

APN Data Tunnel MTU Size Configuration

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Revision History

Note Revision history details are not provided for features introduced before release 21.24.

Revision Details	Release
First introduced	Pre 21.24

Feature Description

The enhanced packet core (EPC) defines many different interfaces that require encapsulation of IPv4 and IPv6 data packets. Because the EPC adds encapsulating headers, additional care must be taken when fragmenting IPv4 and IPv6 packets.

Appropriate configuration should not result in fragmentation at any node in EPC. This feature fragments the IPv6 and IPv4 packets based on their MTU.

In RFC-4861 there is a provision to send the Maximum Transmission Unit (MTU) in Router Advertisement (RA) messages. P-GW supports the sending of the IPv6 MTU option in RAs for IPv6 and IPv4v6 PDN types towards the UE. The (Internet) can now send downlink data packet and based on the configured MTU, data fragmentation is performed at the source, if required. This feature also reduces the number of ICMPv6 Packet Too Big Error messages in the customer's network.

The MTU size is configurable through the Command Line Interface (CLI) on P-GW.

Limitation

- For P-GW/SAEGW IPv6 session, when packet exceeds the APN MTU value the CLI **policy ipv6 tunnel mtu exceed notify-sender** is not supported as ICMP is not available in VPP.
- For GGSN/P-GW/SAEGW IPv4 session, when packet (with df bit) exceeds the APN MTU value the CLI **access-link ip-fragmentation df-fragment-and-icmp-notify** is not supported as ICMP is not available in VPP.
- For GGSN/P-GW/SAEGW IPv4 session, when packet (with df bit) exceeds the APN MTU value the CLI **access-link ip-fragmentation normal** is not supported as ICMP is not available in VPP.

Configuring MTU

The following CLI commands configures the Maximum Transmission Unit (MTU) for data sent on the IPv4 and IPv6 tunnel between the P-GW and the mobile node:

```
configure
   context context_name
      apn apn_name
         ppp mtu bytes
         data-tunnel mtu bytes
         policy ipv6 tunnel mtu exceed { fragment inner | notify-sender |
fragment }
         access-link ip-fragmentation { df-ignore  | normal |
df-fragment-and-icmp-notify }
         end
```

NOTES:

- *bytes*: Specifies the MTU for the IPv6 tunnel between the P-GW and the mobile node. bytes must be an integer between 1280 and 2000. Default: 1500.
- **ppp**: Specifies data sent on the IPv4 tunnel between P-GW and mobile node.
- **data-tunel mtu**: Specifies data sent on the IPv6 tunnel between P-GW and mobile node.
- **fragment inner**: Performs one time fragment at GTP tunnel initiator.
- **notify-sender**: System will drop the incoming packet and send "ICMPv6 Packet Too Big" to the original sender.

Note This is also the default CLI configuration, hence this should be the default behavior when nothing is explicitly configured.

- **fragment**: Performs fragmentation or reassembly at intermediate GTP hops.
- **df-ignore**: Ignores the DF (Don't Fragment) bit setting; fragments and forwards the packet over the access link.

Note This is also the default CLI configuration, hence this should be the default behavior when nothing is explicitly configured.

- **df-fragment-and-icmp-notify**: Partially ignores the DF bit; fragments and forwards the packet, but also returns an ICMP error message to the source of the packet. The number of ICMP errors sent like this is rate-limited to one ICMP error packet per second per session.
- **normal**: Drops the packet and sends an ICMP unreachable message to the source of packet.