Rewrite TTL on 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.	21.19.1

Feature Description

To avoid receiving downlink packets on tethered devices of a subscriber, the tethering blocking feature allows to selectively rewrite TTL on the inner ip-header of all downlink packets for specific flows. Use the configurable option on P-GW to mark the inner IP header TTL with the configured value in the downlink direction between P-GW and S-GW. This allows all the downlink packets related to that specific flow to be consumed at the UE level and downlink packets are not forwarded to the next hop.

How it Works

This section describes a call flow and a procedure for ip-ttl marking on the inner IP header in downlink direction. The following call flow provides the details for setting TTL as "1" in the inner IP header.

Call Flows

Figure 1: Ip-ttl marking on the inner IP header

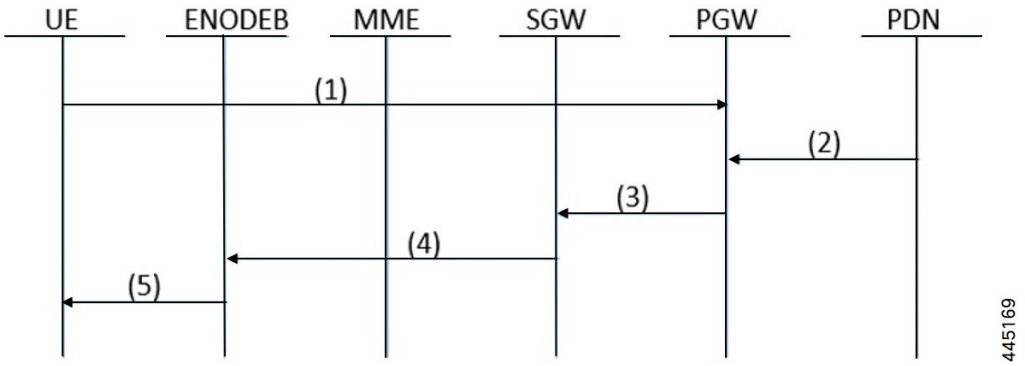

Table 1:

Step	Description
1	UE Attach Procedure and Session is established on all the EPC Nodes such as UE, eNodeB, MME, S-GW and P-GW
2	Downlink traffic is sent for the UE from the PDN. PGW receives the data for a specific flow. The charging-action is selected only for a specific flow. Hence, this feature is applicable only for that specific flows matched by the ruledef and the charging-action combination.
3	PGW encodes the ip-ttl of the inner-IP header with the configured *ttl-value* of the *charging-action* present in *active-charging*. This *ip-ttl* will be forwarded to SGW through S5 interface.

Step	Description
4	Based on the SGW policies, the data are processed further and forwarded towards the UE through eNodeB.
5	UE receives the data from the eNodeB.

Sample Configuration

The following sample configuration describes the configuration of P-GW to mark selectively the inner packet IP of ttl header with specified or configured value:

ip-ttl configuration in charging-action: 4

- If the ip-ttl of the downlink data packet is 8, then the ip-ttl value of the inner packet in the S5 interface is modified or updated to 4.
- If the ip-ttl of the downlink data packet is 2, then the ip-ttl value of the inner packet in the S5 interface remains 2 as the actual value(2) is less than the configured value(4).

Note The inner packet ip-ttl is modified only if the configured ip-ttl value is lower than the value received in the actual downlink packet of that particular flow.

The same rule applies for conflict with other cli for ip-ttl. For example, ip-ttl configuration under the rulebase profile.

Monitoring and Troubleshooting

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

Show Commands

Show active-charging statistics

The output of this show CLI command has been modified to displays count of all the packets that are marked with the configured ttl value to the inner-ip. This is to block the tethering functionality of the UE.

- **Inner IP Tethering Blocked Pkts**