



# 4G Network Upgrade on Gx Interface

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## Feature Summary and Revision History

### Summary Data

Applicable Product(s) or Functional Area	<ul style="list-style-type: none"> <li>• GGSN</li> <li>• P-GW</li> <li>• SAEGW</li> </ul>
Applicable Platform(s)	All
Feature Default	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	<ul style="list-style-type: none"> <li>• <i>Command Line Interface Reference</i></li> <li>• <i>GGSN Administration Guide</i></li> <li>• <i>P-GW Administration Guide</i></li> <li>• <i>SAEGW Administration Guide</i></li> </ul>

### Revision History

Revision Details	Release
First introduced.	21.23

## Feature Description

Diameter Overload Indication Conveyance (DOIC) specification passes overload information during transfer of messages to P-GW server. When there is an overload, there is no specific way to choose the messages that needs to be throttled or discarded which could result in excess traffic in the network. To reduce traffic in the network, Diameter Routing Message Priority (DRMP) is newly introduced. Using DRMP, you can set the priority for messages, based on which messages are throttled or discarded.

DRMP messages can be sent in CCR message and RAA in Gx interface only. The value to be sent in AVP can be configured using the configuration commands for below messages:

Message	Description
CCR -Initial	The CCR message is sent during connection creation.
CCR- Update	The CCR message that is sent during CCR update.
CCR-Termination	The CCR message that is sent during connection deletion.
RAA	ReAuth Answer message that is sent in response to the ReAuth Request from the PCRF.



**Note** If the DRMP feature is not configured, then no priority is set in the CCR/RAA messages. If DRMP is set without any priority (0 to 15), then the default priority of 10 will be set.

## Configuring DRMP Priority Values

Use the following configuration commands to set the priority DRMP value:

```
configure
  context context_name
    ims-auth-service ims_auth_service_name
      policy-control
        [ no ]diameter{ drmp [ ccr-i drmp_value | ccr-t drmp_value | ccr-u
drmp_value | rra drmp_value] }
      end
```



**Note** If the DRMP feature is not configured, then no priority is set in the CCR/RAA messages. If DRMP is set without any priority (0 to 15), then the default priority of 10 will be set.

# Origination Time Stamp and Maximum Wait Time

## Origination-Time-Stamp

Origination-Time-Stamp(1536) is a standard AVP that is added in the CCR-I messages originating from P-GW. This AVP indicates the time (NTP synced) when the request message is sent to PCRF Server from P-GW. The Origination-Time-Stamp(1536) indicates the UTC time at which the originating entity initiated the request and is encoded in the 64-bit NTP timestamp format and here, the binary encoding of the integer part is in the first 32 bits and binary encoding of the fraction part is in the last 32 bits.

## Maximum-Wait-time

Maximum-Wait-time is a standard AVP (code 1537) of type of Unsigned 32. If message is received and takes a long time to process then the message is dropped by the PCRF and the CCA-I will not be sent by the PCRF. This AVP is used along with origination-timestamp AVP. Max-Wait-time (7103) is the non-standard AVP used in CCR-I messages towards Diameter Gx and it is used along with the Maximum-Wait-Time (1537) standard AVP.

*Table 1: Existing AVP's*

AVP Name	AVP ID
Origination-Timestamp	7102
Max-Wait-Time	7103

*Table 2: New AVP's*

AVP Name	AVP ID
Origination-Time-Stamp	1536
Maximum-Wait-Time	1537



**Note** Both new and existing AVPs are supported in this release.

## Monitoring and Trouble Shooting

This section provides information on the show commands and bulk statistics.

### Show Command and Output

```
show ims-authorization service name <service_name>
```

The following new fields are added to the output of this command:

- Diameter Policy Control
  - DRMP: CCR-I CCR-U CCR-T RAA

**show ims-authorization policy-control statistics**

The following new fields are added to the output of this command:

- DPCA Experimental Result Code Stats
  - Late Overlapping Request
  - Time Out Request

**show session disconnect-reasons**

The following new fields are added to the output of this command:

- Disconnect Reason
  - newer-session-detected
  - late-overlapping-request

# Bulk Statistics

The following bulk statistics are newly added:

Bulk Statistics	Description
dpca-imsa-exp-late-overlapping-request	Displays the total number of times the diameter experimental result code <code>DIAMETER_ERROR_LATE_OVERLAPPING_REQUEST(5453)</code> is received in CCA message.
dpca-imsa-exp-timed-out-request	Displays the total number of times the diameter experimental result code <code>DIAMETER_ERROR_TIME_OUT_REQUEST(5454)</code> is received in CCA message.