and installed license(s).

**Important** For information on common commands available in this configuration mode, refer to the Common Commands chapter.


- precedence, on page 1


# precedence

Enables the operator to apply a priority for different paging-profiles based on traffic type. When the MME service is associated with a paging map, the system checks the profile map to determine which paging-profile to adopt for a given paging trigger.

**Product**

MME

**Privilege**

Administrator

**Command Modes**

Exec > Global Configuration > LTE Policy Configuration > LTE Paging Map Configuration

**configure > lte-policy > paging-map** *map_name*

Entering the above command sequence results in the following prompt:

```
[local]host_name(paging-map)#
```

## Syntax Description

**precedence** *priority* **traffic-type { cs [ other | sms | voice ] | ps [ apn-profile** *profile_name* **| arp** *arp_value* **| qci** *qci_value* **| sms paging-profile** *paging_profile_name* **] | signaling [ detach | idr | lcs | node-restoration ] } paging-profile** *paging_profile_name*
**no precedence** *priority*

**no**

Remove the paging map from the system.

**precedence *priority***

*precedence*: For StarOS releases 16.5 and higher, enter an integer from 1 to 19, where 1 is the highest priority and 19 is the lowest priority. For StarOS releases prior to 16.5, enter an integer from 1 to 7, where 1 is the highest priority and 7 is the lowest priority. For releases 20.0 onwards enter an integer from 1 to 35, where 1 is the highest priority and 35 is the lowest priority. The numbers of paging-profiles supported are increased from 8 to 16.

**traffic-type { cs [ voice | sms | other ] | ps [ qci *qci_value* | apn-profile *profile_name* ] | signaling [ detach | idr | lcs | node-restoration ] }**

Defines the type of traffic of the incoming call.

- **cs** (Circuit Switched) - All data and control activities that involve CSFB. Paging requests from the MSC for mobile-terminated calls alone are treated as CS type. Paging requests for SMS are treated as PS type.

  Optionally, define the CS traffic sub-type:

  - **other**: MM Information Request messages coming from MSC can also trigger paging if UE is in IDLE state. These requests are mapped to 'other' sub-traffic type.
  - **sms**: Paging requests from MSC for mobile terminated SMS requests.
  - **voice**: Paging requests from MSC for mobile terminated voice calls.

  If a sub-traffic-type is not configured then paging-profile configured for CS (with no sub traffic-type qualification) is applied. If no such entry exists, then default heuristics based paging behavior is applied.

- **ps** (Packet Switched) - All data and control activities that involve packet services. SRVCC is also mapped to this traffic-type as the voice is carried using PS service. PS traffic type is further qualified using a set of QCI values or ARP values or APN profile names. These qualified entries are only used for paging triggered by S11 Downlink Data Notifications or Create Bearer Request or Update Bearer Request

  Optionally, define the APN Profile for PS traffic:

  **apn-profile** *profile_name*

  where *profile_name* is an alphanumeric string of size 1 to 64.

  The MME supports paging profile selection based on APN. A maximum of four APN profiles can be configured per precedence using this command.

  When heuristics paging is enabled, the MME selects the paging profile based on the APN profile, if paging-profile with matching APN profile name is fetched from the APN information corresponding to the EBI received in DDN is configured in the paging-map. If the incoming DDN does not have the EBI information then the APN information is received from the bearers stored in the MME for the UE. If multiple APN information is available, then the mapping with the highest precedence is picked. MME

warns the user of duplicate APN profile names in a given entry. The same APN profile name cannot be configured with more than one precedence level.

Optionally, define the ARP priority based paging for PS traffic type in the paging-map:

**arp** *arp_value*

The allowed ARP value " *arp_value* " is an integer from 1 through 15.

Optionally, define the QoS Class Identifier (QCI) value for this PS traffic:

**qci** *qci_value*

The QCI values can be either standard or non-standard. The *qci_value* is an integer from 1 through 9, 65, 66, 69, 70 (standard values) and from 128 up to 255 are non-standard values.

QCI qualified entries can only be used for paging triggered by Downlink Data Notifications received on S11. If the incoming DDN contains EPS Bearer ID (EBI) information, the QCI corresponding to that PDN is used to find the appropriate 'ps qci xx' entry and its configured paging-profile.

If there are multiple EBIs included in the DDN the mapping entry with highest precedence is selected.

If no QCI specific mapping exists, or if the incoming DDN does not have the EBI information then the qci corresponding to the bearers stored in MME for the UE shall be used to find the appropriate 'ps qci xx' entry and its configured paging-profile. The MME warns the user of duplicate QCI values in a given entry, same QCI values cannot be configured with more than one precedence level.

**sms**

Configures paging profile for SMS via SGd.

- **signaling [ detach | idr | lcs | node-restoration ]**: UE level signaling requests. This traffic can be optionally qualified according to the following sub-traffic types:

  **detach**: Paging requests triggered due to UE getting detached.

  **idr**: Paging triggered in response to an IDR event, such as receiving an IDR Request.

  **lcs**: (Location Services) – Paging requests triggered due to Positioning Requests coming from SMLC over SLs interface. Mobile Terminated Location Requests arriving on SLg interface can also trigger paging if UE is in IDLE state, and are included in this sub-traffic type.

  **node-restoration**: Paging requests triggered due to node restoration (for example, due to P-GW Restart Notification (PRN)). By default, no precedence is assigned to node restoration signaling traffic. The MME treats node restoration paging with the least priority.

  If a sub-traffic-type is not configured then paging-profile configured for signaling (with no sub traffic-type qualification) shall be applied. If no such entry exists then default-heuristics based paging behavior is applied.

**paging-profile *paging_profile_name***

The paging-profile to apply for paging UE.

## Usage Guidelines

Use this command to apply different paging-profiles based on traffic types.

The command defines the order (1 - highest, 35 - lowest) in which the MME checks the entries in this paging-map. If the paging trigger (like Downlink Data Notification or MSC request) matches the traffic-type of that entry, then the corresponding paging-profile is used for paging the UE. If the paging trigger does not

match, then the next entry in the precedence order is picked and checked for a match. If no match is found in the entire paging-map table then default heuristic paging profile is adopted.

If the MME receives another paging trigger (for example from the MSC for CSFB) while paging is already in progress, the MME checks whether a higher precedence paging profile can be applied. If the new trigger has a paging-map entry with a higher precedence, the MME restarts the paging process using the paging-profile associated with the new map entry.

Paging is typically triggered when either the MSC indicates that there is an incoming call to the UE (Call Service, CS), or when the S-GW sends a Downlink Data Notification (Packet Service, PS) to the MME, or when there is a bearer/PDN request coming from the P-GW/S-GW.

The paging profile with the highest precedence is selected when QCI, ARP and APN Profile, all are configured in the paging-map. If no QCI, ARP and APN-Profile specific mapping exists then the default 'PS' traffic type configuration in the paging-map will be picked and the paging-profile corresponding to that mapping is used. If a paging trigger is received while a paging procedure is on-going, and if the new paging trigger has a higher precedence (considering QCI, ARP or APN-profile configuration mapping) then the paging-profile corresponding to that will be used in the next paging retry. One precedence level can be configured with only one of, QCI or ARP or APN-Profile name, at any point of time.

Refer to the *Heuristic and Intelligent Paging* chapter in the *MME Administration Guide* for more information.

## Related Commands

Refer to the **paging-profile** command in the *LTE Policy Configuration Commands* chapter to create the paging profiles used in this command.

### Example

The following example specifies a special paging-profile for IMS-Voice and a default paging-profile for the rest of PS paging triggers:

```
precedence 1 traffic-type ps qci 1 paging-profile profile-voice
precedence 2 traffic-type ps paging-profile profile-default
```

In the following example, Mobile Terminated voice triggered paging requests will use *profile-voice*. All other CS traffic types like MM-InformationRequest and MT-SMS use *profile-cs*:

```
precedence 1 traffic-type cs voice paging-profile profile-voice
precedence 2 traffic-type cs paging-profile profile-cs
```

In the following example, signaling paging requests due to a node restoration (P-GW Restart Notification (PRN)) will use the *prn*paging map, and is assigned a lower precedence of 3:

```
precedence 3 traffic-type signaling node-restoration paging-profile prn
```