



SaMOG Local P-GW Selection

This feature enables the SaMOG Gateway to configure and use local P-GW addresses either as a fall-back selection method or as the preferred selection method.

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Feature Description

The SaMOG Gateway allocates P-GW to provide PDN connectivity to the User Equipment (UEs). The P-GW address is either selected based on the address provided by the AAA server (static selection) or by using DNS resolution (dynamic selection). With this feature, the SaMOG Gateway can support P-GW addresses that are configured locally under the APN Profile Configuration Mode. SaMOG can use these locally configured P-GW addresses in one of the following ways:

- As a fall-back selection method
- As preferred selection method

Local P-GW as a Fall-back Selection Method

1. When AAA Server identifies the P-GW selection method as Dynamic and if the local P-GW address is configured under the APN Profile, the SaMOG Gateway will perform local P-GW selection in the following scenarios:
 - The P-GW addresses received by DNS resolution are unreachable.
 - The DNS server is unreachable, or the DNS query is rejected.
 - DNS resolution is not configured, and/or the AAA server does not send the P-GW address.
2. When AAA Server identifies the P-GW selection method as static (P-GW IP Address or P-GW FQDN):

If the local P-GW address(es) are configured under the APN Profile and also P-GW selection fallback for P-GW ID is configured under mrme-service, the SaMOG Gateway will perform local P-GW selection in the following scenarios:

- The P-GW address mentioned by AAA server or received by DNS resolution (P-GW FQDN) is unreachable
- The DNS server is unreachable, or the DNS query is rejected (for P-GW FQDN).
- DNS resolution is not configured (for P-GW FQDN).

Local P-GW as the Preferred Selection Method

The SaMOG Gateway can be configured to use the local P-GW addresses for P-GW node selection as the preferred selection method.

This method is applicable only when the AAA server mentions the selection method as dynamic and the "local-configuration-preferred" configuration is enabled under mrme-service.



Note This configuration is not effective when the AAA server mentions the selection method as static.

How Local P-GW Address Support Works

The SaMOG Gateway performs local P-GW address selection based on the weight that is configured for each P-GW address (similar to DNS resolution of P-GW addresses). Only the first P-GW address is selected based on its weight. The rest of the addresses are selected on a round-robin basis starting from the next available P-GW address, rounding to the P-GW address before the first selected P-GW address. A maximum of 16 IPv4 and/or IPv6 local P-GW addresses can be configured.

Limitations

- In this release, the SaMOG Gateway does not support dual bind (IPv4 and IPv6) address for EGTP service (or GTPU service).
- The PGW-Fallback is supported only for GTPv2 Network Protocol.

Table 1: Truth Table Describing P-GW Fall Back Selection

| SL No | Local Preferred Configuration | PGW-ID Fallback Configuration | AAA - Address Location Type | Behavior |
|-------|-------------------------------|-------------------------------|-----------------------------|--|
| 1 | Yes/No | No | PGW - IP Address | 1. If PGW is not reachable then session setup is terminated, No Fallback |

| | | | | |
|---|--------|-----|------------------|---|
| 2 | Yes/No | No | PGW FQDN | <p>1. SaMOG performs DNS resolution on provided PGW FQDN, If resolved</p> <p>PGW is not reachable session setup is terminated, No Fallback</p> |
| 3 | Yes | Yes | PGW - IP Address | <p>1. If PGW is not reachable then</p> <p>2. SaMOG tries to establish session with locally configured PGW Addresses</p> <p>If they are not reachable then</p> <p>3. SaMOG performs DNS resolution based on APN FQDN and tries to establish session with resolved PGW addresses.</p> |
| 4 | No | Yes | PGW- IP Address | <p>1. If PGW is not reachable then</p> <p>2. SaMOG performs DNS resolution based on APN FQDN and tries to establish session with resolved PGW addresses. If they are unreachable then.</p> <p>3. If local configured PGW's are available, SaMOG tries to establish session with configured IP's</p> |
| 5 | Yes | Yes | PGW FQDN | <p>1. SaMOG performs DNS resolution on provided PGW FQDN, If resolved</p> <p>PGW is not reachable then</p> <p>2. SaMOG tries to establish session with locally configured PGW Addresses</p> <p>If they are not reachable then</p> <p>3. SaMOG performs DNS resolution based on APN FQDN and tries to establish session with resolved PGW addresses.</p> |

| | | | | |
|---|-----|-------------|--|---|
| 6 | No | Yes | PGW FQDN | <p>1. SaMOG performs DNS resolution on provided PGW FQDN, If resolved</p> <p>PGW is not reachable then</p> <p>2. SaMOG performs DNS resolution based on APN FQDN and tries to establish session with resolved PGW addresses. If they are unreachable then.</p> <p>3. If local configured PGW's are available, SaMOG tries to establish session with configured IP's</p> |
| 7 | No | No/Yes | PGW - Dynamic Allocation (APN FQDN) | <p>1. SaMOG performs DNS resolution on APN FQDN, If resolved</p> <p>PGWs are not reachable then</p> <p>2. SaMOG tries to establish session with locally configured PGW Addresses.</p> |
| 8 | Yes | No/Yes | PGW - Dynamic Allocation (APN FQDN) | <p>1. SaMOG tries to establish session with locally configured PGW Addresses. If they are not reachable then</p> <p>2. SaMOG performs DNS resolution based on APN FQDN and tries to establish session with resolved PGW addresses.</p> |
| | | Note | Note: Fallback is applicable to only GTPv2 Network Protocol. | |

Configuring Local P-GW Selection

Configuring Local P-GW Resolution

Use the **pgw-address** command under the APN Profile Configuration Mode to define local P-GW addresses for load balancing.

```

configure
  apn-profile profile-name
    pgw-address ipv4_address | ipv6_address weight weight [ primary | secondary
]
  no pgw-address ipv4_address | ipv6_address
end

```

Notes:

- Use the **no pgw-address** *ipv4_address* / *ipv6_address* command to disable the P-GW address(es) configured for an APN profile.
ipv4_address must be an IPv4 address expressed in dotted-decimal notation.
ipv6_address must be an IPv6 address expressed in colon (or double-colon) notation.
- **weight** *weight*
Configures the weight for the IPv4 or IPv6 address.
weight is an integer from 1 to 100.
- **primary** | **secondary**
primary: Configures the primary P-GW for S2b interface.
secondary: Configures the primary P-GW for S2b interface.
- A maximum of 16 P-GW IPv4 and/or IPv6 addresses can be configured for an APN profile.
- When multiple P-GW addresses are configured, only the first P-GW will be selected based on the weight. The rest of the P-GW addresses are selected using the round-robin mechanism

Configuring Preferred Selection as Local P-GW

Use the **pgw-selection** command under the MRME Service Configuration Mode to set the P-GW address selection from a local configuration as the preferred selection mechanism.

```

configure
  context context_name
    mrme-service service_name
      pgw-selection local-configuration-preferred
    end
end

```

Notes:

- Use the **no pgw-selection local-configuration-preferred** command to disable this command.
- By default, this command is disabled. The SaMOG Gateway uses DNS-based P-GW selection (dynamic selection) as the preferred selection method.

Configuring Local P-GW Fallback for Static Selection Method

Use the **pgw-selection** command under the MRME Service Configuration Mode to set the P-GW address selection from a local configuration as static selection method.

```

configure
  context context_name
    mrme-service service_name
      pgw-selection fallback pgw-id
    end

```

Notes:

- Use the **no pgw-selection fallback pgw-id** command to disable this command.
- By default, this command is disabled.

Verifying Configuration for Local P-GW Support

show apn-profile full all

Use the **show apn-profile** command to verify the configured P-GW IP address(es).

```

P-GW:
  IP-Address           : 6666::200:1
  S5-S8-Protocol       : N/A
  Weight               : 1
IP-Address            : 6666::a00:1
  S5-S8-Protocol       : N/A
  Weight               : 17

```

show mrme-service name mrme_service_name

Use the **show mrme-service name** command to verify the status of the local P-GW selection configuration.

```

Preferred PGW selection mechanism : Local
PGW-ID selection fallback : Enabled

```

Monitoring Local P-GW Selection

This section provides information on the show commands available to monitor the local P-GW selection.

Local P-GW Selection Show Command(s) and/or Outputs

show samog-service statistics

The following fields are available to the output of the **show samog-service statistics** command in support of this feature.

```

Local PGW Fallback Stats:
  Attempted:           0
  Success:             0          No Alternate GW:           0

```

Table 2: show samog-service statistics Command Output Descriptions

| Field | Description |
|--------------------------|-------------|
| Local PGW Fallback Stats | |

| | |
|-----------------|---|
| Attempted | Total number of local P-GW fall-back attempted. |
| Success | Total number of successful local P-GW fall-back achieved. |
| No Alternate GW | Total number of alternative Gateways available for fall-back. |

