



# APN AMBR Traffic Policing

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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 APN-AMBR is a subscription parameter stored per APN in the HSS. S-GW provides APN-AMBR during default bearer establishment procedure. APN-AMBR limits the aggregate bit rate that can be expected to be provided across all non-GBR bearers and across all PDN connections of the same APN. Each of those non-GBR bearers could potentially utilize the entire APN-AMBR, for example, when the other non-GBR bearers don't carry any traffic. The P-GW enforces the APN-AMBR in downlink and uplink direction.

As part of this CLI-controlled feature, the CLI parameters must be configured on Control Plane and propagated to User Plane through Sx interface.

## Limitations

The following is the known limitation of APN-AMBR Traffic Policing feature:

- Configuring **token-replenishment-interval** and **violate-action shape** CLIs aren't supported.

# Configuring the APN AMBR Traffic Policing Feature

This section describes how to configure the APN-AMBR Traffic Policing feature.

```
configure
  context context_name
  apn apn_name
  apn-ambr rate-limit direction { downlink | uplink } [ burst-size
{ auto-readjust duration { milliseconds msec | seconds } | violate-action
{ drop | lower-ip-precedence | transmit }
  end
```

## NOTES:

- **rate-limit direction { downlink | uplink }**: Specifies that the rate limit is to be applied to either the downlink (network to subscriber) traffic or the uplink (subscriber to network) traffic.
- **burst-size { auto-readjust duration milliseconds msec | seconds }**: This parameter is used by policing algorithms to permit short bursts of traffic not to exceed the allowed data rates. It's the maximum size of the token bucket.
  - **auto-readjust duration seconds**: The duration (in seconds) used in this burst size calculation: burst size = peak data rate/8 \* auto-readjust duration.
    - Seconds must be an integer value from 1-30. Default is 1 second.
  - **milliseconds**: msec must be an integer value from 100-900, in increments of 100 milliseconds. For example, 100, 200, or 300, and so on.
- **violate-action { drop | lower-ip-precedence | transmit }**: The action that the P-GW takes when the data rate of the bearer context exceeds the AMBR.
  - **drop**: Drops violating packets.
  - **lower-ip-precedence**: Sets the DSCP value to zero ("best effort") for violating packets.
  - **transmit**: Transmits violating packets. This is the default behavior of the feature.
- Prior to this feature, the default behavior was to drop the violating packets.

## Monitoring and Troubleshooting

This section provides information about the commands available to monitor and/or troubleshoot the APN-AMBR Traffic Policing feature.

### Show Commands and or Outputs

This section provides information about the show commands available for monitoring and/or troubleshooting the APN-AMBR Traffic Policing feature.

- **show user-plane-service pdn-instance name <apn\_name>**: The following APN-AMBR information is available on User Plane after APN-AMBR CLI is configured on Control Plane and PFD Push to User Plane is completed:

- APN-AMBR
  - Downlink Apn Ambr: Indicates if the rate limit is enabled or disabled for downlink traffic.
    - Burst Size: Indicates the burst size of the downlink traffic.
    - Auto Readjust: Indicates if the auto-readjust is enabled or disabled for downlink burst size.
    - Auto Readjust Duration: Indicates the duration used in downlink burst size calculation.
    - Burst Size(bytes): Indicates the burst size in bytes.
    - Violate Action: Indicates the action that the P-GW takes when the data rate of the bearer context exceeds the AMBR for downlink traffic.
  - Uplink Apn Ambr: Indicates if the rate limit is enabled or disabled for uplink traffic.
    - Burst Size: Indicates the burst size of the uplink traffic.
    - Auto Readjust: Indicates if the auto-readjust is enabled or disabled for uplink burst size.
    - Auto Readjust Duration: Indicates the duration used in uplink burst size calculation.
    - Burst Size(bytes): Indicates the burst size in bytes.
    - Violate Action: Indicates the action that the P-GW takes when the data rate of the bearer context exceeds the AMBR for uplink traffic.
  - Token Replenishment Interval: Indicates the token replenishment interval duration.

- **show sub user-plane-only full all**:

Use this show command in User Plane to see the count of packets that are dropped, and IP precedence lowered due to APN-AMBR policer. The following fields are introduced in support of this feature:

- APN AMBR Uplink Pkts Drop: Indicates the number of APN-AMBR packets that are dropped for uplink traffic.
- APN AMBR Uplink Bytes Drop: Indicates the number of APN-AMBR bytes that are dropped for uplink traffic.
- APN AMBR Uplink Pkts IP pref lowered: Indicates the number of APN-AMBR uplink packets for which IP precedence is lowered.
- APN AMBR Uplink Bytes IP pref lowered: Indicates the number of APN-AMBR uplink bytes for which IP precedence is lowered.
- APN AMBR Downlink Pkts Drop: Indicates the number of APN-AMBR packets that are dropped for downlink traffic.
- APN AMBR Downlink Bytes Drop: Indicates the number of APN-AMBR bytes that are dropped for downlink traffic.

- APN AMBR Downlink Pkts IP pref lowered: Indicates the number of APN-AMBR downlink packets for which IP precedence is lowered.
- APN AMBR Downlink Bytes IP pref lowered: Indicates the number of APN-AMBR downlink bytes for which IP precedence is lowered.