Tethering Block for Downlink Packets

Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	P-GW
Applicable Platform(s)	• ASR 5500 • VPC-DI • VPC-SI
Feature Default	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	• *Command Line Interface Reference* • *ECS Administration Guide*

Revision History

Revision Details	Release
First introduced.	21.13.2

Feature Description

Tethered devices can connect, browse, and download from the internet although the devices are not charged for it. This feature allows rewriting of TTL/Hop-limit as "1" on all downlink packets for the particular subscriber. By doing this, all the downlink packets are consumed at the UE-level. The downlink packets are not forwarded to the next-hop/Tethered devices since the TTL/Hop-limit is "1", and the UE decrements it by "1", resulting in TTL as "0". As a result, tethered devices will not be able to download and/or browse unless they are subscribed for this.

How It Works

This feature is CLI-controlled wherein TTL/Hop-limit value can be configured under ACS Rulebase configuration mode, and the feature is enabled for all the subscribers under this rule base. As per the configured CLI value, the TTL is rewritten in all the downlink packets under that rule-base, irrespective of service and access technology.

The feature supports Flow Aware Packet Acceleration (FAPA), fragmentation, and buffering.

Call Flows

The following call flow provides the details for setting TTL as "1" in the IP header.
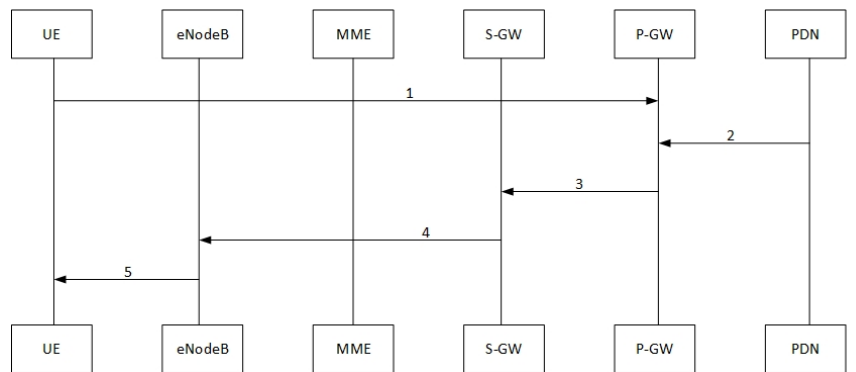
Step	Description
1	UE Attach Procedure and Session establishment on all the EPC Nodes (UE, eNodeB, MME, S-GW, and P-GW).
2	Downlink traffic is sent for the UE from the PDN.
3	On receiving the data from the PDN, the P-GW rewrites the TTL/Hop-limit of the IP header with the configured "TTL value" of the "rulebase" profile present in the "active-charging".
4	S-GW forwards data toward the UE through eNodeB.
5	The UE receives the data (downlink packets with TTL=1) from the eNodeB.

Configuring the Tethering Block for Downlink Packets Feature

This section describes how to configure the Tethering Block for Downlink Packets feature.

Enabling Tethering Block for Downlink Packets

Use the following CLI commands to rewrite the TTL/Hop-limit value in the IP header downlink packets.

```
configure
   active-charging service service_name
      rulebase rulebase_name
         ip ttl ttl_value downlink
         end
```

NOTES:

- **ip**: Specifies the IP related to a user session.

- **ttl** *ttl_value*: Rewrites the TTL value for an IP packet. The *ttl_value* specifies the value to be configured.

- **downlink**: Modifies the IP header TTL on downlink packets.

- If previously configured, use the **no ip ttl** CLI command to disable the feature.

- By default, the CLI is disabled.

Monitoring and Troubleshooting the Tethering Block for Downlink Packet Feature

This section provides the CLI commands available to monitor and troubleshoot the feature.

Show Commands

show active-charging rulebase name <rulebase_name>

The output of this show CLI command has been modified to display whether the feature is enabled or disabled along with the configured TTL value.

- Tethering Block Feature

  - TTL Value

show active-charging rulebase statistics name <rulebase_name>

The output of this show CLI command has been modified to display the number of downlink packets which are modified by rewriting TTL/Hop-limit as per the CLI-configured value.

- Tethering Blocking Statistics

show active-charging rulebase statistics name <rulebase_name>

- TTL Modified downlink packets