

Examine PGW Reporting Higher Quota than Assigned by OCS

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Introduction

This document describes the configuration to be examined when the Packet Data Network Gateway (PGW) reports a higher quota than the assigned one.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Long-Term Evolution (LTE)
- Online Charging
- Diameter Credit-Control Application

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Problem

When the quota is exhausted, PGW reports under the Used-Service-Unit (USU) Attribute-Value Pair (AVP), more than the quota assigned by the Online Charging System (OCS) in the earlier Credit-Control-Answer Update under the Granted-Service-Unit (GSU).

Analysis Performed

Once the quota provisioned by OCS in the previous Credit-Control-Answer_UPDATE (frame 3130) is exhausted, PGW reports under the USU (frame 3142) a higher used quota. A small difference is observed

between the GSU (CC-Total-Octets=11375) and USU (CC-Total-Octets=11756) octets reported.

No.	Source	Destination	Protocol	CC-Request-Type	CC-Total-Octets	3GPP-Rep
3130	10.30.50.36	10.125.230.100	DIAMETER	UPDATE_REQUEST	11375	
3142	10.125.230.100	10.30.50.36	DIAMETER	UPDATE_REQUEST	11756	QUOTA

RFC 4006 contains the behavior and interactions for this scenario. The standard states:

8.17. Granted-Service-Unit AVP

Granted-Service-Unit AVP (AVP Code 431) is of type Grouped and contains the amount of units that the Diameter credit-control client can provide to the end user until the service must be released or the new Credit-Control-Request must be sent.

8.19. Used-Service-Unit AVP

The Used-Service-Unit AVP is of type Grouped (AVP Code 446) and contains the amount of used units measured from the point when the service became active or, if interim interrogations are used during the session, from the point when the previous measurement ended.

Solution

When this behavior is observed, review the `show configuration verbose` output from PGW and verify if `quota request-trigger include-packet-causing-trigger` command is enabled under the `credit-control group` configuration. Cisco StarOS® [Configuration Guide](#) states concerning this configuration line:

```
quota request-trigger
```

This command configures the action on the packet that triggers the credit control application to request

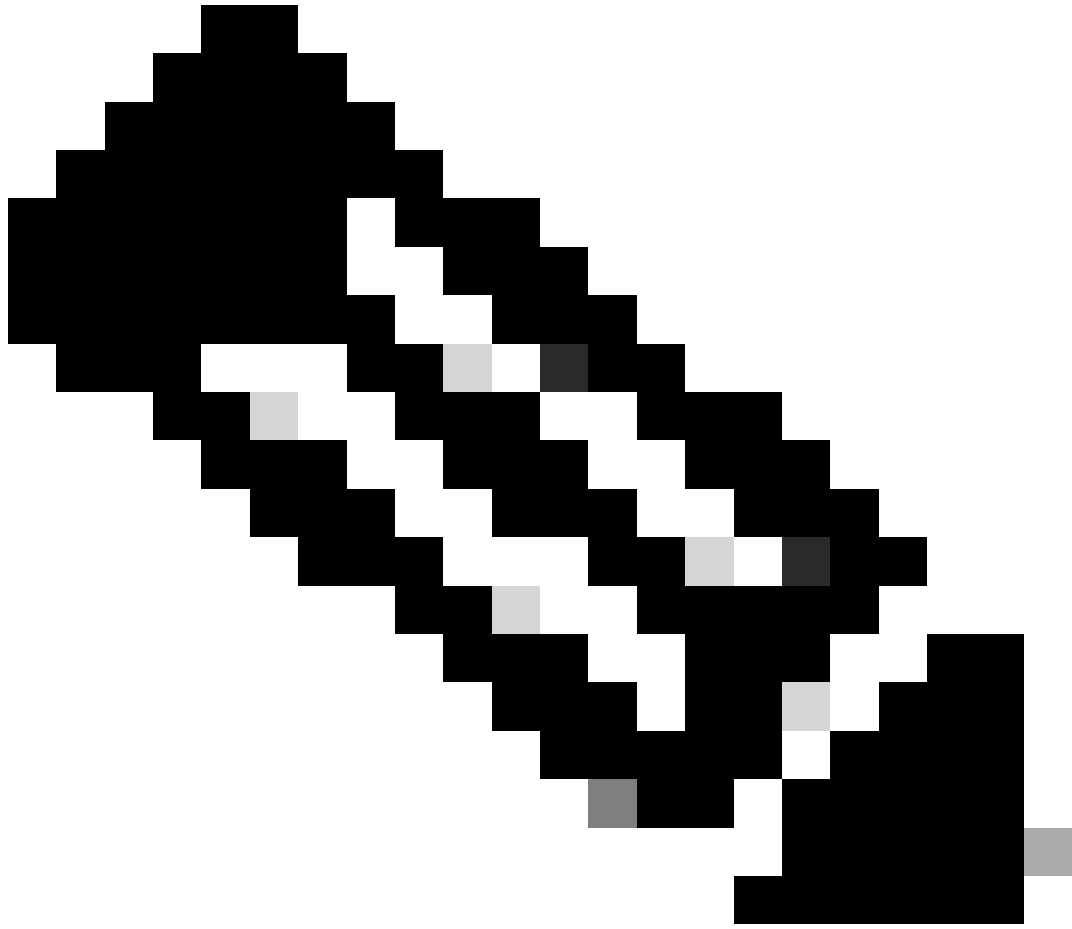
```
include-packet-causing-trigger
```

Includes the packet causing the threshold limit violation trigger.

If this command is enabled, the packet that triggers the QUOTA_EXHAUSTED report must be included in this report and its payload causes the USU reported value to be higher than the GSU by OCS.

Depending on your requirements, this behavior can be controlled with the `quota request-trigger` by including or excluding the packet causing the threshold limit violation trigger:

```
quota request-trigger { exclude-packet-causing-trigger | include-packet-causing-trigger }
```



Note: By default, it is set to include-packet-causing-trigger.
