



# 7750 Service Router

## Virtualized Service Router

Release 25.7.R1

## Gy AVPs Reference Guide

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3HE 21204 AAAB TQZZA 01  
Edition: 01  
July 2025

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# 1 Getting started

## 1.1 About this guide

This document details the Diameter Gy interface specification. The Diameter Gy application is also referred to as Diameter Credit Control Application (DCCA).

The tables in this document provide Attribute Value Pair (AVP) details organized per message type.

The SR OS also provides a Diameter Python interface that enables flexible insertion, deletion, and formatting of AVPs received from and sent to a Diameter application server. For more information about the Diameter Python API, see the *7450 ESS, 7750 SR, and VSR Triple Play Service Delivery Architecture Guide*.



**Note:** Unless otherwise indicated, CLI commands, contexts, and configuration examples in this guide apply for both the MD-CLI and the classic CLI.

### 1.1.1 Audience

This document is intended for network administrators who are responsible for configuring and operating 7750 SR and VSR service routers and using Diameter applications. It is assumed that the network administrators have an understanding of networking principles and configurations, routing processes, protocols, and standards.

### 1.1.2 References

RFC 2865, "Remote Authentication Dial In User Service (RADIUS)", June 2000

RFC 4006, "Diameter Credit-Control Application", August 2005

RFC 6733, "Diameter Base Protocol", October 2012

3GPP TS 32.299 v9.4.0, "Diameter charging applications", June 2010

*7450 ESS, 7750 SR, and VSR RADIUS Attributes Reference Guide*

## 2 Diameter Gy interface specification

Table 1: Diameter Gy application messages provides a summary of the Diameter Gy application messages.

Table 1: Diameter Gy application messages

| Diameter message |                        | Code | RFC      |
|------------------|------------------------|------|----------|
| CCR              | Credit-Control-Request | 272  | RFC 4006 |
| CCA              | Credit-Control-Answer  | 272  | RFC 4006 |
| RAR              | Re-Auth-Request        | 258  | RFC 6733 |
| RAA              | Re-Auth-Answer         | 258  | RFC 6733 |
| ASR              | Abort-Session-Request  | 274  | RFC 6733 |
| ASA              | Abort-Session-Answer   | 274  | RFC 6733 |

### 3 Diameter Gy - Credit-Control-Request (CCR) command

This section describes the Diameter Gy CCR message format as defined in RFC 4006, *Diameter Credit-Control Application*. Strikethrough formatted AVPs are not included in CCR. AVPs listed in *italics* appearing after [AVP] and are not defined in RFC 4006.

```

<Credit-Control-Request> ::= < Diameter Header: 272, REQ, PXY >
    < Session-Id >
    { Origin-Host }
    { Origin-Realm }
    { Destination-Realm }
    { Auth-Application-Id }
    { Service-Context-Id }
    { CC-Request-Type }
    { CC-Request-Number }
    [ Destination-Host ]
    [ User-Name ]
    { CC-Sub-Session-Id }
    { Acct-Multi-Session-Id }
    [ Origin-State-Id ]
    [ Event-Timestamp ]
    *[ Subscription-Id ]
    { Service-Identifier }
    [ Termination-Cause ]
    { Requested-Service-Unit }
    { Requested-Action }
    *[ Used-Service-Unit ]
    [ Multiple-Services-Indicator ]
    *[ Multiple-Services-Credit-Control ]
    *[ Service-Parameter-Info ]
    { CC-Correlation-Id }
    [ User-Equipment-Info ]
    *[ Proxy-Info ]
    *[ Route-Record ]
    *[ AVP ]
    [ Framed-IP-Address ]
    [ Called-Station-Id ]
    [ Framed-IPv6-Prefix ]
    [ Delegated-IPv6-Prefix ]
    [ Alc-IPv6-Address ]
    [ 3GPP-IMSI ]
    [ 3GPP-Charging-Id ]
    [ 3GPP-GPRS-QoS-Negotiated-Profile ]
    [ 3GPP-GGSN-Address ]
    [ 3GPP-NSAPI ]
    [ 3GPP-Session-Stop-Indicator ]
    [ 3GPP-Selection-Mode ]
    [ 3GPP-Charging-Characteristics ]
    [ 3GPP-GGSN-v6-Address ]
    [ 3GPP-RAT-Type ]
    [ 3GPP-User-Location-Info ]
    [ GGSN-Address ]
    [ Service-Information ]
    [ Charging-Rule-Base-Name ]
    [ PDP-Context-Type ]

```



### 3.1 Diameter Gy – CCR message top level AVPs

[Table 2: Diameter Gy CCR: top level AVP description](#) provides a detailed description of each top-level AVP present in a Diameter Gy CCR message. Unless mentioned in the description, the AVP is present in Initial, Update, and Terminate messages. Grouped AVPs are marked with "↳ (grouped AVP)". The grouped AVP format and embedded AVP description and format are described in [Diameter Gy – CCR message grouped AVPs](#).

Table 2: Diameter Gy CCR: top level AVP description

| AVP code | AVP name          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | User-Name         | <p>RADIUS username</p> <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy aaa-user-name</pre> <ul style="list-style-type: none"> <li>• <b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp radius-user-name</pre> <p>default: not included</p>                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8        | Framed-IP-Address | <p>The IP address of the IPv4 subscriber host that triggered the creation of the Diameter Gy session.</p> <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp address-avp</pre> <ul style="list-style-type: none"> <li>• <b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp address-avp</pre> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured with the following commands:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> |

| AVP code | AVP name           | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                    | <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> <p>default: included</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 30       | Called-Station-Id  | <p>The AVP is included if configured in the diameter application policy command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp called-station-id</pre> <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp called-station-id</pre> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs using the following commands:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> <p>value: string up to 64 characters</p> <p>default: no called-station-id</p> |
| 55       | Event-Timestamp    | Timestamp when the request was generated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 97       | Framed-IPv6-Prefix | <p>The IPv6 prefix of the SLAAC subscriber host that triggered the creation of the Diameter Gy session.</p> <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp address-avp</pre> <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp address-avp</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| AVP code | AVP name              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                       | <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>default: included</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 123      | Delegated-IPv6-Prefix | <p>The IPv6 prefix of the DHCPv6 IA-PD subscriber host that triggered the creation of the Diameter Gy session.</p> <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp address-avp</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp address-avp</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>default: included</p> |
| 258      | Auth-Application-Id   | Fixed value: 4 = Diameter Credit Control Application                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 263      | Session-Id            | <p>A session is a logical concept at the application layer that exists between the Diameter client and the Diameter server; it is identified via the Session-Id AVP.</p> <p>Format:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| AVP code | AVP name          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                   | <p>&lt;DiameterIdentity&gt;; &lt;high 32 bits&gt;; &lt;low 32 bits&gt;</p> <ul style="list-style-type: none"> <li>&lt;DiameterIdentity&gt; is the configured origin host</li> <li>&lt;high 32 bits&gt; are encoded as the Diameter initialization time (number of seconds because 1 January, 1970)</li> <li>&lt;low 32 bits&gt; are encoded as a sequentially increasing number starting at 1</li> </ul> <p>Example: bng.nokia.com;1326398325;1</p> |
| 264      | Origin-Host       | <p>Diameter Identity. As configured in the corresponding diameter-peer-policy.</p> <p>Example: bng.nokia.com</p>                                                                                                                                                                                                                                                                                                                                    |
| 278      | Origin-State-Id   | <p>Initialized to the Diameter process startup time. Encoded as number of seconds since 1 January, 1970.</p>                                                                                                                                                                                                                                                                                                                                        |
| 283      | Destination-Realm | <p>Diameter Identity. As configured in the corresponding diameter-peer-policy or learned from CCA/RAR.</p> <p>Example: nokia.com</p>                                                                                                                                                                                                                                                                                                                |
| 293      | Destination-Host  | <p>Diameter Identity. As configured in the corresponding diameter-peer-policy or learned from CCA/RAR. Omitted in CCR-I if not configured.</p> <p>Example: server.nokia.com</p>                                                                                                                                                                                                                                                                     |
| 295      | Termination-Cause | <p>(CCR-T only)</p> <p>Indicates the reason that the credit control session was terminated.</p> <p>Values:</p> <p>1 = Diameter Logout</p> <p>4 = Diameter Administrative - a diameter session could not be created because of category mismatch or system resources</p>                                                                                                                                                                             |
| 296      | Origin-Realm      | <p>Diameter Identity. As configured in the corresponding diameter-peer-policy.</p> <p>Example: nokia.com</p>                                                                                                                                                                                                                                                                                                                                        |
| 415      | CC-Request-Number | <p>Initial Request: 0</p> <p>Update and Termination Request: sequence number</p>                                                                                                                                                                                                                                                                                                                                                                    |
| 416      | CC-Request-Type   | <p>1 = Initial Request</p> <p>2 = Update Request</p> <p>3 = Termination Request</p>                                                                                                                                                                                                                                                                                                                                                                 |
| 443      | Subscription-Id   | <p>Identifies the subscriber host or session.</p> <p>The value is as configured in the diameter application policy:</p>                                                                                                                                                                                                                                                                                                                             |

| AVP code | AVP name                                            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | ↳ (grouped AVP)                                     | <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy avp-subscription-id origin</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy avp-subscription-id origin</pre> </li> </ul> <p>If no data is available for the specified origin, then the subscriber-id is used instead.</p> <p>default: avp-subscription-id subscriber-id type private</p> <p>For GTP access, the configured value is ignored and two Subscription-Id AVPs are included: IMSI (type imsi) and MSISDN (type e164) with the corresponding values learned from the GTP Create Session Request message.</p> |
| 455      | Multiple-Services-Indicator                         | (CCR-I only)<br>Fixed value: 1 = MULTIPLE_SERVICES_SUPPORTED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 456      | Multiple-Services-Credit-Control<br>↳ (grouped AVP) | Up to 16 Multiple-Services-Credit-Control AVPs, each corresponding with a single rating group. A rating group maps to a category configured in a category-map using the following commands. <pre>configure subscriber-mgmt category-map category rating-group</pre>                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 458      | User-Equipment-Info<br>↳ (grouped AVP)              | (GTP access only)<br>The AVP is included if configured in the diameter application policy: <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp user-equipment-info-type type imeisv</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp user-equipment-info type imeisv</pre> </li> </ul> <p>value: IMEI as signaled in the GTP Create Session Request message.</p> <p>default: not included</p>                                                                                                                                                     |
| 461      | Service-Context-Id                                  | The AVP is included if configured in the diameter application policy using the following command:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| AVP code   | AVP name         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                  | <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp service-context-id</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp service-context-id</pre> </li> </ul> <p>value: string of up to 32 characters<br/>default: no service-context-id</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| NOKIA – 99 | Alc-IPv6-Address | <p>The IPv6 address of the DHCPv6 IA-NA subscriber host that triggered the creation of the Diameter Gy session.</p> <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp address-avp</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp address-avp</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>default: included</p> |
| 3GPP – 1   | 3GPP-IMSI        | <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-imsi</pre> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| AVP code | AVP name         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                  | <ul style="list-style-type: none"> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-imsi</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>values:</p> <ul style="list-style-type: none"> <li>• circuit-id</li> <li>• imsi</li> <li>• subscriber-id</li> </ul> <p>default: included with value subscriber-id</p>                                                               |
| 3GPP – 2 | 3GPP-Charging-Id | <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-charging-id</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-charging-id</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> |

| AVP code | AVP name                         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                  | <p>values:</p> <ul style="list-style-type: none"> <li>auto: defaults to esm-info for <b>vendor-support three-gpp</b></li> <li>esm-info: &lt;subscriber-id&gt;;&lt;sap-id&gt;;&lt;sla-profile&gt;[ &lt;SPI sharing id&gt;]</li> <li>id: a unique 32 bit integer value per session</li> </ul> <p>default: included with esm-info value (auto)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 3GPP – 5 | 3GPP-GPRS-QoS-Negotiated-Profile | <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-gprs-negotiated-qos-profile</pre> </li> <li><b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-gprs-negotiated-qos-profile</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li><b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>value: the active SLA profile name</p> <p>default: included</p> |
| 3GPP – 7 | 3GPP-GGSN-Address                | <p>The local IPv4 address used to setup the diameter peer. The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-ggsn-ipv4-address</pre> </li> <li><b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-ggsn-address</pre> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



| AVP code  | AVP name   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |            | <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>Value:</p> <ol style="list-style-type: none"> <li>Use the configured IPv4 source address: <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure aaa diameter-peer-policy ipv4-source-address</pre> </li> <li> <b>classic CLI</b> <pre>configure aaa diameter-peer-policy source-address</pre> </li> </ul> </li> <li>If the router equals base or vprn service id, use the system interface IPv4 address<br/> else if the router equals management, use the active management port IP address configured in the BOF</li> </ol> <p>default: included</p> |
| 3GPP – 10 | 3GPP-NSAPI | <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-nsapi</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-nsapi</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> </ul>                                                                                                                                                                                                                                                                                                            |

| AVP code  | AVP name                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |                             | <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> <p>value: &lt;system name&gt;;&lt;service-id&gt;;&lt;sap-id&gt;</p> <p>default: included</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 3GPP – 11 | 3GPP-Session-Stop-Indicator | <p>(CCR-T only)</p> <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-session-stop-indicator</pre> <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-session-stop-indicator</pre> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> <p>Fixed value: 0x FF</p> <p>default: included</p> |
| 3GPP – 12 | 3GPP-Selection-Mode         | <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-selection-mode</pre> <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-selection-mode</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| AVP code  | AVP name                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |                               | <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>Fixed value: 0x 00 00 00 00 (MS or network provided APN, subscribed verified)<br/>default: included</p>                                                                                                                                                                                                                                                                                                                                                                        |
| 3GPP – 13 | 3GPP-Charging-Characteristics | <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-charging-characteristics</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-charging-characteristics</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>Fixed value: "0000"<br/>default: included</p> |
| 3GPP – 16 | 3GPP-GGSN-v6-Address          | <p>The local IPv6 address used to setup the diameter peer. The AVP is included if configured in the diameter application policy using the following command:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| AVP code  | AVP name      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |               | <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-ggsn-ipv6-address</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ps-information</pre> </li> </ul> <p>value:</p> <ol style="list-style-type: none"> <li>1. Use the configured IPv6 source address: <pre>configure aaa diameter peer-policy ipv6-source-address</pre> </li> <li>2. If router = base or vprn service id: use the system interface IPv6 address<br/> else if router = management: use the active management port IP address configured in the BOF</li> </ol> <p>default: not included</p> |
| 3GPP – 21 | 3GPP-RAT-Type | <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp three-gpp-rat-type</pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp 3gpp-rat-type</pre> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| AVP code   | AVP name                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                         | <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured with the following command options:</p> <pre>gy include-avp ps-information</pre> <p>value: [1 to 255]<br/>default: not included</p> <p>For GTP access, the RAT-Type value is learned from the GTP Create Session Request message. The configured value is used when the GTP learned value is unknown or invalid.</p>                                                                         |
| 3GPP - 22  | 3GPP-User-Location-Info | <p>(GTP access only)<br/>Provides UE location details<br/>The AVP is included if configured in the diameter application policy:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp 3gpp-user-location-info</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp three-gpp-user-location-info</pre> </li> </ul> <p>value: ULI learned from the GTP Create Session Request message.<br/>default: not included</p> |
| 3GPP – 847 | GGSN-Address            | <p>The local address used to setup the diameter peer.<br/>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ggsn-address type (ipv4   ipv6)</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy include-avp ggsn-address {ipv4   ipv6}</pre> </li> </ul> <p>Either IPv4 or IPv6 address can be included.</p>            |

| AVP code   | AVP name                               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                                        | <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured with the following command options:</p> <pre>gy include-avp ps-information</pre> <p>value:</p> <ol style="list-style-type: none"> <li>Use the configured IP source address: <ul style="list-style-type: none"> <li><b>MD-CLI</b> <pre>configure aaa diameter peer-policy ipv6-source-address</pre> <pre>configure aaa diameter peer-policy ipv4-source-address</pre> </li> <li><b>classic CLI</b> <pre>configure aaa diameter-peer-policy ipv6-source-address</pre> <pre>configure aaa diameter-peer-policy ipv4-source-address</pre> </li> </ul> </li> <li>If router = base or vprn service id: use the system interface IP address<br/> else if router = management: use the active management port IP address configured in the BOF</li> </ol> <p>default: not included</p> |
| 3GPP – 873 | Service-Information<br>↳ (grouped AVP) | <p>Grouped AVP containing the [3GPP – 874] PS-Information grouped AVP and embedding following AVPs:</p> <ul style="list-style-type: none"> <li>[8] Framed-IP-Address</li> <li>[30] Called-Station-Id</li> <li>[97] Framed-IPv6-Prefix</li> <li>[123] Delegated-IPv6-Prefix</li> <li>[NOKIA – 99] Alc-IPv6-Address</li> <li>[3GPP – 1] 3GPP-IMSI</li> <li>[3GPP – 2] 3GPP-Charging-Id</li> <li>[3GPP – 5] 3GPP-GPRS-Negotiated-QoS-profile</li> <li>[3GPP – 7] 3GPP-GGSN-Address</li> <li>[3GPP – 10] GGSN-NSAPI</li> <li>[3GPP – 11] 3GPP-Session-Stop-Indicator</li> <li>[3GPP – 12] 3GPP-Selection-Mode</li> </ul>                                                                                                                                                                                                                                                                                                               |

| AVP code    | AVP name                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                         | <ul style="list-style-type: none"> <li>[3GPP – 13] 3GPP-Charging-Characteristics</li> <li>[3GPP – 16] 3GPP-GGSN-IPv6-Address</li> <li>[3GPP – 21] 3GPP-RAT-Type</li> <li>[3GPP – 847] GGSN-Address</li> <li>[3GPP – 1004] Charging-Rule-Base-Name</li> <li>[3GPP – 1247] PDP-Context-Type</li> </ul> <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> <li><b>classic CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp ps-information</pre> </li> </ul> <p>When not configured the above listed AVPs are included at command level.</p> <p>default: no ps-information</p>                                                                                                                   |
| 3GPP – 1004 | Charging-Rule-Base-Name | <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li><b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp charging-rule-base-name category-map</pre> </li> <li><b>classic CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp charging-rule-base-name category-map-name</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured with the following command options:</p> <pre>gy include-avp ps-information</pre> <p>value:</p> <ul style="list-style-type: none"> <li>category-map-name: the name of the category-map in use for this session</li> <li>string: a string of max. 64 characters.</li> </ul> <p>default: charging-rule-base-name category-map-name</p> |

| AVP code    | AVP name         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3GPP – 1247 | PDP-Context-Type | <p>(CCR-I only)</p> <p>The AVP is included if configured in the diameter application policy using the following command:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp pdp-context-type</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy include-avp pdp-context-type</pre> </li> </ul> <p>Included at the command level or embedded within the [3GPP – 873] Service-Information / [3GPP – 874] PS-Information grouped AVPs when configured with the following command options:</p> <pre>gy include-avp ps-information</pre> <p>Fixed value: 0 (primary)<br/>default: included</p> |

Table 3: Diameter Gy CCR: top level AVP format

| AVP code | AVP name              | Standard          | Data format       | Flags |
|----------|-----------------------|-------------------|-------------------|-------|
| 1        | User-Name             | RFC 2865/RFC 6733 | UTF8 String       | M     |
| 8        | Framed-IP-Address     | RFC 2865          | Octet String      | M     |
| 30       | Called-Station-Id     | RFC 2865          | UTF8 String       | M     |
| 55       | Event-Timestamp       | RFC 6733/RFC 4006 | Time              | M     |
| 97       | Framed-IPv6-Prefix    | RFC 3162          | Octet String      | M     |
| 123      | Delegated-IPv6-Prefix | RFC 4818          | Octet String      | M     |
| 258      | Auth-Application-Id   | RFC 6733/RFC 4006 | Unsigned 32       | M     |
| 263      | Session-Id            | RFC 6733          | UTF8 String       | M     |
| 264      | Origin-Host           | RFC 6733          | Diameter Identity | M     |
| 278      | Origin-State-Id       | RFC 6733          | Unsigned 32       | M     |
| 283      | Destination-Realm     | RFC 6733          | Diameter Identity | M     |
| 293      | Destination-Host      | RFC 6733          | Diameter Identity | M     |
| 295      | Termination-Cause     | RFC 6733          | Enumerated        | M     |



| AVP code    | AVP name                                            | Standard             | Data format       | Flags |
|-------------|-----------------------------------------------------|----------------------|-------------------|-------|
| 296         | Origin-Realm                                        | RFC 6733             | Diameter Identity | M     |
| 415         | CC-Request-Number                                   | RFC 4006             | Unsigned 32       | M     |
| 416         | CC-Request-Type                                     | RFC 4006             | Enumerated        | M     |
| 443         | Subscription-Id<br>↳ (grouped AVP)                  | RFC 4006             | Grouped           | M     |
| 455         | Multiple-Services-Indicator                         | RFC 4006             | Enumerated        | M     |
| 456         | Multiple-Services-Credit-Control<br>↳ (grouped AVP) | RFC 4006             | Grouped           | M     |
| 458         | User-Equipment-Info<br>↳ (grouped AVP)              | RFC 4006             | Grouped           | M     |
| 461         | Service-Context-Id                                  | RFC 4006             | UTF8 String       | M     |
| NOKIA – 99  | Alc-IPv6-Address                                    | –                    | Octet String      | V     |
| 3GPP – 1    | 3GPP-IMSI                                           | TS 29.061/ TS 32.299 | UTF8 String       | V     |
| 3GPP – 2    | 3GPP-Charging-Id                                    | TS 29.061/ TS 32.299 | UTF8 String       | V     |
| 3GPP – 5    | 3GPP-GPRS-QoS-Negotiated-Profile                    | TS 29.061            | UTF8 String       | V     |
| 3GPP – 7    | 3GPP-GGSN-Address                                   | TS 29.061            | Octet String      | V     |
| 3GPP – 10   | 3GPP-NSAPI                                          | TS 29.061            | UTF8 String       | V     |
| 3GPP – 11   | 3GPP-Session-Stop-Indicator                         | TS 29.061            | UTF8 String       | V     |
| 3GPP – 12   | 3GPP-Selection-Mode                                 | TS 29.061            | UTF8 String       | V     |
| 3GPP – 13   | 3GPP-Charging-Characteristics                       | TS 29.061            | UTF8 String       | V     |
| 3GPP – 16   | 3GPP-GGSN-v6-Address                                | TS 29.061            | Octet String      | V     |
| 3GPP – 21   | 3GPP-RAT-Type                                       | TS 29.061            | Octet String      | V     |
| 3GPP – 22   | 3GPP-User-Location-Info                             | TS 29.061            | Octet String      | V     |
| 3GPP – 847  | GGSN-Address                                        | TS 32.299            | Address           | V     |
| 3GPP – 873  | Service-Information<br>↳ (grouped AVP)              | TS 32.299            | Grouped           | V     |
| 3GPP – 1004 | Charging-Rule-Base-Name                             | TS 29.212            | Octet String      | V, M  |
| 3GPP – 1247 | PDP-Context-Type                                    | TS 32.299            | Enumerated        | V, M  |

## 3.2 Diameter Gy – CCR message grouped AVPs

This section provides an overview of CCR message grouped AVPs.

### 3.2.1 Diameter Gy CCR – Subscription-Id grouped AVP

Grouped AVP format as defined in RFC 4006:

```
Subscription-Id ::= < AVP Header: 443 >
                { Subscription-Id-Type }
                { Subscription-Id-Data }
```

Table 4: Diameter Gy CCR: Subscription-Id grouped AVP description

| AVP code | AVP name             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 450      | Subscription-Id-Type | <p>Value as configured in the diameter application policy:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy avp- subscription-id origin configure subscriber-mgmt diameter-gy-policy gy avp- subscription-id type</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy avp-subscription-id <i>origin</i> (circuit-id dual-stack- remote-id imei imsi mac msisdn nas-port-id subscriber- id username) [type (e164 imsi nai private)]</pre> </li> </ul> <p>values:</p> <ul style="list-style-type: none"> <li>e164: identifier in international E.164 format (ITU-T E.164)</li> <li>imsi: identifier in international IMSI format (ITU-T E.212)</li> <li>nai: identifier in the form of a Network Access Identifier (RFC 2486)</li> <li>private: a credit control server private identifier</li> </ul> <p>default: type private</p> <p>For GTP access, the configured value is ignored and the type is set to imsi and msisdn respectively for each of the two included Subscription-Id AVPs.</p> |
| 444      | Subscription-Id-Data | <p>The value as configured in the diameter application policy:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy avp- subscription-id origin</pre> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| AVP code | AVP name | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |          | <pre>configure subscriber-mgmt diameter-gy-policy gy avp-subscription-id type</pre> <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt diameter-application-policy gy avp-subscription-id origin [type]</pre> <p>Note that there is no check if the provided data is in the format of the following configured type.</p> <p>values:</p> <ul style="list-style-type: none"> <li>circuit-id</li> <li>subscriber-id</li> <li>imsi</li> <li>msisdn</li> <li>imei</li> </ul> <p>default: avp-subscription-id subscriber-id</p> <p>For GTP access, the Subscription ID data is learned from GTP and contains the IMSI and MSISDN.</p> |

Table 5: Diameter Gy CCR: Subscription-Id grouped AVP format

| AVP code | AVP name             | Standard | Data format | Flags |
|----------|----------------------|----------|-------------|-------|
| 450      | Subscription-Id-Type | RFC 4006 | Enumerated  | M     |
| 444      | Subscription-Id-Data | RFC 4006 | UTF8 String | M     |

### 3.2.2 Diameter Gy CCR – Multiple-Services-Credit-Control grouped AVP

Grouped AVP format as defined in RFC 4006. ~~Strikethrough~~ formatted AVPs are not included in CCR. *Italic* formatted AVPs listed after [AVP] are not defined in RFC 4006.

```
Multiple-Services-Credit-Control ::= < AVP Header: 456 >
    [Granted-Service-Unit]
    [ Requested-Service-Unit ]
    *[ Used-Service-Unit ]
    [Tariff-Change-Usage]
    *[ Service-Identifier ]
    [ Rating-Group ]
    *[ G-S-U-Pool-Reference ]

    { Validity-Time }
    { Result-Code }
    { Final-Unit-Indication }

    *[ AVP ]
    [ Reporting-Reason ]
```

Table 6: Diameter Gy CCR: Multiple-Services-Credit-Control Grouped AVP description

| AVP code   | AVP name                                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 432        | Rating-Group                              | <p>Rating group for which the quota is requested or reported. Corresponds with a category within a category-map defining the queues and policers and direction to monitor.</p> <pre>configure subscriber-mgmt category-map category rating-group</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 437        | Requested-Service-Unit<br>↳ (grouped AVP) | <p>(CCR-I and CCR-U only)</p> <p>When included, the Requested-Service-Unit AVP has an empty data field in all CCR Initial/Update messages.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 446        | Used-Service-Unit<br>↳ (grouped AVP)      | <p>(CCR-U and CCR-T only)</p> <p>Amount of used service units measured for a specified category or rating group to a specified quota type.</p> <p>The Used-Service-Unit AVP is not present in CCR-U when all contained AVP values are zero and the Reporting-Reason = Validity Time (4) or Forced Reauthorization (7).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 3GPP – 872 | Reporting-Reason                          | <p>Specifies the reason for which the Used-Service-Units are reported. CCR-U and CCR-T only.</p> <p>Values</p> <ul style="list-style-type: none"> <li>• 0 (Threshold): used quota reached time or volume threshold value (threshold value different from zero)</li> <li>• 1 (Quota Holding Time): expiration of the Quota Holding Time</li> <li>• 2 (Final): Diameter session termination; can be client or server initiated.</li> <li>• 3 (Quota Exhausted): no threshold or threshold is zero and quota exhausted.</li> <li>• 4 (Validity Time): expiration of the Validity Time</li> <li>• 5 (Other Quota Type): not supported</li> <li>• 6 (Rating Condition Change): not supported</li> <li>• 7 (Forced Reauthorization): reception of a RAR message</li> <li>• 8 (Pool Exhausted): not supported</li> </ul> |

Table 7: Diameter Gy CCR: Multiple-Services-Credit-Control grouped AVP format

| AVP code   | AVP name                                  | Standard  | Data format | Flags |
|------------|-------------------------------------------|-----------|-------------|-------|
| 432        | Rating-Group                              | RFC 4006  | Unsigned 32 | M     |
| 437        | Requested-Service-Unit<br>↳ (grouped AVP) | RFC 4006  | Grouped     | M     |
| 446        | Used-Service-Unit<br>↳ (grouped AVP)      | RFC 4006  | Grouped     | M     |
| 3GPP – 872 | Reporting-Reason                          | TS 32.299 | Enumerated  | V, M  |

### 3.2.3 Diameter Gy CCR – Requested-Service-Unit grouped AVP

Grouped AVP format as defined in RFC 4006. Strikethrough formatted AVPs are not included in CCR.

```
Requested-Service-Unit ::= < AVP Header: 437 >
    [CC-Time]
    [CC-Money]
    [CC-Total-Octets]
    [CC-Input-Octets]
    [CC-Output-Octets]
    [CC-Service-Specific-Units]
    *[ AVP ]
```

The Requested-Service-Unit AVP has an empty data field in all CCR Initial/Update messages and is not present in a CCR Terminate message.

### 3.2.4 Diameter Gy CCR – Used-Service-Unit grouped AVP

Grouped AVP format as defined in RFC 4006. Strikethrough formatted AVPs are not included in CCR.

```
Used-Service-Unit ::= < AVP Header: 446 >
    [Tariff-Change-Usage]
    [ CC-Time ]
    [CC-Money]
    [ CC-Total-Octets ]
    [ CC-Input-Octets ]
    [ CC-Output-Octets ]
    [CC-Service-Specific-Units]
    *[ AVP ]
```

Table 8: Diameter Gy CCR: Used-Service-Unit grouped AVP description

| AVP code | AVP name        | Description                                                                                                                 |
|----------|-----------------|-----------------------------------------------------------------------------------------------------------------------------|
| 412      | CC-Input-Octets | Number of ingress bytes forwarded via queues or policers that are monitored in the ingress direction for this rating group. |

| AVP code | AVP name         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                  | <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt category-map category ingress policer <i>value</i> configure subscriber-mgmt category-map category ingress queue <i>value</i></pre> </li> <li>• classic CLI <pre>configure subscriber-mgmt category-map category queue <i>queue-id</i> {ingress-only} configure subscriber-mgmt category-map category policer <i>policer-id</i> {ingress-only}</pre> </li> </ul> <p>Value equals zero when credit type is time or when no queues/policers are monitored in ingress direction.</p>                                                                                                                          |
| 414      | CC-Output-Octets | <p>Number of egress bytes forwarded via queues or policers that are monitored in egress direction for this rating group.</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt category-map category egress policer <i>value</i> configure subscriber-mgmt category-map category egress queue <i>value</i></pre> </li> <li>• classic CLI <pre>configure subscriber-mgmt category-map category queue <i>queue-id</i> {egress-only} configure subscriber-mgmt category-map category policer <i>policer-id</i> {egress-only}</pre> </li> </ul> <p>Value equals zero when credit type is time. Or when no queues/policers are monitored in egress direction.</p> |
| 420      | CC-Time          | <p>Total number of seconds during which activity is detected for queues or policers that are monitored for this rating group.</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b> <pre>configure subscriber-mgmt category-map category ingress policer <i>value</i> configure subscriber-mgmt category-map category ingress queue <i>value</i></pre> </li> <li>• <b>classic CLI</b> <pre>configure subscriber-mgmt category-map category queue <i>queue-id</i> {ingress-only   egress-only   ingress-egress}</pre> </li> </ul>                                                                                                                                                            |

| AVP code | AVP name        | Description                                                                                                                                                                                                                                                                                                                                                 |
|----------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                 | <pre>configure subscriber-mgmt category-map category   policer <i>policer-id</i> {ingress-only   egress-only       ingress-egress}</pre> <p>Only sampling periods exceeding the configured activity-threshold are counted:</p> <pre>configure subscriber-mgmt category-map activity-   threshold</pre> <p>Value equals zero when credit type is volume.</p> |
| 421      | CC-Total-Octets | <p>Total number of bytes used for this rating-group. Corresponds with the sum of CC-Input-Octets and CC-Output-Octets.</p> <p>Value equals zero when credit type is time.</p>                                                                                                                                                                               |

Table 9: Diameter Gy CCR: Used-Service-Unit grouped AVP format

| AVP code | AVP name         | Standard | Data format | Flags |
|----------|------------------|----------|-------------|-------|
| 412      | CC-Input-Octets  | RFC 4006 | Unsigned 64 | M     |
| 414      | CC-Output-Octets | RFC 4006 | Unsigned 64 | M     |
| 420      | CC-Time          | RFC 4006 | Unsigned 32 | M     |
| 421      | CC-Total-Octets  | RFC 4006 | Unsigned 64 | M     |

### 3.2.5 Diameter Gy CCR - User-Equipment-Info grouped AVP

Grouped AVP format as defined in RFC 4006.

```
User-Equipment-Info ::= < AVP Header: 458 >
  { User-Equipment-Info-Type }
  { User-Equipment-Info-Value }
```

Table 10: Diameter Gy CCR: User-Equipment-Info grouped AVP description

| AVP code | AVP name                  | Description                                                                                                                            |
|----------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 459      | User-Equipment-Info-Type  | <p>(GTP access only)</p> <p>fixed value: IMEISV (0)</p>                                                                                |
| 460      | User-Equipment-Info-Value | <p>(GTP access only)</p> <p>The Internet Mobile Equipment Identifier (IMEI) as signaled in the GTP Create Session Request message.</p> |

Table 11: Diameter Gy CCR: User-Equipment-Info grouped AVP format

| AVP code | AVP name                  | Standard | Data format | Flags |
|----------|---------------------------|----------|-------------|-------|
| 459      | User-Equipment-Info-Type  | RFC 4006 | Enumerated  |       |
| 460      | User-Equipment-Info-Value | RFC 4006 | UTF8 String |       |

### 3.2.6 Diameter Gy CCR – Service-Information grouped AVP

Grouped AVP format as defined in TS 32.29. Strikethrough formatted AVPs are not included in CCR.

```
Service-Information ::= < AVP Header: 873>
                        * { Subscription-Id }
{ AoC-Information }
                        [ PS-Information ]
                        { WLAN-Information }
{ IMS-Information }
{ LCS-Information }
{ PoC-Information }
{ MBMS-Information }
{ SMS-Information }
{ MMTel-Information }
{ Service-Generic-Information }
{ IM-Information }
{ DCD-Information }
```

Table 12: Diameter Gy CCR: Service-Information grouped AVP description

| AVP code   | AVP name                          | Description                                                                                  |
|------------|-----------------------------------|----------------------------------------------------------------------------------------------|
| 3GPP – 874 | PS-Information<br>↳ (grouped AVP) | Allows the transmission of additional Packet Switched service-specific information elements. |

Table 13: Diameter Gy CCR: Service-Information grouped AVP format

| AVP code   | AVP name                          | Standard  | Data format | Flags |
|------------|-----------------------------------|-----------|-------------|-------|
| 3GPP – 874 | PS-Information<br>↳ (grouped AVP) | TS 32.299 | Grouped     | V     |

### 3.2.7 Diameter Gy CCR – PS-Information grouped AVP

Grouped AVP format as defined in TS 32.299:

Strikethrough formatted AVPs are not included in CCR. *Italic* formatted AVPs listed at the end are not defined in TS 32.299.



For a description and format of the AVPs embedded in the grouped PS-Information AVP, see [Table 2: Diameter Gy CCR: top level AVP description](#) and [Table 3: Diameter Gy CCR: top level AVP format](#).

```

PS-Information ::= < AVP Header: 874>
    [ 3GPP-Charging-Id ]
    { PDN-Connection-ID }

{ Node-Id }
{ 3GPP-PDP-Type }
{ PDP-Address }
{ Dynamic-Address-Flag }
{ QoS-Information }
{ SGSN-Address }
    [ GGSN-Address ]
    { CG-Address }

{ Serving-Node-Type }
{ SGW-Change }
{ 3GPP-IMSI-MCC-MNC }
{ IMSI-Unauthenticated-Flag }
{ 3GPP-GGSN-MCC-MNC }
    [ 3GPP-NSAPI ]
    [ Called-Station-Id ]
    [ 3GPP-Session-Stop-Indicator ]
    [ 3GPP-Selection-Mode ]
    [ 3GPP-Charging-Characteristics ]
    { Charging-Characteristics-Selection-Mode }

{ 3GPP-SGSN-MCC-MNC }
{ 3GPP-MS-TimeZone }
    * [ Charging-Rule-Base-Name ]
    { 3GPP-User-Location-Info }

{ User-CSG-Information }
{ 3GPP2-BSID }
    [ 3GPP-RAT-Type ]
    { PS-Furnish-Charging-Information }
    [ PDP-Context-Type ]
    { Offline-Charging }
    * { Traffic-Data-Volumes }
    * { Service-Data-Container }

{ User-Equipment-Info }
{ Terminal-Information }
{ Start-Time }
{ Stop-Time }
{ Change-Condition }
{ Diagnostics }
[ Framed-IP-Address ]
[ Framed-IPv6-Prefix ]
[ Delegated-IPv6-Prefix ]
[ Alc-IPv6-Address ]
[ 3GPP-IMSI ]
[ 3GPP-GPRS-Negotiated-QoS-profile ]
[ 3GPP-GGSN-Address ]
[ 3GPP-GGSN-IPv6-Address ]

```

## 4 Diameter Gy – Credit-Control-Answer (CCA) command

This section describes the Diameter Gy CCA message format as defined in RFC 4006. Strikethrough formatted AVPs should not appear or are ignored in CCA. *Italic* formatted AVPs listed after [AVP] are not defined in RFC 4006.

```

<Credit-Control-Answer> ::= < Diameter Header: 272, PXY >
                                < Session-Id >
                                { Result-Code }
                                { Origin-Host }
                                { Origin-Realm }
                                { Auth-Application-Id }
                                { CC-Request-Type }
                                { CC-Request-Number }
                                { User-Name }
                                [ CC-Session-Failover ]
                                { CC-Sub-Session-Id }

{ Acct-Multi-Session-Id }
{ Origin-State-Id }
{ Event-Timestamp }
{ Granted-Service-Unit }

                                *[ Multiple-Services-Credit-Control ]
                                { Cost-Information }

{ Final-Unit-Indication }
{ Check-Balance-Result }

                                [ Credit-Control-Failure-Handling ]
                                { Direct-Debiting-Failure-Handling }

{ Validity-Time }

                                *{ Redirect-Host }

{ Redirect-Host-Usage }
{ Redirect-Max-Cache-Time }

                                *{ Proxy-Info }
                                *{ Route-Record }
                                *[ Failed-AVP ]
                                *[ AVP ]
                                [ Charging-Rule-Base-Name ]

```

### 4.1 Diameter Gy – CCA message top level AVPs

Table 14: Diameter Gy CCA: top level AVP description provides a detailed description for each top level AVP present in a Diameter Gy CCA message. Unless mentioned different in the description, the AVP is present in Initial, Update and Terminate messages. Grouped AVPs are marked with “↳ (grouped AVP)”. The grouped AVP format and embedded AVP description and format are described in section [Diameter Gy – CCA message grouped AVPs](#).

Table 14: Diameter Gy CCA: top level AVP description

| AVP code | AVP name            | Description                                          |
|----------|---------------------|------------------------------------------------------|
| 258      | Auth-Application-Id | Fixed value: 4 = Diameter Credit Control Application |

| AVP code | AVP name                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 263      | Session-id                    | <p>A session is a logical concept at the application layer that exists between the Diameter client and the Diameter server; it is identified via the Session-Id AVP.</p> <p>Format:</p> <p>&lt;DiameterIdentity&gt;;&lt;high 32 bits&gt;;&lt;low 32 bits&gt;</p> <ul style="list-style-type: none"> <li>• &lt;DiameterIdentity&gt; is the configured origin host</li> <li>• &lt;high 32 bits&gt; are encoded as the Diameter initialization time (the number of seconds since 1 Jan 1970)</li> <li>• &lt;low 32 bits&gt; are encoded as a sequentially increasing number starting at 1</li> </ul> <p>Example: bng.nokia.com;1326398325;1</p> |
| 264      | Origin-Host                   | <p>Diameter Identity. Used as destination host in the next Diameter message.</p> <p>Example: server.nokia.com</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 268      | Result-Code                   | <p>Values:</p> <p>2001 = Diameter Success</p> <p>3xxx = Protocol Errors</p> <p>4001 = Diameter Authentication Rejected</p> <p>4010 = Diameter End User Service Denied (CCA-U only)</p> <p>4011 = Diameter Credit Control Not Applicable</p> <p>4012 = Diameter Credit Limit Reached (CCA-U only)</p> <p>5003 = Diameter Authorization Rejected</p> <p>5030 = Diameter User Unknown</p> <p>5031 = Diameter Rating Failed (CCA-U only)</p> <p>Values not listed result in a Diameter Session Failure and the Credit Control Failure Handling action is executed.</p>                                                                           |
| 278      | Failed-AVP<br>↳ (grouped AVP) | Provides debugging information when CCR is rejected or not fully processed because of unsupported AVP or AVP value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 296      | Origin-Realm                  | <p>Diameter Identity. Used as destination host in the next Diameter message.</p> <p>Example: nokia.com</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 415      | CC-Request-Number             | <p>Values:</p> <p>CCA-Initial: 0</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| AVP code | AVP name                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                 | CCA-Update and CCA-Termination: sequence number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 416      | CC-Request-Type                 | <p>Values:</p> <p>1 = Initial Answer</p> <p>2 = Update Answer</p> <p>3 = Termination Answer</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 418      | CC-Session-Failover             | <p>Specifies if a secondary peer should be attempted in case of Credit Control Failure Handling.</p> <p>Use the commands in the following context to override the configured failover value:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy on-failure failover [true   false] handling [terminate   continue   retry-and-terminate]</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter- application-policy on-failure [failover {enabled   disabled}] [handling {continue   retry-and-terminate   terminate}]</pre> </li> </ul> <p>Values:</p> <p>0 = Failover Not Supported</p> <p>1 = Failover Supported</p>     |
| 427      | Credit-Control-Failure-Handling | <p>Action to take when the Credit Control client does not receive a valid CCA message within the interval specified with tx-timer (default 10s).</p> <p>Use the following commands to override the configured failure handling:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy- policy on-failure failover enabled handling [terminate   continue   retry-and-terminate]</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter- application-policy on-failure [failover {enabled disabled}] [handling {continue   retry-and-terminate   terminate}]</pre> </li> </ul> <p>Values:</p> <p>0 = Terminate</p> <p>1 = Continue</p> |

| AVP code    | AVP name                                            | Description                                                                                                                                                                                                                    |
|-------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                     | 2 = Retry and terminate                                                                                                                                                                                                        |
| 456         | Multiple-Services-Credit-Control<br>↳ (grouped AVP) | Up to sixteen Multiple-Services-Credit-Control AVPs, each corresponding to a rating group. A rating group maps to a category configured in a category-map:<br><br>configure subscriber-mgmt category-map category rating-group |
| 3GPP – 1004 | Charging-Rule-Base-Name                             | (CCA-I only)<br><br>Assigns the category-map or overrides the category-map obtained in authentication.<br><br>value: category-map-name: the name of the category-map to be used for this session                               |

Table 15: Diameter Gy CCA: top level AVP format

| AVP code    | AVP name                                            | Standard          | Data format       | Flags |
|-------------|-----------------------------------------------------|-------------------|-------------------|-------|
| 258         | Auth-Application-Id                                 | RFC 6733/RFC 4006 | Unsigned 32       | M     |
| 263         | Session-id                                          | RFC 6733          | UTF8 String       | M     |
| 264         | Origin-Host                                         | RFC 6733          | Diameter Identity | M     |
| 268         | Result-Code                                         | RFC 6733/RFC 4006 | Unsigned 32       | M     |
| 278         | Failed-AVP<br>↳ (grouped AVP)                       | RFC 6733          | Grouped           | M     |
| 296         | Origin-Realm                                        | RFC 6733          | Diameter Identity | M     |
| 415         | CC-Request-Number                                   | RFC 4006          | Unsigned 32       | M     |
| 416         | CC-Request-Type                                     | RFC 4006          | Enumerated        | M     |
| 418         | CC-Session-Failover                                 | RFC 4006          | Enumerated        | M     |
| 427         | Credit-Control-Failure-Handling                     | RFC 4006          | Enumerated        | M     |
| 456         | Multiple-Services-Credit-Control<br>↳ (grouped AVP) | RFC 4006          | Grouped           | M     |
| 3GPP – 1004 | Charging-Rule-Base-Name                             | TS 29.212         | Octet String      | V, M  |

## 4.2 Diameter Gy – CCA message grouped AVPs

This section provides an overview of CCA message grouped AVPs.

### 4.2.1 Diameter Gy CCA – Failed-AVP grouped AVP

Grouped AVP format as defined in RFC 6733:

```
<Failed-AVP> ::= < AVP Header: 279 >
                1* {AVP}
```

The failed-AVP AVP contains the entire AVP that could not be processed successfully.

### 4.2.2 Diameter Gy CCA – Multiple-Services-Credit-Control grouped AVP

Grouped AVP format as defined in RFC 4006: ~~Strikethrough~~ formatted AVPs should not appear or are ignored in CCA. *Italic* formatted AVPs listed after [AVP] are not defined in RFC 4006.

```
Multiple-Services-Credit-Control ::= < AVP Header: 456 >
                                     [ Granted-Service-Unit ]
                                     [ Requested-Service-Unit ]
                                     *[ Used-Service-Unit ]
[ Tariff-Change-Usage ]
                                     *[ Service-Identifier ]
                                     [ Rating-Group ]
                                     *[ G-S-U-Pool-Reference ]
                                     [ Validity-Time ]
                                     [ Result-Code ]
                                     [ Final-Unit-Indication ]
                                     *[ AVP ]
                                     [ Time-Quota-Threshold ]
                                     [ Volume-Quota-Threshold ]
                                     [ Quota-Holding-Time ]
```

Table 16: Diameter Gy CCA: Multiple-Services-Credit-Control grouped AVP description

| AVP code | AVP name    | Description                                                                                                                                                                                                                                                                                                                                                                 |
|----------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 268      | Result-Code | Values:<br>2001 = Diameter Success<br>4010 = Diameter End User Service Denied<br>4011 = Diameter Credit Control Not Applicable<br>4012 = Diameter Credit Limit Reached<br>5003 = Diameter Authorization Rejected<br>5031 = Diameter Rating Failed<br><br>Values not listed result in a Diameter Session Failure and the Credit Control Failure Handling action is executed. |

| AVP code   | AVP name                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 430        | Final-Unit-Indication<br>↳ (grouped AVP) | <p>This AVP indicates that the Granted-Service-Unit contains the final units for the service. When this quota is consumed, a final reporting is started (CCR-U or CCR-T) with reporting reason "Final". The final reporting can be disabled with the following commands:</p> <ul style="list-style-type: none"> <li> <b>MD-CLI</b> <pre>configure subscriber-mgmt diameter-gy-policy gy out-of-credit-reporting quota-exhausted</pre> </li> <li> <b>classic CLI</b> <pre>configure subscriber-mgmt diameter-application-policy gy out-of-credit-reporting quota-exhausted</pre> </li> </ul> |
| 431        | Granted-Service-Unit<br>↳ (grouped AVP)  | Amount of service units that the Diameter credit control client can provide to the end user until the service must be released or a new CCR message must be sent.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 432        | Rating-Group                             | <p>Rating group for which the quota is allocated. The rating group corresponds with a category within a category-map defining the queues and policers and direction to monitor.</p> <pre>configure subscriber-mgmt category-map category rating-group</pre>                                                                                                                                                                                                                                                                                                                                 |
| 448        | Validity-Time                            | <p>If the granted service units have not been consumed within the validity time, a CCR-U is triggered with Reporting Reason AVP set to 4 (Validity Time).</p> <p>Value in seconds</p>                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3GPP – 868 | Time-Quota-Threshold                     | <p>Threshold preventing time quota exhaustion before refreshing. When the used time quota exceeds the threshold, a CCR-U is triggered with Reporting Reason AVP set to 0 (Threshold).</p> <p>Value in seconds</p>                                                                                                                                                                                                                                                                                                                                                                           |
| 3GPP – 869 | Volume-Quota-Threshold                   | <p>Threshold preventing volume quota exhaustion before refreshing. When the used volume quota exceeds the threshold, a CCR-U is triggered with Reporting Reason AVP set to 0 (Threshold).</p> <p>Value in octets</p>                                                                                                                                                                                                                                                                                                                                                                        |
| 3GPP – 871 | Quota-Holding-Time                       | <p>Specifies an idle-timeout associated with the granted service units. If no traffic associated with the quota is observed for the time specified by the quota holding time, then a CCR-U is triggered with Reporting Reason AVP set to 1 (Quota Holding Time). The idle time is measured per sampling period.</p> <p>Value in seconds</p>                                                                                                                                                                                                                                                 |

Table 17: Diameter Gy CCA: Multiple-Services-Credit-Control grouped AVP format

| AVP code   | AVP name                                 | Standard          | Data format | Flags |
|------------|------------------------------------------|-------------------|-------------|-------|
| 268        | Result-Code                              | RFC 6733/RFC 4006 | Unsigned 32 | M     |
| 430        | Final-Unit-Indication<br>↳ (grouped AVP) | RFC 4006          | Grouped     | M     |
| 431        | Granted-Service-Unit<br>↳ (grouped AVP)  | RFC 4006          | Grouped     | M     |
| 432        | Rating-Group                             | RFC 4006          | Unsigned 32 | M     |
| 448        | Validity-Time                            | RFC 4006          | Unsigned 32 | M     |
| 3GPP – 868 | Time-Quota-Threshold                     | TS 32.299         | Unsigned 32 | V, M  |
| 3GPP – 869 | Volume-Quota-Threshold                   | TS 32.299         | Unsigned 32 | V, M  |
| 3GPP – 871 | Quota-Holding-Time                       | TS 32.299         | Unsigned 32 | V, M  |

### 4.2.3 Diameter Gy CCA – Final-Unit-Indication grouped AVP

Grouped AVP format as defined in RFC 4006: ~~Strikethrough~~ formatted AVPs should not appear or are ignored in CCA.

```
Final-Unit-Indication ::= < AVP Header: 430 >
    { Final-Unit-Action }
    *{ Restriction-Filter-Rule }
    *{ Filter-Id }
    [ Redirect-Server ]
```

Table 18: Diameter Gy CCA: Final-Unit-Indication grouped AVP description

| AVP code | AVP name                           | Description                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 434      | Redirect-Server<br>↳ (grouped AVP) | <p>This AVP is included when the Final-Unit-Action AVP is set to REDIRECT (1) and contains the URL to which the user must be redirected. The URL overrides the URL specified with the following commands:</p> <ul style="list-style-type: none"> <li>• <b>MD-CLI</b></li> </ul> <pre>configure subscriber-mgmt category-map category exhausted-credit-service- level ingress ip-filter entry 1 action http-redirect</pre> |



| AVP code | AVP name          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                   | <ul style="list-style-type: none"> <li><b>classic CLI</b></li> </ul> <pre>configure subscriber-mgmt category-map category exhausted-credit-service- level ingress-ip-filter-entries entry action http-redirect url allow- override</pre> <p>The AVP is ignored when the out-of-credit action is different from change-service-level or when no http-redirect action with <b>allow-override</b> is configured.</p>                                                                                                                                                                                                                         |
| 449      | Final-Unit-Action | <p>If the value is Terminate, then the session is terminated and the corresponding subscriber host deleted.</p> <p>If the value is Redirect or Restrict Access, then the out-of-credit action as configured for that rating group (category) is executed using the following command:</p> <pre>configure subscriber-mgmt credit-control- policy out-of-credit-action</pre> <p>Alternately, the following command can be used to configure out of credit action:</p> <pre>configure subscriber-mgmt category-map category out-of-credit-action-override</pre> <p>Values:</p> <p>0 = Terminate<br/>1 = Redirect<br/>2 = Restrict Access</p> |

Table 19: Diameter Gy CCA: Final-Unit-Indication grouped AVP format

| AVP code | AVP name                           | Standard | Data format | Flags |
|----------|------------------------------------|----------|-------------|-------|
| 434      | Redirect-Server<br>↳ (grouped AVP) | RFC 4006 | Enumerated  | M     |
| 449      | Final-Unit-Action                  | RFC 4006 | Enumerated  | M     |

## 4.2.4 Diameter Gy CCA - Redirect-Server grouped AVP

Grouped AVP format as defined in RFC 4006.

```
Redirect-Server ::= < AVP Header: 434 >
                { Redirect-Address-Type }
                { Redirect-Server-Address }
```

Table 20: Diameter Gy CCA: Redirect-Server grouped AVP description

| AVP code | AVP name                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 433      | Redirect-Address-Type   | Must be set to URL (2). The Redirect-Server-Address AVP is ignored when set to a different value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 435      | Redirect-Server-Address | <p>Contains the IPv4 HTTP redirect URL that is used when the Final-Unit-Action REDIRECT is triggered for the rating group that corresponds with the MSCC in which the Final-Unit-Indication AVP is included.</p> <p>The URL specified in the Redirect-Server-Address AVP is only used when all following conditions are met:</p> <ul style="list-style-type: none"> <li>• The Final-Unit-Indication AVP is present in the Multiple-Services-Credit-Control AVP</li> <li>• The Final-Unit-Action is set to REDIRECT (1)</li> <li>• The Redirect-Address-Type is set to URL (2)</li> <li>• The out-of-credit action for the corresponding rating group is set to change-service-level:</li> </ul> <pre>configure subscriber-mgmt credit-control-policy out-of-credit-action change-service-level</pre> <p>Alternately, the following command can be used to set the change service level:</p> <pre>configure subscriber-mgmt category-map category out-of-credit-action-override change-service-level</pre> <ul style="list-style-type: none"> <li>• An IPv4 HTTP redirect action with allow-override is specified as exhausted-credit-service-level for the corresponding rating group:</li> </ul> <p>– <b>MD-CLI</b></p> <pre>configure subscriber-mgmt category-map category exhausted-credit-</pre> |

| AVP code        | AVP name | Description                                                                                                                                                                                                                                                                                                                       |
|-----------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |          | <pre>service-level ingress ip-filter entry action http-redirect url allow-override</pre> <p>– <b>classic CLI</b></p> <pre>configure subscriber-mgmt category- map category exhausted-credit- service-level ingress-ip-filter- entries entry action http-redirect url allow-override</pre>                                         |
| 435 (continued) |          | <p>In all other cases, the Redirect-Server-Address AVP is ignored.</p> <p>The maximum URL length is 255 characters and can include the same macro substitutions such as \$IP (customer's IP address), \$MAC (customer's MAC address), \$URL (original requested URL), as supported for a static configured HTTP redirect URL.</p> |

Table 21: Diameter Gy CCA: Redirect-Server grouped AVP format

| AVP code | AVP name                | Standard | Data format | Flags |
|----------|-------------------------|----------|-------------|-------|
| 433      | Redirect-Address-Type   | RFC 4006 | Enumerated  | M     |
| 435      | Redirect-Server-Address | RFC 4006 | Enumerated  | M     |

#### 4.2.5 Diameter Gy CCA – Granted-Service-Unit grouped AVP

Grouped AVP format as defined in RFC 4006. Strikethrough formatted AVPs should not appear or are ignored in CCA.

```
Granted-Service-Unit ::= < AVP Header: 431 >
    [ Tariff-Time-Change ]
    [ CC-Time ]
    [ CC-Money ]
    [ CC-Total-Octets ]
    [ CC-Input-Octets ]
    [ CC-Output-Octets ]
    [ CC-Service-Specific-Units ]
    * [ AVP ]
```

For a single rating group (category), either Volume or Time quota can be granted. Granting both time and volume quota for a single rating group is not supported and results in a Diameter Session Failure and the execution of the Credit Control Failure Handling action.

*Table 22: Diameter Gy CCA: Granted-Service-Unit grouped AVP description*

| AVP code | AVP name        | Description                                                                                                          |
|----------|-----------------|----------------------------------------------------------------------------------------------------------------------|
| 420      | CC-Time         | Amount of granted time<br>Value: in seconds                                                                          |
| 421      | CC-Total-Octets | Total number of octets regardless of the direction (quota can be consumed for ingress or egress)<br>Value: in octets |

*Table 23: Diameter Gy CCA: Granted-Service-Unit grouped AVP format*

| AVP code | AVP name        | Standard | Data format | Flags |
|----------|-----------------|----------|-------------|-------|
| 420      | CC-Time         | RFC 4006 | Unsigned 32 | M     |
| 421      | CC-Total-Octets | RFC 4006 | Unsigned 64 | M     |

## 5 Diameter Gy – Re-Auth-Request (RAR) command

### 5.1 Diameter Gy – RAR message format

This section describes the Diameter Gy RAR message format as defined in RFC 6733. Strikethrough formatted AVPs should not appear or are ignored in RAR.

A RAR message triggers an intermediate interrogation (CCR-U) with Reporting-Reason set to "Forced Reauthorization".

```
<RAR> ::= < Diameter Header: 258, REQ, PXY >
        < Session-Id >
        { Origin-Host }
        { Origin-Realm }
        { Destination-Realm }
        { Destination-Host }
        { Auth-Application-Id }
        { Re-Auth-Request-Type }
        { User-Name }
{ Origin-State-Id }
        * { Proxy-Info }
        * { Route-Record }
        * { AVP }
```

### 5.2 Diameter Gy – RAR message top level AVPs

[Table 24: Diameter Gy RAR: top level AVP description](#) provides a detailed description for each top level AVP present in a Diameter Gy RAR message.

Table 24: Diameter Gy RAR: top level AVP description

| AVP code | AVP name            | Description                                                                                                                                                                                                                                                                                                                                                                                    |
|----------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 258      | Auth-Application-Id | Fixed value: 4 = Diameter Credit Control Application                                                                                                                                                                                                                                                                                                                                           |
| 263      | Session-id          | <div>A session is a logical concept at the application layer that exists between the Diameter client and the Diameter server; it is identified via the Session-Id AVP.</div> <div>Format:</div> <div>&lt;DiameterIdentity&gt;;&lt;high 32 bits&gt;;&lt;low 32 bits&gt;</div> <div><ul style="list-style-type: none"><li>&lt;DiameterIdentity&gt; is the configured origin host</li></ul></div> |

| AVP code | AVP name             | Description                                                                                                                                                                                                                                                                                                    |
|----------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                      | <ul style="list-style-type: none"> <li>&lt;high 32 bits&gt; are encoded as the Diameter initialization time (the number of seconds since 1 January, 1970)</li> <li>&lt;low 32 bits&gt; are encoded as a sequentially increasing number starting at 1</li> </ul> <p>Example:<br/>bng.nokia.com;1326398325;1</p> |
| 264      | Origin-Host          | Diameter Identity. Used as destination host in the next Diameter message.<br>Example: server.nokia.com                                                                                                                                                                                                         |
| 283      | Destination-Realm    | Diameter Identity.<br>Example: nokia.com                                                                                                                                                                                                                                                                       |
| 285      | Re-Auth-Request-Type | Values:<br>0 = Authorize-Only                                                                                                                                                                                                                                                                                  |
| 293      | Destination-Host     | Diameter Identity.<br>Example: bng.nokia.com                                                                                                                                                                                                                                                                   |
| 296      | Origin-Realm         | Diameter Identity. Used as destination realm in the next Diameter message.<br>Example: nokia.com                                                                                                                                                                                                               |

Table 25: Diameter Gy RAR: top level AVP format

| AVP code | AVP name             | Standard          | Data format       | Flags |
|----------|----------------------|-------------------|-------------------|-------|
| 258      | Auth-Application-Id  | RFC 6733/RFC 4006 | Unsigned 32       | M     |
| 263      | Session-id           | RFC 6733          | UTF8 String       | M     |
| 264      | Origin-Host          | RFC 6733          | Diameter Identity | M     |
| 283      | Destination-Realm    | RFC 6733          | Diameter Identity | M     |
| 285      | Re-Auth-Request-Type | RFC 6733          | Enumerated        | M     |
| 293      | Destination-Host     | RFC 6733          | Diameter Identity | M     |
| 296      | Origin-Realm         | RFC 6733          | Diameter Identity | M     |

## 6 Diameter Gy – Re-Auth-Answer (RAA) command

### 6.1 Diameter Gy – RAA message format

This section describes the Diameter Gy RAA message format as defined in RFC 6733. Strikethrough formatted AVPs are not included in RAA.

```
<RAA> ::= < Diameter Header: 258, PXY >
        < Session-Id >
        { Result-Code }
        { Origin-Host }
        { Origin-Realm }
        { User-Name }
{ Origin-State-Id }
{ Error-Message }
{ Error-Reporting-Host }
{ Failed-AVP }
        * { Redirect-Host }
{ Redirect-Host-Usage }
{ Redirect-Max-Cache-Time }
        * { Proxy-Info }
        * { AVP }
```

### 6.2 Diameter Gy – RAA message top level AVPs

[Table 26: Diameter Gy RAA: top level AVP description](#) provides a detailed description for each top level AVP present in a Diameter Gy RAA message.

Table 26: Diameter Gy RAA: top level AVP description

| AVP code | AVP name   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 263      | Session-id | <p>A session is a logical concept at the application layer that exists between the Diameter client and the Diameter server; it is identified via the Session-Id AVP.</p> <p>Format:</p> <p>&lt;DiameterIdentity&gt;;&lt;high 32 bits&gt;;&lt;low 32 bits&gt;</p> <ul style="list-style-type: none"><li>&lt;DiameterIdentity&gt; is the configured origin host</li><li>&lt;high 32 bits&gt; are encoded as the Diameter initialization time (the number of seconds since 1 January, 1970)</li><li>&lt;low 32 bits&gt; are encoded as a sequentially increasing number starting at 1</li></ul> |

| AVP code | AVP name     | Description                                                                                                                                                 |
|----------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |              | Example:<br>bng.nokia.com;1326398325;1                                                                                                                      |
| 264      | Origin-Host  | Diameter Identity. As configured in the corresponding diameter-peer-policy<br>Example: bng.nokia.com                                                        |
| 268      | Result-Code  | Values:<br>2002 = Diameter Limited Success<br>5002 = Diameter Unknown Session ID<br>5012 = Diameter Unable To Comply - AVP parsing errors or message errors |
| 296      | Origin-Realm | Diameter Identity. As configured in the corresponding diameter-peer-policy<br>Example: nokia.com                                                            |

Table 27: Diameter Gy RAA: top level AVP format

| AVP code | AVP name     | Standard          | Data format       | Flags |
|----------|--------------|-------------------|-------------------|-------|
| 263      | Session-id   | RFC 6733          | UTF8 String       | M     |
| 264      | Origin-Host  | RFC 6733          | Diameter Identity | M     |
| 268      | Result-Code  | RFC 6733/RFC 4006 | Unsigned 32       | M     |
| 296      | Origin-Realm | RFC 6733          | Diameter Identity | M     |



## 7 Diameter Gy – Abort-Session-Request (ASR) command

### 7.1 Diameter Gy – ASR message format

This section describes the Diameter Gy ASR message format as defined in RFC 6733. Strikethrough formatted AVPs should not appear or are ignored in ASR.

An Abort-Session-Request message triggers a deletion of the Diameter session: an Abort-Session-Answer is generated, followed by a CCR-T. The corresponding subscriber host is deleted from the system.

```
<ASR> ::= < Diameter Header: 274, REQ, PXY >
        < Session-Id >
        { Origin-Host }
        { Origin-Realm }
        { Destination-Realm }
        { Destination-Host }
        { Auth-Application-Id }
        { User-Name }
{ Origin-State-Id }
* { Proxy-Info }
* { Route-Record }
* { AVP }
```

### 7.2 Diameter Gy – ASR message top level AVPs

[Table 28: Diameter Gy ASR: top level AVP description](#) provides a detailed description for each top level AVP present in a Diameter Gy ASR message.

Table 28: Diameter Gy ASR: top level AVP description

| AVP code | AVP name            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 258      | Auth-Application-Id | Fixed value: 4 = Diameter Credit Control Application                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 263      | Session-id          | <p>A session is a logical concept at the application layer that exists between the Diameter client and the Diameter server; it is identified via the Session-Id AVP.</p> <p>Format:</p> <p>&lt;DiameterIdentity&gt;;&lt;high 32 bits&gt;;&lt;low 32 bits&gt;</p> <ul style="list-style-type: none"><li>&lt;DiameterIdentity&gt; is the configured origin host</li><li>&lt;high 32 bits&gt; are encoded as the Diameter initialization time (the number of seconds since 1 Jan 1970)</li></ul> |

| AVP code | AVP name          | Description                                                                                                                                                                |
|----------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                   | <ul style="list-style-type: none"> <li>&lt;low 32 bits&gt; are encoded as a sequentially increasing number starting at 1</li> </ul> Example:<br>bng.nokia.com;1326398325;1 |
| 264      | Origin-Host       | Diameter Identity. Used as destination host in the next Diameter message.<br>Example: server.nokia.com                                                                     |
| 283      | Destination-Realm | Diameter Identity.<br>Example: nokia.com                                                                                                                                   |
| 293      | Destination-Host  | Diameter Identity.<br>Example: bng.nokia.com                                                                                                                               |
| 296      | Origin-Realm      | Diameter Identity. Used as destination realm in the next Diameter message.<br>Example: nokia.com                                                                           |

Table 29: Diameter Gy ASR: top level AVP format

| AVP code | AVP name            | Standard          | Data format       | Flags |
|----------|---------------------|-------------------|-------------------|-------|
| 258      | Auth-Application-Id | RFC 6733/RFC 4006 | Unsigned 32       | M     |
| 263      | Session-id          | RFC 6733          | UTF8 String       | M     |
| 264      | Origin-Host         | RFC 6733          | Diameter Identity | M     |
| 283      | Destination-Realm   | RFC 6733          | Diameter Identity | M     |
| 293      | Destination-Host    | RFC 6733          | Diameter Identity | M     |
| 296      | Origin-Realm        | RFC 6733          | Diameter Identity | M     |

## 8 Diameter Gy – Abort-Session-Answer (ASA) command

### 8.1 Diameter Gy – ASA message format

This section describes the Diameter Gy ASA message format as defined in RFC 6733. Strikethrough formatted AVPs are not included in ASA.

```
<ASA> ::= < Diameter Header: 274, PXY >
        < Session-Id >
        { Result-Code }
        { Origin-Host }
        { Origin-Realm }
        { User-Name }
{ Origin-State-Id }
{ Error-Message }
{ Error-Reporting-Host }
{ Failed-AVP }
        * { Redirect-Host }
{ Redirect-Host-Usage }
{ Redirect-Max-Cache-Time }
        * { Proxy-Info }
        * { AVP }
```

### 8.2 Diameter Gy – ASA message top level AVPs

[Table 30: Diameter Gy ASA: top level AVP description](#) provides a detailed description for each top level AVP present in a Diameter Gy ASA message.

Table 30: Diameter Gy ASA: top level AVP description

| AVP code | AVP name   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 263      | Session-id | <p>A session is a logical concept at the application layer that exists between the Diameter client and the Diameter server; it is identified via the Session-Id AVP.</p> <p>Format:</p> <p>&lt;DiameterIdentity&gt;;&lt;high 32 bits&gt;;&lt;low 32 bits&gt;</p> <ul style="list-style-type: none"><li>&lt;DiameterIdentity&gt; is the configured origin host</li><li>&lt;high 32 bits&gt; are encoded as the Diameter initialization time (the number of seconds since 1 Jan 1970)</li><li>&lt;low 32 bits&gt; are encoded as a sequentially increasing number starting at 1</li></ul> |

| AVP code | AVP name     | Description                                                                                                                                                 |
|----------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |              | Example:<br>bng.nokia.com;1326398325;1                                                                                                                      |
| 264      | Origin-Host  | Diameter Identity. As configured in the corresponding diameter-peer-policy<br>Example: bng.nokia.com                                                        |
| 268      | Result-Code  | Values:<br>2002 = Diameter Limited Success<br>5002 = Diameter Unknown Session ID<br>5012 = Diameter Unable To Comply — AVP parsing errors or message errors |
| 296      | Origin-Realm | Diameter Identity. As configured in the corresponding diameter-peer-policy<br>Example: nokia.com                                                            |

Table 31: Diameter Gy ASA: top level AVP format

| AVP code | AVP name     | Standard          | Data format       | Flags |
|----------|--------------|-------------------|-------------------|-------|
| 263      | Session-id   | RFC 6733          | UTF8 String       | M     |
| 264      | Origin-Host  | RFC 6733          | Diameter Identity | M     |
| 268      | Result-Code  | RFC 6733/RFC 4006 | Unsigned 32       | M     |
| 296      | Origin-Realm | RFC 6733          | Diameter Identity | M     |

## 9 Standards and protocol support

**Note:**

The information provided in this chapter is subject to change without notice and may not apply to all platforms.

Nokia assumes no responsibility for inaccuracies.

### 9.1 Access Node Control Protocol (ANCP)

draft-ietf-ancp-protocol-02, *Protocol for Access Node Control Mechanism in Broadband Networks*

RFC 5851, *Framework and Requirements for an Access Node Control Mechanism in Broadband Multi-Service Networks*

### 9.2 Bidirectional Forwarding Detection (BFD)

draft-ietf-lsr-ospf-bfd-strict-mode-10, *OSPF BFD Strict-Mode*

RFC 5880, *Bidirectional Forwarding Detection (BFD)*

RFC 5881, *Bidirectional Forwarding Detection (BFD) IPv4 and IPv6 (Single Hop)*

RFC 5882, *Generic Application of Bidirectional Forwarding Detection (BFD)*

RFC 5883, *Bidirectional Forwarding Detection (BFD) for Multihop Paths*

RFC 7130, *Bidirectional Forwarding Detection (BFD) on Link Aggregation Group (LAG) Interfaces*

RFC 7880, *Seamless Bidirectional Forwarding Detection (S-BFD)*

RFC 7881, *Seamless Bidirectional Forwarding Detection (S-BFD) for IPv4, IPv6, and MPLS*

RFC 7883, *Advertising Seamless Bidirectional Forwarding Detection (S-BFD) Discriminators in IS-IS*

RFC 7884, *OSPF Extensions to Advertise Seamless Bidirectional Forwarding Detection (S-BFD) Target Discriminators*

RFC 9247, *BGP - Link State (BGP-LS) Extensions for Seamless Bidirectional Forwarding Detection (S-BFD)*

### 9.3 Border Gateway Protocol (BGP)

draft-gredler-idr-bgplu-epe-14, *Egress Peer Engineering using BGP-LU*

draft-hares-idr-update-attr-low-bits-fix-01, *Update Attribute Flag Low Bits Clarification*

draft-ietf-idr-add-paths-guidelines-08, *Best Practices for Advertisement of Multiple Paths in IBGP*

draft-ietf-idr-best-external-03, *Advertisement of the best external route in BGP*

draft-ietf-idr-bgp-flowspec-oid-03, *Revised Validation Procedure for BGP Flow Specifications*  
draft-ietf-idr-bgp-gr-notification-01, *Notification Message support for BGP Graceful Restart*  
draft-ietf-idr-bgp-ls-app-specific-attr-16, *Application-Specific Attributes Advertisement with BGP Link-State*  
draft-ietf-idr-bgp-ls-flex-algo-06, *Flexible Algorithm Definition Advertisement with BGP Link-State*  
draft-ietf-idr-bgp-optimal-route-reflection-10, *BGP Optimal Route Reflection (BGP-ORR)*  
draft-ietf-idr-error-handling-03, *Revised Error Handling for BGP UPDATE Messages*  
draft-ietf-idr-flowspec-interfaceset-03, *Applying BGP flowspec rules on a specific interface set*  
draft-ietf-idr-flowspec-path-redirect-05, *Flowspec Indirection-id Redirect – localised ID*  
draft-ietf-idr-flowspec-redirect-ip-02, *BGP Flow-Spec Redirect to IP Action*  
draft-ietf-idr-link-bandwidth-03, *BGP Link Bandwidth Extended Community*  
RFC 1772, *Application of the Border Gateway Protocol in the Internet*  
RFC 1997, *BGP Communities Attribute*  
RFC 2385, *Protection of BGP Sessions via the TCP MD5 Signature Option*  
RFC 2439, *BGP Route Flap Damping*  
RFC 2545, *Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing*  
RFC 2858, *Multiprotocol Extensions for BGP-4*  
RFC 2918, *Route Refresh Capability for BGP-4*  
RFC 4271, *A Border Gateway Protocol 4 (BGP-4)*  
RFC 4360, *BGP Extended Communities Attribute*  
RFC 4364, *BGP/MPLS IP Virtual Private Networks (VPNs)*  
RFC 4456, *BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)*  
RFC 4486, *Subcodes for BGP Cease Notification Message*  
RFC 4659, *BGP-MPLS IP Virtual Private Network (VPN) Extension for IPv6 VPN*  
RFC 4684, *Constrained Route Distribution for Border Gateway Protocol/MultiProtocol Label Switching (BGP/MPLS) Internet Protocol (IP) Virtual Private Networks (VPNs)*  
RFC 4724, *Graceful Restart Mechanism for BGP – helper mode*  
RFC 4760, *Multiprotocol Extensions for BGP-4*  
RFC 4798, *Connecting IPv6 Islands over IPv4 MPLS Using IPv6 Provider Edge Routers (6PE)*  
RFC 5004, *Avoid BGP Best Path Transitions from One External to Another*  
RFC 5065, *Autonomous System Confederations for BGP*  
RFC 5291, *Outbound Route Filtering Capability for BGP-4*  
RFC 5396, *Textual Representation of Autonomous System (AS) Numbers – asplain*  
RFC 5492, *Capabilities Advertisement with BGP-4*  
RFC 5668, *4-Octet AS Specific BGP Extended Community*  
RFC 6286, *Autonomous-System-Wide Unique BGP Identifier for BGP-4*  
RFC 6368, *Internal BGP as the Provider/Customer Edge Protocol for BGP/MPLS IP Virtual Private Networks (VPNs)*

RFC 6793, *BGP Support for Four-Octet Autonomous System (AS) Number Space*  
RFC 6810, *The Resource Public Key Infrastructure (RPKI) to Router Protocol*  
RFC 6811, *Prefix Origin Validation*  
RFC 6996, *Autonomous System (AS) Reservation for Private Use*  
RFC 7311, *The Accumulated IGP Metric Attribute for BGP*  
RFC 7606, *Revised Error Handling for BGP UPDATE Messages*  
RFC 7607, *Codification of AS 0 Processing*  
RFC 7674, *Clarification of the Flowspec Redirect Extended Community*  
RFC 7854, *BGP Monitoring Protocol (BMP)*  
RFC 7911, *Advertisement of Multiple Paths in BGP*  
RFC 7999, *BLACKHOLE Community*  
RFC 8092, *BGP Large Communities Attribute*  
RFC 8097, *BGP Prefix Origin Validation State Extended Community*  
RFC 8212, *Default External BGP (EBGP) Route Propagation Behavior without Policies*  
RFC 8277, *Using BGP to Bind MPLS Labels to Address Prefixes*  
RFC 8571, *BGP - Link State (BGP-LS) Advertisement of IGP Traffic Engineering Performance Metric Extensions*  
RFC 8950, *Advertising IPv4 Network Layer Reachability Information (NLRI) with an IPv6 Next Hop*  
RFC 8955, *Dissemination of Flow Specification Rules*  
RFC 8956, *Dissemination of Flow Specification Rules for IPv6*  
RFC 9086, *Border Gateway Protocol - Link State (BGP-LS) Extensions for Segment Routing BGP Egress Peer Engineering*  
RFC 9494, *Long-Lived Graceful Restart for BGP*  
RFC 9552, *Distribution of Link-State and Traffic Engineering Information Using BGP*

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openconfig-bfd.yang version 0.2.2, *OpenConfig BFD Model*

openconfig-bgp.yang version 6.1.0, *OpenConfig BGP Model*

openconfig-bgp-common.yang version 6.0.0, *OpenConfig BGP Common Model*

openconfig-bgp-common-multiprotocol.yang version 6.0.0, *OpenConfig BGP Common Multiprotocol Model*

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openconfig-bgp-global.yang version 6.0.0, *OpenConfig BGP Global Model*

openconfig-bgp-neighbor.yang version 6.1.0, *OpenConfig BGP Neighbor Model*

openconfig-bgp-peer-group.yang version 6.1.0, *OpenConfig BGP Peer Group Model*

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openconfig-if-aggregate.yang version 2.4.3, *OpenConfig Interfaces Aggregated Model*

openconfig-if-ethernet.yang version 2.12.2, *OpenConfig Interfaces Ethernet Model*

openconfig-if-ip.yang version 3.1.0, *OpenConfig Interfaces IP Model*

openconfig-if-ip-ext.yang version 2.3.1, *OpenConfig Interfaces IP Extensions Model*

openconfig-igmp.yang version 0.3.1, *OpenConfig IGMP Model*

openconfig-interfaces.yang version 3.0.0, *OpenConfig Interfaces Model*

openconfig-isis.yang version 1.1.0, *OpenConfig IS-IS Model*

openconfig-isis-policy.yang version 0.5.0, *OpenConfig IS-IS Policy Model*

openconfig-isis-routing.yang version 1.1.0, *OpenConfig IS-IS Routing Model*

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openconfig-lldp.yang version 0.1.0, *OpenConfig LLDP Model*

openconfig-local-routing.yang version 1.2.0, *OpenConfig Local Routing Model*

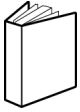
openconfig-mpls.yang version 2.3.0, *OpenConfig MPLS Model*

openconfig-mpls-ldp.yang version 3.0.2, *OpenConfig MPLS LDP Model*



openconfig-mpls-rsvp.yang version 2.3.0, *OpenConfig MPLS RSVP Model*  
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openconfig-network-instance.yang version 1.1.0, *OpenConfig Network Instance Model*  
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openconfig-pim.yang version 0.4.3, *OpenConfig PIM Model*  
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openconfig-platform-fan.yang version 0.1.1, *OpenConfig Platform Fan Model*  
openconfig-platform-linecard.yang version 0.1.2, *OpenConfig Platform Linecard Model*  
openconfig-platform-port.yang version 0.4.2, *OpenConfig Port Model*  
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openconfig-procmon.yang version 0.4.0, *OpenConfig Process Monitoring Model*  
openconfig-relay-agent.yang version 0.1.0, *OpenConfig Relay Agent Model*  
openconfig-routing-policy.yang version 3.0.0, *OpenConfig Routing Policy Model*  
openconfig-rsvp-sr-ext.yang version 0.1.0, *OpenConfig RSVP-TE and SR Extensions Model*  
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openconfig-system-grpc.yang version 1.0.0, *OpenConfig System gRPC Model*  
openconfig-system-logging.yang version 0.3.1, *OpenConfig System Logging Model*  
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openconfig-telemetry.yang version 0.5.0, *OpenConfig Telemetry Model*  
openconfig-terminal-device.yang version 1.9.0, *OpenConfig Terminal Device Model*  
openconfig-vlan.yang version 2.0.0, *OpenConfig VLAN Model*

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