

# **Rewrite TTL on Downlink Packets**

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## **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

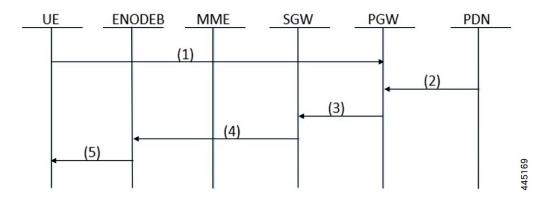


Table 1:

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 <i>ttl-value</i> of the <i>charging-action</i> present in <i>active-charging</i> . This <i>ip-ttl</i> 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).



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