

Default APN for DNS Failure

With Release 18.2, it is possible for the operator to configure the MME to use a default APN in some situations where the DNS resolution fails due to a problem with the subscriber-requested APN. As a result, the Attach could proceed or the PDP context activation could complete.

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Feature Description

The Default APN for DNS Failure feature makes it possible for the operator to ensure that calls and PDP context activation are not rejected because of possible UE errors, such as, the UE requested a misspelled APN name. This feature allows the operator to promote activation success if

- the DNS query would fail

when

- the subscriber-requested APN is not present in the subscription record,

and if

- the wildcard subscription is present in the subscription record.

This functionality is configured with the use of the **require-dns-fail-wildcard** keyword. This keyword is currently supported only on MME.

By default, this new functionality is not enabled. If not enabled, then the MME sends a PDN connectivity reject to the eNodeB if the DNS resolution fails for the reasons indicated above.

Relationships to Other Features

Operator Policy - Default APN for DNS Failure is configured with the commands in the APN Remap Table configuration mode which is a key component of the Operator Policy feature. For information about this feature, see the chapter on *Operator Policy*.

How It Works

With the Default APN for DNS Failure enabled by configuring the 'required-dns-fail-wildcard', if DNS resolution fails because the UE-requested APN name is not present in the subscription record but the wildcard subscription is present, then MME overrides the requested APN with a configured default APN. The MME proceeds with the DNS resolution of the configured default APN and then proceeds with the Attach or PDP context activation.

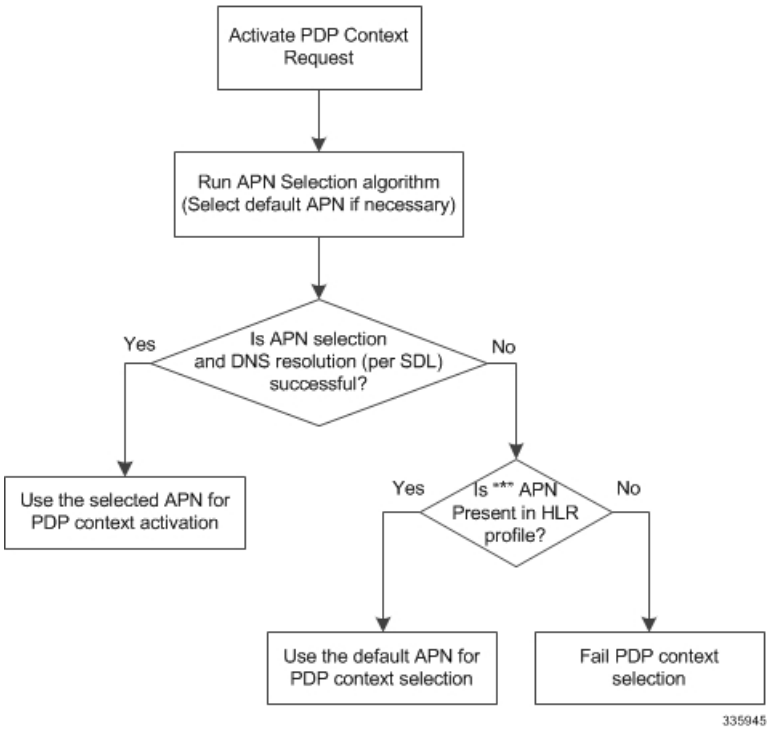
The MME checks the subscription record with the configured default APN. If subscription record of the configured default APN is available, then the MME takes the QoS profile and the ARP values from that record. If the subscription record is not available, then the MME checks the QoS profile and ARP values included in the wildcard subscription record.

Important Note that DNS query will be retried with default APN only once. If DNS resolution fails again, even after applying the configured default APN, then the Activation Request will be rejected.

Architecture

The graphic below illustrates the intenal procedure the MME follows to determine if a default APN should be used.

Figure 1: Decision Tree for MME Using Default APN



Standards Compliance

The Default APN for DNS Failure feature complies with the following standards:

- 3GPP TS 23.060
- 3GPP TS 36.413
- 3GPP TS 24.301
- 3GPP TS 29.274
- 3GPP TS 23.401

Configuring Default APN for DNS Failure

Enabling Default APN for DNS Failure is configured in the APN Remap Table configuration mode. This mode generates a remap table that is a key component of the Operator Policy feature. The operator policy must be assigned subscribers in the LTE Policy, the LTE policy's subscriber map must be associated with the MME service.

Check the MME's current configuration for names of already created APN remap tables, operator policies, subscriber maps and mme-service instances. If desired, these names can be used to create associations *with pre-configured* tables, policies and services.



Important We recommend that all table, policy, and service names be unique - not only within a context but across the MME's configuration. Do not use preconfigured names unless the association is desired.

This configuration procedure will take you through all of the following:

1. creating an APN remap table and enabling 'require-dns-fail-wildcard',
2. creating an operator policy and associating the remap table with the operator policy,
3. associating the remap table with the operator policy,
4. assigning subscribers to the operator policy in the LTE policy,
5. associating the LTE policy's subscriber map to the MME service configuration.

All commands, keywords, and variables are defined in the *Command Line Interface Reference*.

All components must be completed for the feature to be enabled. Begin this procedure in the Local context in the Exec mode.

Enabling 'require-dns-fail-wildcard'

The following configuration components deals with creating an APN Remap Table and configuring the special keyword specific to enabling the Default APN for DNS Failure feature.

```
config
  apn-remap-table <table_name> -noconfirm
    apn-selection-default network-identifier   net_id
require-dns-fail-wildcard
    end
```

Notes:

- *net_id* - Specifies the network identifier to be used as the default APN name. Must be a string of 1 to 62 characters, including digits, letters, dots (.) and dashes (-).
- require-dns-fail-wildcard - The keyword that enables the use of the default APN when DNS resolution fails. This keyword is currently supported only on MME.
- **no** prefixed to the command will remove the require-dns-fail-wildcard configuration from the remap table.

Associating the APN Remap Table with the Operator Policy

The following configuration components deals with creating an operator policy or accessing the operator policy configuration to associate the APN remap table identified in the configuration procedure above.

```
config
  operator-policy name <policy_name> -noconfirm
    associate apn-remap-table <table_name>
    end
```

Assigning Subscribers to the Operator Policy

The following configuration components deals with assigning subscribers to the operator policy in the LTE policy.

```
config
  lte-policy
    subscriber-map <map_name> -noconfirm
      precedence precedence match-criteria all operator-policy-name
<policy_name>
      end
```

Associating the Subscriber's Map with the MME Service

The following configuration components deals with associating the LTE policy's subscriber map to the MME service configuration

```
config
  context context_name -noconfirm
    mme-service <srvc_name> -noconfirm
      associate subscriber-map <map_name>
      end
```

Verifying the Feature's Configuration

The **show apn-remap-table full all** command generates a display that indicates the configuration for the APN Remap Table. The Use Default APN when DNS Query fails field indicates if the Default APN for DNS Failure feature has been enabled.

The following is a sample display is only a portion of the output and this sample shows *star.com* configured as the default APN name.

```
show apn-remap-table full all
APN Remap Table Name = test-table
Default APN                        : star.com
```

```
Require Subscription APN                                : Not Configured
    Use Default APN when no APN is requested            : Yes
    Use Default APN when DNS Query fails                : Yes
    Fallback APN to use when Default APN not present
    in subscription                                     : Not Configured
    . . . .
```