

APN Remap Table Configuration Mode



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apn-remap network-identifier

Creates an entry in the APN remap table and provides the ability to override the network identifier part of the APN requested by the UE.

Product MME	
	SGSN
Privilege	Security Administrator, Administrator
Command Modes	Exec > Global Configuration > APN Remap Table Configuration
	<pre>configure > apn-remap-table table_name</pre>
	Entering the above command sequence results in the following prompt:
	[local]host_name(apn-remap-table_name) #
Syntax Description	<pre>apn-remap network-identifier apn_net_id { new-ni new_apn_net_id subscription-failure reject [orig-apn] operator-identifier apn_op_id { new-ni new_apn_net_id value-for-ni-wc new_apn_net_id { new-oi new_apn_op_id value-for-oi-mcc mcc value-for-oi-mnc mnc } [orig-apn] + } value-for-ni-wc new_apn_net_id [orig-apn] } no apn-remap network-identifier apn_net_id</pre>
	no

Deletes the specified APN remap entry from the APN remap table.

network-identifier apn_net_id

Identifies the "old" APN network identifier that is being mapped for replacement.

apn_net_id is a string of 1 to 62 characters, including digits, letters, dots (.) and dashes (-). Additionally, one wildcard character (*) can be included anywhere within the string.

subscription-failure

Subscription failure for requested APN.

reject

Specifies the rejection with cause code Unknown or Missing APN.

new-ni *new_apn_net_id*

Identifies the new (target) network identifier to use when no wildcard character is included in the "old" APN network identifier.

new_apn_net_id is a string of 1 to 62 characters, including digits, letters, dots (.) and dashes (-).

orig-apn

Enables MME to send the original APN (UE requested APN) in the ATTACH_ACCEPT or ACTIVATE_DEFAULT_BEARER_REQUEST message to the UE. This is an optional keyword.

If this keyword is not configured, then remapped APN is sent back to UE.

value-for-ni-wc new_apn_net_id

Identifies the information to replace the wildcard in the new APN network identifier when a wildcard character is included in the "old" APN network identifier.

new_apn_net_id is an alphanumeric string of characters, including dots (.) and dashes (-). This string replaces the wildcard (*) specified in the *apn_net_id*. The two strings together must not exceed 62 characters.

operator-identifier apn_op_id{ new-ni new_apn_net_id | value-for-ni-wc new_apn_net_id{ new-oi new_apn_op_id | value-for-oi-mcc mcc | value-for-oi-mnc mnc }[orig-apn] + }

Identifies the "old" APN operator identifier that is being mapped for replacement.

apn_op_id is a string of 1 to 18 characters including digits, letters, and dots (.). The entry must be in the following format, where # represents a digit: MNC###.MCC###.GPRS.

Optionally, either one or two wildcard characters (*) can be entered. Wildcard characters can be used in place of one # or three # -- for example MNC12*.MCC*.GPRS.

The following options can be configured:

- **new-oi** *new_apn_op_id*: Identifies the new (target) operator identifier to use when no wildcard character is included in the "old" APN operator identifier. *new_apn_op_id* is a string of 1 to 18 characters including digits, letters, and dots (.). The entry must be in the following format, where # represents a digit: MNC###.MCC###.GPRS.
- value-for-oi-mcc *mcc*: Identifies the information to replace the wildcard in the new APN operator identifier when a wildcard character is included in the MCC portion of the "old" APN operator identifier; for example MNC###.MCC*.GPRS.
- value-for-oi-mnc *mnc*: Identifies the information to replace the wildcard in the new APN operator identifier when a wildcard character is included in the MNC portion of the "old" APN operator identifier; for example MNC*.MCC###.GPRS.

Usage Guidelines

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Important Entries in the APN remap table are only valid if the table is associated with an operator policy. The can then be associated with an IMEI profile as IMEI-specific remap entries are not supported.		
Thi Ma	s command defines mapping entries in the APN remap table which supports a range of APN overrides. pping can be done one-to-one:	
	• a "new" APN network identifier (NI) can be mapped to override an "old" APN network identifier (NI) or an "old" APN operator identifier (OI)	

• a "new" APN operator identifier (OI) can be mapped to override an "old" APN network identifier (NI) or an "old" APN operator identifier (OI)

Mapping can also be done with wildcards in the "old" APN entry mapped to wildcard replacements to dynamically create "new" APN network/operator identifiers.

Related Commands: APN override can also be based on charging characteristics. This type of override mapping is defined with the **cc** command, also part of this configuration mode.

Example

A one-to-one APN NI remap entry is illustrated by:

```
apn-remap network-identifier 123abc.com new-ni 333CBC.com
```

Create an entry with a wildcard so that part of an incoming APN NI will be replaced - for example, incoming *xyzabcpqr.com* becomes *xyzinternet2pqr.com*.

```
apn-remap network-identifier xyz*pqr.com value-for-ni-wc internet2
```

Replace any incoming APN NI with a new APN NI.

```
apn-remap network-identifier * value-for-ni-wc newnet.com
```

apn-remap non3gpp-char-apn

This command enables MME to remap the UE requested APN, containing non-3GPP characters, to an operator defined APN.

Product	MME Security Administrator, Administrator	
Privilege		
Command Modes	Exec > Global Configuration > APN Remap Table Configuration	
	configure > apn-remap-table table_name	
	Entering the above command sequence results in the following prompt:	
	[local]host_name(apn-remap-table_name)#	
Syntax Description	apn-remap non3gpp-char-apn new-ni <pre>new_apn_net_id [orig-apn] no apn-remap non3gpp-char-apn</pre>	
	по	
	Disables remapping of UE requested APN with non-3GPP standard characters.	
	new-ni <i>new_apn_net_id</i>	
	Identifies the new (target) network identifier to use when non-3GPP characters are included in the UE requested APN.	

new_apn_net_id is a string of 1 to 62 characters, including digits, letters, dots (.) and dashes (-).

orig-apn

Enables MME to send the original APN (UE requested APN) in the ATTACH_ACCEPT or ACTIVATE_DEFAULT_BEARER_REQUEST message to the UE. This is an optional keyword.

If this keyword is not configured, then remapped APN is sent back to UE.

Usage Guidelines

Important Entries in the APN remap table are only valid if the table is associated with an operator policy. The same table can then be associated with an IMEI profile as IMEI-specific remap entries are not supported.

This command enables MME to remap all UE requested APNs containing non-3GPP characters to the configured new-ni APN.

This CLI is applied only if the UE sessions are not rejected by the new configuration options **policy attach reject-non3gpp-char-apn** and **policy pdn-connect reject-non3gpp-char-apn** under the mme-service. If the UE requested APN contains non-3GPP characters and the **apn-remap non3gpp-char-apn new-ni** CLI command is configured, then this CLI takes precedence over any other matching criterion for APN remapping.

Related Commands: APN override can also be based on charging characteristics. This type of override mapping is defined with the **cc** command, also part of this configuration mode.

Example

The following command enables remapping of UE requested APN with non-3GPP standard characters to 333CBC.com:

```
apn-remap non3gpp-char-apn new-ni 333CBC.com
```

apn-remap operator-identifier

Creates an entry in the APN remap table and provides the ability to override the operator part of APN requested by the UE.

Product	MME
	SGSN
Privilege	Security Administrator, Administrator
Command Modes	Exec > Global Configuration > APN Remap Table Configuration
	<pre>configure > apn-remap-table table_name</pre>
	Entering the above command sequence results in the following prompt:
	[local]host_name(apn-remap-table_name)#
Syntax Description	_ apn-remap operator-identifier <pre>apn_op_id { new-oi new_apn_op_id value-for-oi-mcc mcc [value-for-oi-mnc mnc] value-for-oi-mnc mnc [</pre>

```
value-for-oi-mcc mcc ] }
no apn-remap operator-identifier apn_op_id
```

no

Deletes the specified APN remap entry from the APN remap table.

operator-identifier apn_op_id { new-oi new_apn_op_id | value-for-oi-mcc mcc [value-for-oi-mnc mnc] | value-for-oi-mnc mnc [value-for-oi-mcc mcc] }

Identifies the "old" APN operator identifier that is being mapped for replacement.

apn_op_id is a string of 1 to 18 characters including digits, letters, and dots (.). The entry must be in the following format, where # represents a digit: MNC###.MCC###.GPRS.

Optionally, either one or two wildcard characters (*) can be entered. Wildcard characters can be used in place of one # or three # -- for example MNC12*.MCC*.GPRS.

The following options can be configured:

- **new-oi** *new_apn_op_id*: Identifies the new (target) operator identifier to use when no wildcard character is included in the "old" APN operator identifier. *new_apn_op_id* is a string of 1 to 18 characters including digits, letters, and dots (.). The entry must be in the following format, where # represents a digit: MNC###.MCC###.GPRS.
- value-for-oi-mcc *mcc*: Identifies the information to replace the wildcard in the new APN operator identifier when a wildcard character is included in the MCC portion of the "old" APN operator identifier; for example MNC###.MCC*.GPRS.
- value-for-oi-mnc *mnc*: Identifies the information to replace the wildcard in the new APN operator identifier when a wildcard character is included in the MNC portion of the "old" APN operator identifier; for example MNC*.MCC###.GPRS.

NOTES:

The first **apn-remap** command above remaps "company.com.apn.epc.mnc456.mcc123.3gppnetwork.org" to "starent.com.apn.epc.mnc987.mcc654.3gppnetwork.org".

The second **apn-remap** command above remaps "starent.com.apn.epc.mnc456.mcc123.3gppnetwork.org" to "starent.com.apn.epc.mnc234.mcc543.3gppnetwork.org".

Wildcards characters (*) can be used in the existing operator identifier.

Usage Guidelines

 Important
 Entries in the APN remap table are only valid if the table is associated with an operator policy. The same table can then be associated with an IMEI profile as IMEI-specific remap entries are not supported.

 This command defines mapping entries in the APN remap table which supports a range of APN overrides.

Mapping can be done one-to-one:

• a "new" APN network identifier (NI) can be mapped to override an "old" APN network identifier (NI) or an "old" APN operator identifier (OI)

• a "new" APN operator identifier (OI) can be mapped to override an "old" APN network identifier (NI) or an "old" APN operator identifier (OI)

Mapping can also be done with wildcards in the "old" APN entry mapped to wildcard replacements to dynamically create "new" APN network/operator identifiers.

Related Commands: APN override can also be based on charging characteristics. This type of override mapping is defined with the **cc** command, also part of this configuration mode.

Example

A one-to-one APN OI remap entry is illustrated by:

```
apn-remap operator-identifier MNC423.MCC222.GPRS new-oi MNC123.MCC456.GPRS
Replace any incoming APN OI with a new APN OI MNC123.MCC456.GPRS:
```

```
apn-remap operator-identifier MNC*.MCC*.GPRS value-for-oi-mnc 123 value-for-oi-mcc 456
```

apn-selection-default

Enables and configures or disables the Default APN feature for use when the normal APN selection process fails.

Product	- MME
	SGSN
Privilege	Security Administrator, Administrator
Command Modes	Exec > Global Configuration > APN Remap Table Configuration
	configure > apn-remap-table <i>table_name</i>
	Entering the above command sequence results in the following prompt:
	[local]host_name(apn-remap-table_name)#
Syntax Description	<pre>apn-selection-default { context-id context_id_value first-in-subscription[orig-apn] lowest-context-id [orig-apn] network-identifier apn_net_id [fallback-apn network-identifier apn_net_id fallback-to-first-in-subscription prefer-single-subscription reject-blank-apn require-dns-fail-wildcard [orig-apn] require-subscription-apn] + } no apn-selection-default { context-id context_id_value first-in-subscription lowest-context-id network-identifier apn_net_id }</pre>
	no

Delete the configuration statement and disable the default APN feature.

context-id context_id_value

Specifies the usage of APN in subscription record with context ID matching the PDN type if normal APN selection fails. context_id_value must be an integer between 1 and 15.

first-in-subscription [orig-apn]

Specifies that the first APN in the subscription record matching the requested PDN type is used as the default APN. This applies when normal APN selection fails and if the UE APN is absent and the defined default APN is not a match.

For the SGSN, "first-in-subscription" means the first record from the list of records sent from the HLR (in the same order) with PDP type matching the requested PDP type. With this configuration, if the first record is a wildcard APN it is expected that the wildcard APN be configured. If not, the activation will be rejected.

For MME, if the default APN in the subscription data matches the requested pdn-type, then the default APN is used. Otherwise, the first record from the list of records (apn-list) sent from the HSS with PDP type matching the UE-requested PDP type is selected. The apn-list is sorted according to apn-name.

orig-apn: Enables MME to send the original APN (UE requested APN) in the ATTACH_ACCEPT or ACTIVATE_DEFAULT_BEARER_REQUEST message to the UE. This is an optional keyword.

If this keyword is not configured, then re-mapped APN is sent back to UE.

lowest-context-id [orig-apn]

Specifies that the subscription APN with the lowest context-ID in the subscription record matching the PDN type is used as the default APN when normal APN selection fails.

With this configuration, if the record with the lowest context-ID is a wildcard APN, then it is expected that the wildcard APN has already been configured. If not, the activation will be rejected.

If both **apn-selection-default lowest-context-id** and **apn-selection-default first-in-subscription** options are configured, whichever command was executed (configured) first will be the behavior used.

Starting with Release 14.0, MME also supports use of this keyword.

orig-apn: Enables MME to send the original APN (UE requested APN) in the ATTACH_ACCEPT or ACTIVATE_DEFAULT_BEARER_REQUEST message to the UE. This is an optional keyword.

If this keyword is not configured, then remapped APN is sent back to UE.

network-identifier apn_net_id

Specifies the network identifier will be used as the default APN name. *apn_net_id* is a string of 1 through 62 characters, including digits, letters, dots (.) and dashes (-).

In 21.4 and later releases, this keyword is enhanced to support S4-SGSN.

Any of the following optional keywords can be used with **network-identifier** as qualifications.

fallback-apn network-identifier apn_net_id

SGSN only.

Specifies a dummy APN to be used when the default APN is not present in the subscription so that the activation does not fail. With this keyword configured, the context is activated with a dummy APN and the GGSN displays a static page for this APN, instructing the subscriber to subscribe for appropriate services.

apn_net_id is a string of 1 to 62 characters, including letters, digits, dots (.) and dashes (-).

fallback-to-first-in-subscription

SGSN only.

Uses the APN from the first subscription record when the configured default APN is not available.

prefer-single-subscription

SGSN only.

Uses the APN from the subscription record if it is the only record available and normal APN selection fails.

reject-blank-apn

SGSN only.

Disables use of the default APN if a blank APN is received.

require-dns-fail-wildcard [orig-apn]

MME only.

Enables the default APN to be used if the DNS query fails with the requested APN.

orig-apn: Enables MME to send the original APN (UE requested APN) in the ATTACH_ACCEPT or ACTIVATE_DEFAULT_BEARER_REQUEST message to the UE. This is an optional keyword.

If this keyword is not configured, then remapped APN is sent back to UE.

In 18.2 and later releases: The **require-dns-fail-wildcard** keyword is also supported by the MME.

In releases prior to 21.4: The **require-dns-fail-wildcard** keyword is not supported for S4-SGSN.

In 21.4 and later releases: The require-dns-fail-wildcard keyword is supported for S4-SGSN.

require-subscription-apn network-identifier apn_net_id

SGSN only.

If defined, this APN name must also be included in the subscription data for the default APN feature to function.

apn_net_id is a string of 1 to 62 characters, including letters, digits, dots (.) and dashes (-).

Usage Guidelines The default APN feature will be used in error situations when the MME or the SGSN cannot select a valid APN via the normal APN selection process. Within an operator policy, an APN remap table with a default APN can be configured for the MME/SGSN to:

- override a requested APN when the HSS/HLR does not have the requested APN in the subscription profile.
- provide a viable APN if APN selection fails because there was no "requested APN" and wildcard subscription was not an option.

The default APN feature can also be used in the event of a DNS query failure with the selected APN, if:

• the wildcard-apn command is configured, (requirement only for SGSN)

- a wildcard subscription is present,
- the require-dns-fail-wildcard keyword is included with the apn-selection-default command then the configured default APN will be used when the DNS query is retried.

In all of the instances outlined above, the MME/SGSN can provide the default APN as an alternate behavior to ensure that PDP context activation is successful.



Important For SGSN ONLY - Beginning with Release 16, customers already using an APN remap table that is associated with an IMEI profile **will have to change the existing configuration** to enable the default APN remapping associated with an operator policy rather than the one associated with an IMEI profile. For example, if an existing configuration forced all matching IMEI in a defined IMEI range to use xxx.net APN, the configuration needs to be changed to an APN remap table configuration similar to what is shown below:

Old APN remap table associated with an IMEI profile:

```
apn-selection-default network-identifier xxx.net
```

For a configuration to accomplish the same remapping function, change the APN remap table **associated with an IMEI profile** to the following:

```
apn-remap network-identifier * new-ni xxx.net
```

C)

Important For SGSN ONLY - With Release 16, an APN remap table associated with an IMEI profile overrides a remap table associated with an operator policy. This means activation will be rejected if a local default APN configured, in an APN remap table associated with **an IMEI profile**, cannot be used. This will occur even if a valid local default APN is available in an APN remap table associated with **an operator policy**.

For SGSN ONLY - Beginning with Release 16, the following *sample* configuration will enable the operator to bypass APN remapping for a specific IMEI range:

```
config
   operator-policy name OpPol1
      associate call-control-profile OpPol1CCprof1
      associate apn-remap-table RemapOpPol1
      imei-range first start imei last ending imei [ sv IMEI sv ] imei-profile
name IMEIprof1
      exit
   imei-profile name IMEIprof1
      associate apn-remap-table remapIMEIprof1
      exit
   apn-remap-table
                    remapIMEIprof1
      exit
   apn-remap-table
                     RemapOpPol1
      apn-selection-default network-identifier NewAPN.net
      end
```

Example

The following command enables the default APN feature for APN *HomeNet1* in an APN remap table associated with an operator policy:

apn-selection-default network-identifier HomeNet1

For SGSN only - Beginning with Release 16, if the APN remap table is associated with an IMEI profile, for a configuration to accomplish the same remapping function as noted in the sample above, then use syntax similar to the following:

```
apn-remap network-identifier * new-ni xxx.net
```

The following command, in an APN remap table associated with an operator policy, enables use of a default APN selected on the basis of lowest context-ID if the APN is not contained within the subscription:

apn-selection-default lowest-context-id

The following command enables use of a default APN if the DNS query fails:

apn-selection-default network-identifier HomeNet1 require-dns-fail-wildcard

blank-apn

Enables the Blank APN feature and defines the APN that will be used when no APN is requested. This command is specific to SGSN.

Product	SGSN
Privilege	Security Administrator, Administrator
Command Modes	Exec > Global Configuration > APN Remap Table Configuration
	configure > apn-remap-table table_name
	Entering the above command sequence results in the following prompt:
	[local]host_name(apn-remap-table_name)#
Syntax Description	blank-apn network-identifier apn_net_id no blank-apn
	no
	Removes the APN NI from the APN remap table configuration and disables the Default APN feature.
	network-identifier apn_net_id
	Identifies the APN network identifier (NI) that will be used when no APN is requested.
	apn_net_id is a string of 1 to 62 characters, including letters, digits, dots (.) and dashes (-).
Usage Guidelines	Use this command to enable the Blank APN feature.

Example

The following command creates an entry that supplies the *starnet.com* as the APN network identifier whenever a request does not include an APN:

blank-apn network-identifier starnet.com

CC

	This command maps an APN override based on charging characteristics.
Product	- MME
	SGSN
Privilege	Security Administrator, Administrator
Command Modes	Exec > Global Configuration > APN Remap Table Configuration
	configure > apn-remap-table <i>table_name</i>
	Entering the above command sequence results in the following prompt:
	[local] <i>host_name</i> (apn-remap- <i>table_name</i>)#
Syntax Description	<pre>cc behavior bit_value profile index_bit apn-remap network-identifier apn_net_id new-ni new_apn_net_id [orig-apn] no cc behavior bit_value profile index_bit apn-remap network-identifier</pre>
	apn_net_id
	no
	Disables the configured cc-based remapping behavior.
	behavior <i>bit value</i>

Specifies the value for the charging characteristic behavior bit.

bit_value is a hex value from 0x0 to 0xFFF.

profile index_bit

Specifies the index for the charging characteristic profile.

index_bit is an integer from 1 through 15.

Some of the index values are predefined according to 3GPP standards:

- 1 for hot billing
- 2 for flat billing
- 4 for prepaid billing
- 8 for normal billing

	apn-remap network-identifier <i>apn_net_id</i>
	Identifies the "old" APN network identifier that is being mapped for replacement.
	apn_net_id is a string of 1 to 62 characters, including letters, digits, dots (.) and dashes (-).
	new-ni <i>new_apn_net_id</i>
	Identifies the "new" APN network identifier that is being mapped to.
	new_apn_net_id is a string of 1 to 62 characters, including letters, digits, dots (.) and dashes (-).
	orig-apn
	Enables MME to send the original APN (UE requested APN) in the ACTIVATE_DEFAULT_BEARER_REQUEST message to the UE. This is an optional keyword.
	If this keyword is not configured, then remapped APN is sent back to UE.
Usage Guidelines	Use this command to enable APN remapping only when the charging characteristic value in the subscription record associated with the requested APN matches the value configured for the new-ni .
	The new APN NI must be part of the subscription data so that the charging characteristic associated with the new APN NI will be used for activating the context. If there is not one associated, then the general charging characteristic will be used.
	Example
	The following command associates a new APN NI locals1 with a set of charging characteristics:
	cc behavior 0xF profile 4 apn-remap network-identifier homer1 new-ni

description

locals1

Defines a string that describes this APN remap table.

Product	MME
	SGSN
Privilege	Security Administrator, Administrator
Command Modes	Exec > Global Configuration > APN Remap Table Configuration
	<pre>configure > apn-remap-table table_name</pre>
	Entering the above command sequence results in the following prompt:
	<pre>[local]host_name(apn-remap-table_name)#</pre>
Syntax Description	description description
	no description

	no	
	Removes the description configuration from this APN Remap Table configuration.	
	description	
	Specifies descriptive text to be associated with the APN remap table as an alphanumeric string of 1 through 100 characters. The string may include spaces, punctuation, and case-sensitive letters if the string is enclosed in double quotation marks (").	
Usage Guidelines Define information that identifies this particularly APN remap table.	Define information that identifies this particularly APN remap table.	
	Example	
	description "APN_remap1 replaces all MNC1## Ids."	

end

Exits the current configuration mode and returns to the Exec mode.

Product	All
Privilege	Security Administrator, Administrator
Syntax Description	end
Usage Guidelines	Use this command to return to the Exec mode.

exit

Exits the current mode and returns to the parent configuration mode.

Product	All
Privilege	Security Administrator, Administrator
Syntax Description	exit
Usage Guidelines	Use this command to return to the parent configuration mode.

wildcard-apn

Enables or disables the Wildcard APN feature and define the default APN to be used whenever a wildcard APN is included in the subscriber record.

Product

MME

r.	
e IPv6 address/prefix	
command in the Operator Policy	
).
	s network identifier
	wo or more of the
wing scenarios:	



Use this command to enable an APN wildcard for PDP type IPv4 and NI homer1:

wildcard-apn pdp-type ipv4 network-identifier homer1