

IPWorks AAA Server-AAA Clients Gi Interface

INTERWORK DESCRIPTION

Copyright

© Ericsson AB 2014. All rights reserved. No part of this document may be reproduced in any form without the written permission of the copyright owner.

Disclaimer

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Ericsson shall have no liability for any error or damage of any kind resulting from the use of this document.

Trademark List

All trademarks mentioned herein are the property of their respective owners. These are shown in the document Trademark Information.



Contents

| | | |
|----------|--|-----------|
| 1 | Introduction | 1 |
| 1.1 | Prerequisites | 1 |
| 1.2 | Related Information | 1 |
| 2 | Interface Overview | 3 |
| 2.1 | Interface Role | 3 |
| 2.2 | Services | 3 |
| 2.3 | Encapsulation and Addressing | 4 |
| 3 | Procedures | 5 |
| 3.1 | Authentication/Authorization | 5 |
| 3.2 | Accounting | 6 |
| 3.3 | Disconnect | 7 |
| 3.4 | Change-of-Authorization | 8 |
| 3.5 | Proxy | 8 |
| 4 | Information Model | 11 |
| 4.1 | Authentication/Authorization | 11 |
| 4.2 | Accounting Messages | 13 |
| 4.3 | Dynamic Authorization Extension Messages | 17 |
| 5 | Information Elements | 19 |
| 5.1 | 3GPP Vendor Specific Sub Attributes | 19 |
| 5.2 | Access-Control-Group Sub Attributes | 21 |
| 5.3 | Radius-Supported-VSA Related Messages | 21 |
| 5.4 | Suggested-Rule-Space Sub Attributes | 44 |
| 6 | Error Handling | 45 |
| 7 | Formal Syntax | 47 |
| 8 | Related Standards | 49 |
| | Reference List | 51 |





1 Introduction

This document describes the (GGSN-to-PDN) Gi interface between the IPWorks AAA Server and the AAA Clients.

Scope

- Interface Overview
- Procedures
- Information Model
- Information Elements
- Error Handling
- Formal Syntax
- Related Standards

Target Groups

This document is intended for personnel needing to understand the logical entity, including interfaces and protocols, of the IPWorks.

1.1 Prerequisites

Not Applicable

1.2 Related Information

Trademark information, typographic conventions, definition and explanation of acronyms and terminology can be found in the following documents:

- Trademark Information, Reference [1]
- Glossary of Terms and Acronyms, Reference [2]
- Typographic Conventions, Reference [3]





2 Interface Overview

This section describes the interface between the IPWorks AAA Server and the AAA Clients, as shown in Figure 1.

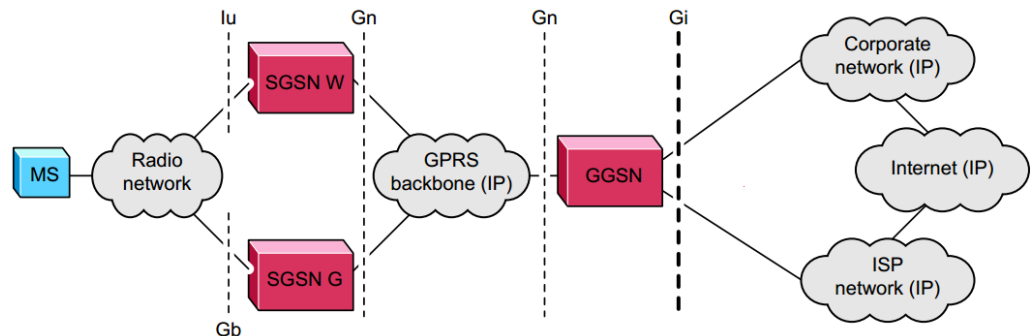


Figure 1 Gi Interface Overview

2.1 Interface Role

This section describes the role of the Gi interface in the GPRS network.

2.2 Services

This section describes the services the Gi interface offers.

The services offered by the Gi interface are shown in Table 1.

Table 1 Offered Services

| Offered Service | Description |
|---|--|
| Authentication, Authorization, and Accounting | <ul style="list-style-type: none"> IPWorks AAA Server uses the RADIUS protocol to realize the authentication, authorization, and accounting functionalities. These functionalities are widely used in the fixed, mobile access networks, and some other scenarios. IPWorks AAA Server uses the RADIUS protocol to communicate with the Network Access Server (NAS), which is based on the IETF and 3GPP Standard, see the references from Reference [5] to Reference [13] and it supports the Ericsson GGSN 2009A Gi interface as well, see Reference [4]. |



2.3 Encapsulation and Addressing

This section describes what lower level protocol this Gi interface uses as described in Figure 2.

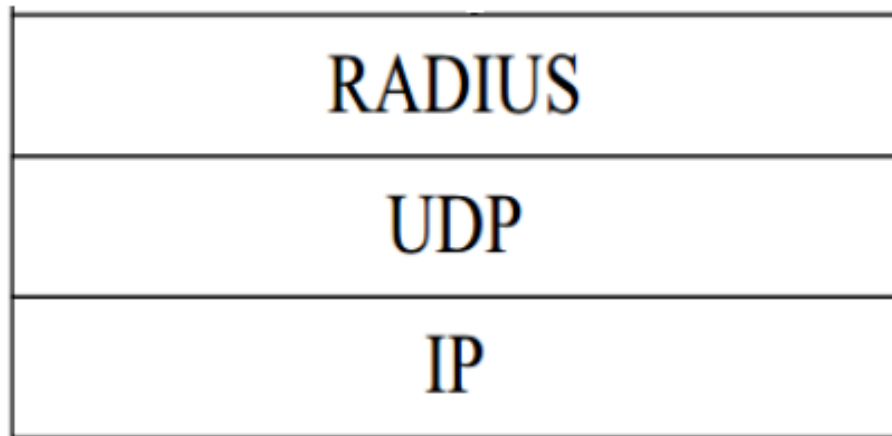


Figure 2 Protocol Stack



3 Procedures

This section describes the procedures used in connection with the offered and used interfaces of IPWorks.

3.1 Authentication/Authorization

IPWorks AAA server Authentication/Authorization interface is based on RFC 2865, which is carried over UDP/IP.

The IPWorks AAA Server listens on port 1812 by default, and it can be configured when necessary.

Figure 3 describes the authentication and authorization procedure:



Figure 3 IPWorks AAA Server Authentication and Authorization

The detailed procedure is listed as follows:

1. The RADIUS client (NAS) creates an Access-Request and sends to the AAA Server.

The Access-Request includes the following attributes:

- User Name
- Password
- Client Identity
- Other Attributes

2. The AAA server receives Access-Request from NAS and replies NAS with Access-Accept or Access-Reject according to the validation result.

3.2 Accounting

The AAA Accounting is known as RADIUS Accounting specified in RFC 2866, UDP/IP is used as the transport layer protocol.

The AAA Accounting listens on port 1813 by default, and it can be configured when necessary.

Figure 4 describes the accounting procedure:

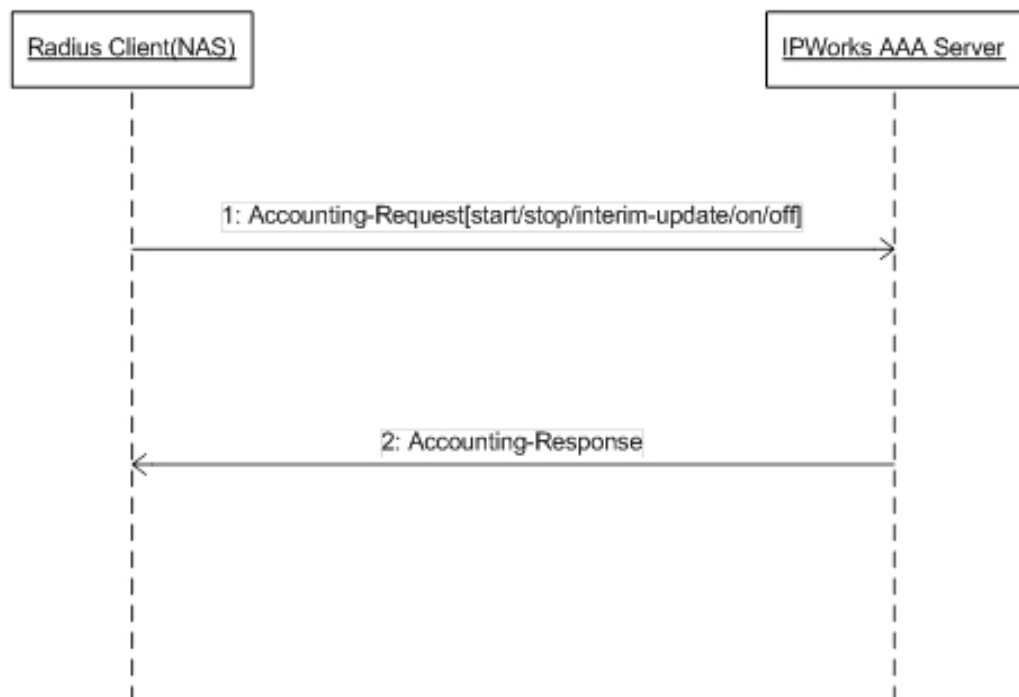


Figure 4 IPWorks AAA Server Accounting Procedure

The detailed procedure is listed as follows:

1. The RADIUS Client (NAS) sends Accounting-Request to the IPWorks AAA server.
 - NAS generates an Accounting Start packet **in the beginning of the service delivery**.
 - NAS sends an Accounting Stop packet to the AAA server **at the end of the service delivery**.
 - NAS continually sends an Accounting interim-update packet to the AAA Server to update the accounting information **during the service delivery period**.
 - When a startup/shutdown happens in the NAS, it triggers an Accounting on/off packet to the AAA Server and the AAA Server releases the relevant resources.



2. Upon successfully recording/processing the Accounting Request from NAS client, the AAA Server sends the Accounting-Response ACK to the client, otherwise, it does not send back ACK to the client.

3.3 Disconnect

The DAS is the entity receiving CoA-Request or Disconnect-Request packets, which is a NAS or a RADIUS proxy.

The protocol used between DAS and IPWorks AAA is based on RFC 5176, which is over UDP/IP. The default destination UDP port of DAS to listen for either Disconnect Request or CoA Request is 3799, and it can be configured when necessary.

Figure 5 describes the disconnect procedure:

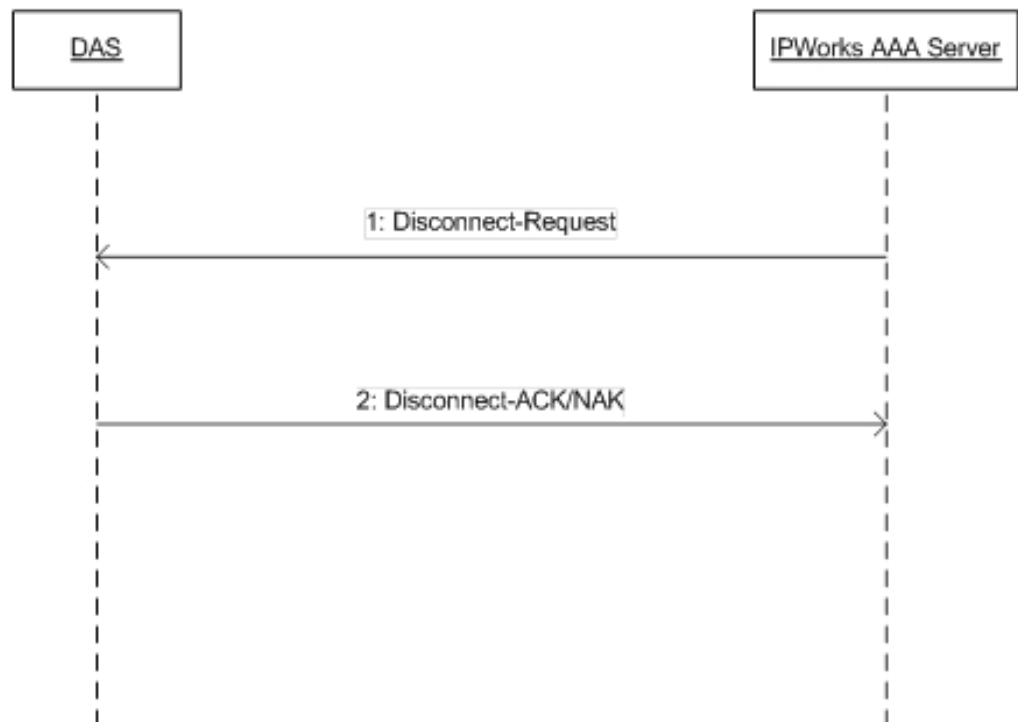


Figure 5 IPWorks AAA Server Disconnect Procedure

1. IPWorks AAA Server sends a Disconnect-Request to DAS/NAS to terminate the user sessions on a NAS.
2. The DAS/NAS responds to the Disconnect-Request sent by the AAA Server with a Disconnect-ACK/NAK if DAS/NAS is able/unable to terminate all the related sessions.

3.4 Change-of-Authorization

The protocol of Change-of-Authorization (CoA) is the same as Disconnect, see Section 3.2 on page 5.

Figure 6 describes the Change-of-Authorization procedure:

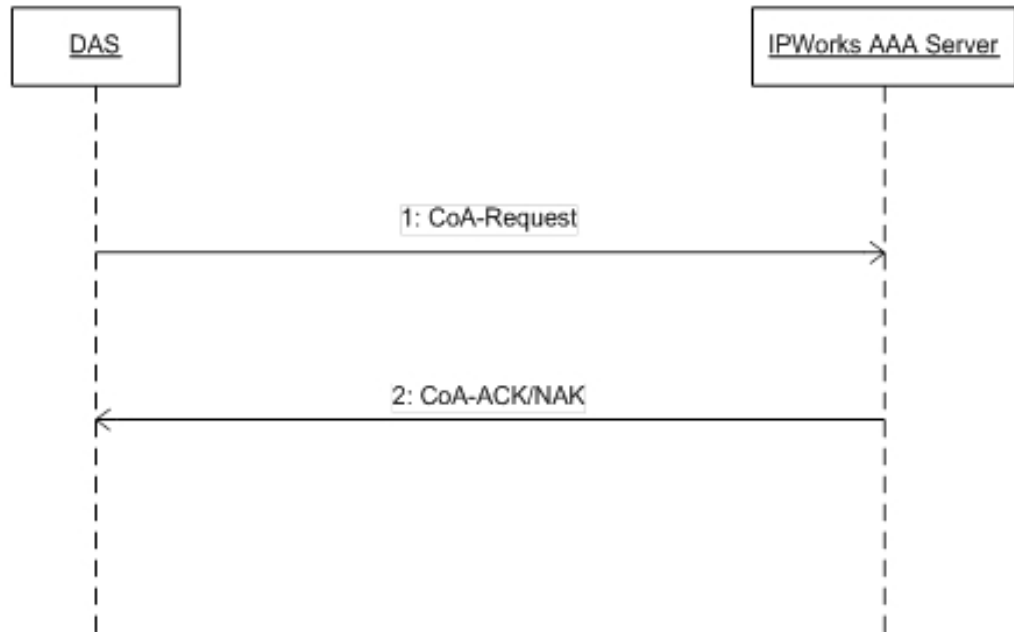


Figure 6 IPWorks AAA Server CoA Procedure

1. IPWorks AAA Server sends CoA-Request to DAS/NAS, which contains information for dynamically changing session authorizations.
2. The DAS/NAS replies the AAA server with a CoA-ACK/NAK if DAS/NAS is able/unable to change the authorization for the related user sessions.

3.5 Proxy

As a Proxy Server, IPWorks AAA Server acts as both RADIUS Server and Client, except the interface with RADIUS Client (NAS), it's able to forward these messages (as specified above) to remote AAA Home Server as well.

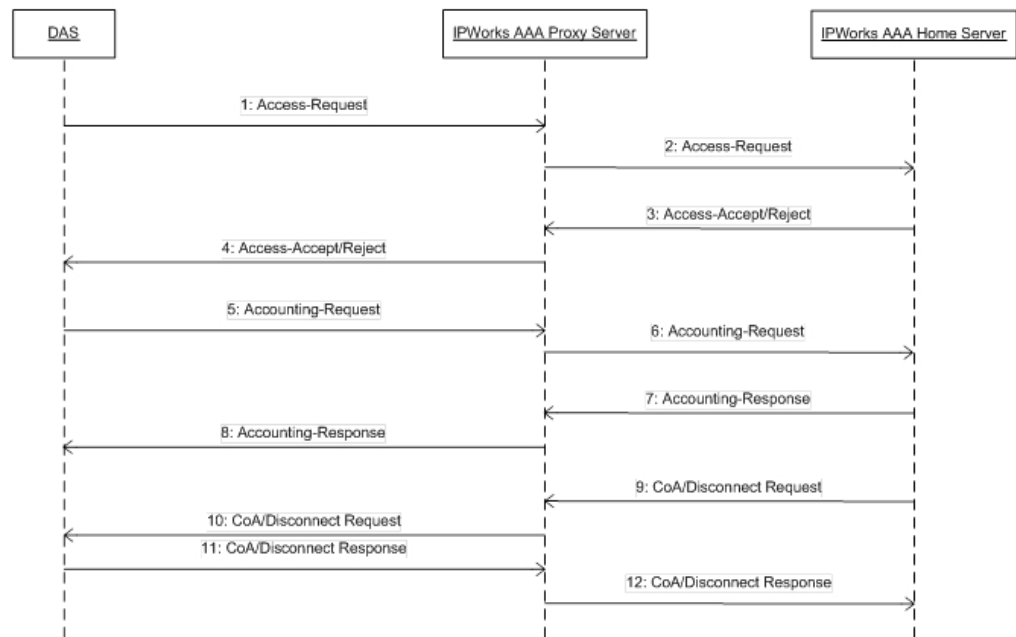


Figure 7 IPWorks AAA Proxy Server Procedure





4 Information Model

This section describes the information model, including mandatory and optional parameters of each service operation.

The presence of an information element is defined in the P column as follows:

- M Mandatory
- C Conditional
- O Optional

4.1 Authentication/Authorization

This section describes the content of messages (Access-Request, Access-Accept, Access-Reject) involved in the Authentication/Authorization procedure.

The procedure follows the basic RADIUS Message format as specified in RFC 2865. The attributes that IPWorks AAA supports in this message are specified in RFC 2865, RFC 2868, RFC 3162 and 3GPP TS 29.061 as well as in the Ericsson GGSN 2009A Gi Interface.

4.1.1 Access-Request Message

The Access-Request message is sent from RADIUS Client (NAS) to IPWorks AAA Server.

Table 2 describes the significant attributes for the Access-Request Message:

Table 2 Access-Request Message

| Attr # | Element | Type | P | Description |
|--------|--------------------|---------------|---|---|
| 1 | Username | String | M | It indicates the name of the user to be authenticated. |
| 2 | User-Password | String | C | Users must provide the user password if PAP is used. ⁽¹⁾ |
| 3 | CHAP-Password | String | C | Users must provide the user password if CHAP is used. ⁽¹⁾ |
| 4 | NAS-IP-Address | Address(IPv4) | M | It is the IP address of the NAS for communication with the RA. |
| 5 | NAS-Port | String | O | It is a configurable value for Access-Request. |
| 32 | NAS-Identifier | String | M | It is the hostname of the NAS for communication with the RA. |
| 6 | Service-Type | Integer | M | It indicates the type of service for this user. |
| 7 | Framed-Protocol | Integer | M | It indicates the type of protocol for this user. |
| 8 | Framed-IP-Address | Address(IPv4) | C | It is the IP address allocated for this user. ⁽²⁾ |
| 97 | Framed-IPv6-Prefix | Address(IPv6) | C | It is the IPv6 address prefix allocated for this user. ⁽³⁾ |



Table 2 Access-Request Message

| Attr # | Element | Type | P | Description |
|----------|----------------------|--------------------|---|--|
| 30 | Called-Station-Id | String | O | It is the phone number the user called or the identifier for the target network. |
| 31 | Calling-Station-Id | String | O | It is the phone number where the call came from. |
| 44 | Acct-Session-Id | String | O | It is the user session identifier. |
| 60 | CHAP-Challenge | String | C | CHAP-Challenge is mandatory if CHAP is used. ⁽⁴⁾ |
| 61 | NAS-Port-Type | Integer | M | It is the type of physical port used by NAS. |
| 26/10415 | 3GPP Vendor-Specific | See Reference [11] | O | See Reference [11] for the sub attributes description. |

(1) User Password is present when PAP is used.

(2) IPWorks AAA considers it as a hint address when allocating an IP address.

(3) IPWorks AAA considers it as a hint IPv6 prefix when allocating an IPv6 prefix.

(4) Challenge is present when CHAP is used.

4.1.2 Access-Accept Message

The Access-Accept message is sent to RADIUS Client (NAS) from IPWorks AAA Server.

Table 3 describes only the significant attributes for the Access-Accept Message:

Table 3 Access-Accept Message

| Attr # | Element | Type | P | Description |
|--------|-----------------------|---------------|---|---|
| 6 | Service-Type | Integer | O | It indicates the type of service for this user. |
| 7 | Framed-Protocol | Integer | O | It indicates the type of protocol for this user. |
| 8 | Framed-IP-Address | Address(IPv4) | O | It is the IP address allocated for this user, if the RADIUS server is used to allocate an IP address. |
| 9 | Framed-IP-Netmask | Address(IPv4) | O | It is the netmask for the user IP address, if the RADIUS server is used to allocate IP netmask. |
| 25 | Class | String | O | It is the identifier to be used in all subsequent accounting messages. |
| 27 | Session-Timeout | Integer | O | It is the timeout value for the session |
| 28 | Idle-Timeout | Integer | O | It is the timeout value for idle session |
| 30 | Called-Station-Id | String | O | It is the phone number the user called or the identifier for target network. |
| 88 | Framed-Pool | String | O | It is the name of a local pool to be used for address allocation. |
| 97 | Framed-IPv6-Prefix | Address(IPv6) | O | It might contain IPv6 address prefixes. |
| 100 | Framed-IPv6-Pool | String | O | It is the name of a local pool to be used for address allocation. |
| 26/311 | MS-Primary-DNS-server | Address(IPv4) | O | It contains the primary DNS server address |



Table 3 Access-Accept Message

| Attr # | Element | Type | P | Description |
|----------|--------------------------|---------------|---|---|
| 26/311 | MS-Secondary-DNS-Server | Address(IPv4) | O | It contains the secondary DNS server address |
| 26/311 | MS-Primary-NBNS-Server | Address(IPv4) | O | It contains the primary NetBios name server address |
| 26/311 | MS-Secondary-NBNS-Server | Address(IPv4) | O | It contains the secondary NetBios server address |
| 26/10923 | Suggested-Rule-Space | See Table 15 | O | See Table 15 for the sub attributes description. |
| 26/10923 | Access-control-group | See Table 13 | O | See Table 13 for the sub attributes description. |
| 26/10415 | 3GPP Vendor-Specific | See Table 12 | O | See Table 12 for the sub attributes description. |

4.1.3 Access-Reject Message

The Access-Reject message is sent to RADIUS Client (NAS) from IPWorks AAA Server.

Table 4 describes the significant attributes for the Access-Reject Messages:

Table 4 Access-Reject Message

| Attr # | Element | Type | P | Description |
|--------|---------------|------|---|------------------------------------|
| 18 | Reply-Message | Text | O | The text is displayed to the user. |

4.2 Accounting Messages

This section describes the content of IPWorks AAA Accounting Messages.

The message format follows the standard RADIUS protocol as specified in Reference [6], and the attributes supported by these messages are specified in Reference [6], Reference [7], Reference [10] and Reference [13].

4.2.1 Accounting-Request (Start) Message

The Accounting-Request (Start) message is sent from RADIUS Client (NAS) to IPWorks AAA Server.

Table 5 describes the significant attributes for the Accounting-Request (Start) Message:



Table 5 Accounting-Request (Start) Message

| Attr # | Element | Type | P | Description |
|----------|----------------------|---------------|---|--|
| 1 | User-Name | String | C | It indicates the name of the user to be authenticated. |
| 4 | NAS-IP-Address | Address(IPv4) | M | It is the NAS IP Address for communication with AAA Server. |
| 5 | NAS-Port | String | O | It is A configurable value for Accounting-Requests. |
| 32 | NAS-Identifier | String | M | It is the hostname of the NAS for communication with AAA server. |
| 6 | Service-Type | Integer | M | It indicates the type of service for this user. |
| 7 | Framed-Protocol | Integer | M | It indicates the type of protocol for this user. |
| 8 | Framed-IP-Address | Address(IPv4) | C | It is the User IP Address. ⁽¹⁾ |
| 97 | Framed-IPv6-Prefix | Address(IPv6) | C | It is the User IPv6 prefix ⁽¹⁾ . |
| 25 | Class | String | C | Received in the access accept. ⁽²⁾ |
| 30 | Called-Station-Id | String | O | It is the phone number the user called or the identifier of the network. |
| 31 | Calling-Station-Id | String | O | It is the phone number that the call came from. |
| 40 | Acct-Status-Type | Integer | M | It is the type of accounting message, in this message it is 1 (Start). |
| 41 | Acct-Delay-Time | Integer | M | It indicates how long the NAS has been trying to start the session for, and can be subtracted from the time of arrival of the message to find the approximate time in seconds of the event of this Accounting-Request. |
| 44 | Acct-Session-Id | String | M | It is the user session identifier. |
| 45 | Acct-Authentic | Integer | M | It is the authentication method, 1(RADIUS) or 2(LDAP). |
| 46 | Acct-Session-Time | Integer | O | It is the number of seconds that the user has received service. |
| 61 | NAS-Port-Type | Integer | M | It is the type of physical port used by NAS. |
| 26/10415 | 3GPP Vendor-Specific | See Table 12 | O | See Table 12 for the sub attributes description. |

(1) Either IPv4 address or IPv6 prefix is present.

(2) The presence of this attribute is conditional upon it being received in the Access-Accept message.

4.2.2 Accounting-Request (Stop) Message

The Accounting-Request (Stop) message is sent from RADIUS Client (NAS) to IPWorks AAA Server.

Table 6 describes the significant attributes for the Accounting-Request (Stop) Message:

Table 6 Accounting-Request (Stop) Message

| Attr # | Element | Type | P | Description |
|--------|----------------|---------------|---|--|
| 1 | User-Name | String | C | It indicates the name of the user to be authenticated. |
| 4 | NAS-IP-Address | Address(IPv4) | M | The NAS IP Address for communication with AAA Server. |
| 5 | NAS-Port | String | O | It is a configurable value for Accounting-Requests. |



Table 6 Accounting-Request (Stop) Message

| Attr # | Element | Type | P | Description |
|----------|----------------------|---------------|---|---|
| 32 | NAS-Identifier | String | M | It is the hostname of the NAS for communication with the server |
| 6 | Service-Type | Integer | M | It indicates the type of service for this user. |
| 7 | Framed-Protocol | Integer | M | It indicates the type of protocol for this user. |
| 8 | Framed-IP-Address | Address(IPv4) | C | It is the User IP Address. ⁽¹⁾ |
| 97 | Framed-IPv6-Prefix | Address(IPv6) | C | User IPv6 prefix. ⁽¹⁾ |
| 25 | Class | String | C | It is received in the access accept. ⁽²⁾ |
| 30 | Called-Station-Id | String | O | It is the phone number the user called or the number of the network. |
| 31 | Calling-Station-Id | String | O | It is the phone number where the call came from. |
| 40 | Acct-Status-Type | Integer | M | It is the type of accounting message, in this message it is 2 (Stop). |
| 41 | Acct-Delay-Time | Integer | M | It indicates how long the NAS has been trying to establish the session for, and can be subtracted from the time of arrival to find the approximate time in seconds of the start of this Accounting-Request. |
| 42 | Acct-Input-Octets | Integer | O | It indicates how many octets have been received by the user of this service being provided. |
| 43 | Acct-Output-Octets | Integer | O | It indicates how many octets have been sent by the user delivering this service. |
| 44 | Acct-Session-Id | String | M | It is the User session identifier. |
| 45 | Acct-Authentic | Integer | M | It is the authentication method, 1(RADIUS) or 2(RADIUS over IPsec). |
| 46 | Acct-Session-Time | Integer | O | It is the number of seconds that the user has received the service. |
| 47 | Acct-Input-Packets | Integer | O | This attribute indicates how many packets have been received by the user the course of this service being provided to a user. |
| 48 | Acct-Output-Packets | Integer | O | It indicates how many packets have been sent by the user delivering this service to a user. |
| 49 | Acct-Terminate-Cause | Integer | M | It indicates how the session was terminated. |
| 61 | NAS-Port-Type | Integer | M | It is the type of physical port used by NAS. |
| 26/10415 | 3GPP Vendor-Specific | See Table 12 | O | See Table 12 for the sub attributes description and the bbf |

(1) Either IPv4 address or IPv6 prefix is present.

(2) The presence of this attribute is conditional upon it being received in the Access-Accept message.

4.2.3 Accounting-Request (On) Message

The Accounting-Request (On) message is sent from RADIUS Client (NAS) to IPWorks AAA Server.

Table 7 describes the significant attributes for the Accounting-Request (On) Message:



Table 7 Accounting-Request (On) Message

| Attr # | Element | Type | P | Description |
|--------|-------------------|---------------|---|--|
| 4 | NAS-IP-Address | Address(IPv4) | M | It is the NAS IP Address for communication with AAA Server |
| 30 | Called-Station-Id | String | C | It is the phone number the user called or the identifier for the target network. |
| 32 | NAS-Identifier | String | M | It is the hostname of the NAS for communication with the AAA server |
| 40 | Acct-Status-Type | Integer | M | It is the type of accounting message, in this message, the content is 7 (Accounting-On). |
| 44 | Acct-Session-Id | String | M | It is the user session identifier. |

4.2.4 Accounting-Request (Off) Message

The Accounting-Request (Off) message is sent from RADIUS Client (NAS) to IPWorks AAA Server.

Table 8 describes the significant attributes for the Accounting-Request (Off) Message:

Table 8 Accounting-Request (Off) Message

| Attr # | Element | Type | P | Description |
|--------|-------------------|---------------|---|---|
| 4 | NAS-IP-Address | Address(IPv4) | M | It is the NAS IP Address for communication with AAA Server |
| 30 | Called-Station-Id | String | C | It is the phone number the user called or the identifier for the target network. |
| 32 | NAS-Identifier | String | M | It is the hostname of the NAS for communication with the AAA server |
| 40 | Acct-Status-Type | Integer | M | It is the type of accounting message, in this message, the content is 8 (Accounting-Off). |
| 44 | Acct-Session-Id | String | M | It is the user session identifier. |

4.2.5 Accounting-Request (Interim-Update) Message

The Accounting-Request (Interim-Update) message is sent from RADIUS Client (NAS) to IPWorks AAA Server.

Table 9 describes the significant attributes for the Accounting-Request (Interim-Update) Message:

Table 9 Accounting-Request (Interim-Update) Message

| Attr # | Element | Type | P | Description |
|--------|----------------|---------------|---|--|
| 1 | User-Name | String | C | It indicates the name of the user to be authenticated. |
| 4 | NAS-IP-Address | Address(IPv4) | M | It is the NAS IP Address for communication with AAA Server |
| 5 | NAS-Port | String | O | It is a configurable value for Accounting-Requests |



Table 9 Accounting-Request (Interim-Update) Message

| Attr # | Element | Type | P | Description |
|----------|----------------------|---------------|---|--|
| 32 | NAS-Identifier | String | M | It is the hostname of the NAS for communication with the AAA server. |
| 6 | Service-Type | Integer | M | It indicates the type of service for this user. |
| 7 | Framed-Protocol | Integer | M | It indicates the type of protocol for this user. |
| 8 | Framed-IP-Address | Address(IPv4) | C | It is the User IP Address. |
| 97 | Framed-IPv6-Prefix | Address(IPv6) | C | It is the User IPv6 prefix. |
| 25 | Class | String | C | It is received in the access accept. |
| 30 | Called-Station-Id | String | O | It is the phone number the user called or the identifier for the target network. |
| 31 | Calling-Station-Id | String | O | It is the phone number where the call came from. |
| 40 | Acct-Status-Type | Integer | M | It is the type of accounting message, in this message, the content is 3 (Interim-Update). |
| 41 | Acct-Delay-Time | Integer | M | It indicates how long the NAS has been trying to send this record and can be subtracted from the time of arrival on the AAA server to find the approximate time in seconds of the event generating the Accounting-Request. |
| 42 | Acct-Input-Octets | Integer | O | It indicates how many octets have been received over the course of this service being provided. |
| 43 | Acct-Output-Octets | Integer | O | It indicates how many octets have been sent in the course of delivering this service. |
| 44 | Acct-Session-Id | String | M | It is the user session identifier. |
| 45 | Acct-Authentic | Integer | M | It is the authentication method, 1(RADIUS) or 2(LOCAL) |
| 46 | Acct-Session-Time | Integer | O | It is the number of seconds that the user has received service. |
| 47 | Acct-Input-Packets | Integer | O | It indicates how many packets have been received over the course of this service being provided to a user. |
| 48 | Acct-Output-Packets | Integer | O | It indicates how many packets have been sent in the course of delivering this service to a user. |
| 61 | NAS-Port-Type | Integer | M | It is the type of physical port used by NAS. |
| 26/10415 | 3GPP Vendor-Specific | See Table 12 | O | See Table 12 for the sub attributes description. |

4.2.6 Accounting-Response Message

The Accounting-Response message is sent to RADIUS Client (NAS) from the IPWorks AAA Server.

Accounting-Response Message is not required to have any attributes in it.

4.3 Dynamic Authorization Extension Messages

The section describes the messages used for dynamic authorization extension to RADIUS, which is defined in Reference [12].



4.3.1 Disconnect-Request Message

The Disconnect-Request message is sent to Dynamic Authorization Server (that is, NAS) from IPWorks AAA Server.

The IPWorks AAA supported attributes for this message is specified in RFC 2865, RFC 3162, RFC 5176, and 3GPP TS 29.061.

Table 10 describes the significant attributes for the Disconnect-Request Message:

Table 10 Disconnect-Request Message

| Attr # | Element | Type | P | Description |
|----------|----------------------|---------------|---|--|
| 8 | Framed-IP-Address | Address(IPv4) | C | It is the user IP address ⁽¹⁾ |
| 97 | Framed-IPv6-Prefix | String | C | It is the user IPv6 prefix ⁽¹⁾ |
| 44 | Acct-Session-Id | String | M | It is the user session identifier |
| 26/10415 | 3GPP Vendor-Specific | See Table 12 | O | See Table 12 for the sub attributes description. |

(1) Either an IPv4 or an IPv6 address or prefix is present. If no such address is available to the RADIUS-server, the value 0.0.0.0 is used.

4.3.2 Disconnect-ACK/NAK

The Disconnect-ACK/NAK message is sent from Dynamic Authorization Server (that is, NAS) to IPWorks AAA Server.

As there are not any specific requirement for these messages, the content of these messages follows the message content and format specified in RFC 5176.

4.3.3 Change-Of-Authorization (CoA) Request

The Change-Of-Request message is sent to Dynamic Authorization Server (that is, NAS) by IPWorks AAA Server.

The IPWorks AAA supported attributes for this message is specified in RFC 5176 and Ericsson GGSN 2009A Gi interface.

Table 11 describes the significant attributes for CoA Request:

Table 11 Change-Of-Authorization Message

| Attr # | Element | Type | P | Description |
|----------|----------------------|--------|---|--------------------------------------|
| 44 | Acct-Session-Id | String | M | User session identifier |
| 26/10923 | Access-control-group | String | M | Sub attributes according to Table 13 |



5 Information Elements

5.1 3GPP Vendor Specific Sub Attributes

Table 12 describes the sub attributes of the 3GPP Vendor-Specific attribute of the Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update), and Disconnect Request messages.

The definition of these attributes can be found in 3GPP TS 29.061.

Table 12 3GPP Vendor Specific Sub Attributes

| Sub Attr # | Sub Attribute Name | Description | Presence | Associated Attribute (Location of Sub Attr) |
|------------|----------------------------------|--|-----------------------|--|
| 1 | 3GPP-IMSI | IMSI for this user | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 2 | 3GPP-Charging-Id | The charging ID for this PDP Context (along with the GGSN-Address, constitutes a unique identifier for the PDP context) | Optional-Configurable | Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 3 | 3GPP-PDP Type | Type of PDP context, such as IP or PPP | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 4 | 3GPP-CG-Address | Charging Gateway IP address | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 5 | 3GPP-GPRS-QoS-Negotiated-Profile | QoS profile applied by the GGSN | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 6 | 3GPP-SGSN-Address | The SGSN IP address that is used by the GTP control plane for the handling of control messages. It is used to identify the PLMN to which the user is attached. | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 7 | 3GPP-GGSN-Address | The GGSN IP address that is used by the GTP control plane for the context establishment. It is the same as the GGSN IP address used in the G-CDRs | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 8 | 3GPP-IMSI-MCC-MNC | The MCC and MNC extracted from the IMSI of the user (first five or six digits, as applicable from the presented IMSI) | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 9 | 3GPP-GGSN-MCC-MNC | The MCC-MNC of the network to which the GGSN belongs to | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Interim-Update) |
| 10 | 3GPP-NSAPI | Identifies a particular PDP context for the associated PDN and MSISDN or IMSI from creation to deletion | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 11 | 3GPP-Session-Stop-Indicator | Indicates to the RADIUS server that the last PDP context of a session is released and that the PDP session has been terminated | Optional-Configurable | Accounting-Request (Stop) |
| 12 | 3GPP-Selection-Mode | Contains the Selection mode for this PDP Context received in the Create PDP Context Request Message | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |



Table 12 3GPP Vendor Specific Sub Attributes

| Sub Attr # | Sub Attribute Name | Description | Presence | Associated Attribute (Location of Sub Attr) |
|------------|-------------------------------|--|-----------------------|---|
| 13 | 3GPP-Charging-Characteristics | Contains the charging characteristics for this PDP Context. This is either received from the SGSN in the Create PDP Context Request Message (only available in R99 and later releases) or from the RADIUS server in the Access-Accept message. | Optional-Configurable | Access-Accept, Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 17 | 3GPP-IPv6-DNS-Servers | A list of IPv6 addresses of DNS servers | Optional | Access-Accept |
| 18 | 3GPP-SGSN-MCC-MNC | Specifies the Mobile Country Code (MCC) and Mobile Network Code (MNC), that is PLMN ID, of the SGSN. PLMN ID information is available in the following prioritized order: <ul style="list-style-type: none"> • If a PLMN ID is received from the SGSN, this value is used. • If a PLMN ID has been configured for the SGSN, this value is used. • If a PLMN ID has been provided from a RADIUS server, this value is used. • If a PLMN ID has been provided from a RADIUS server with RADIUS Assisted Selection of APN (RAAS), this value is used. If no information on PLMN ID is available, this AVP is omitted. | Optional-Configurable | Access-Request, Access-Accept, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 19 | 3GPP-Teardown-Indicator | Indicates to the GGSN that all PDP contexts for this particular user and sharing user sessions need to be deleted. | Optional | Disconnect Request |
| 20 | 3GPP-IMEISV | International Mobile Equipment Id and its Software Version | Optional-Configurable | Access-Request, Accounting-Request (Start) |
| 21 | 3GPP-RAT-Type | Indicates which radio access technology is serving the UE. If a RAT type is received from the SGSN, this value is used. Otherwise, RAT type information is taken from a preconfigured table in the GGSN and then this value is used. If no information on RAT type is available, this AVP is omitted. | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 22 | 3GPP-User-Location-Info | Indicate details of where the UE is located (for example, SAI or CGI) | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 23 | 3GPP-MS-TimeZone | Indicate the offset between universal time and local time in steps of 15 minutes of where the MS currently resides. | Optional-Configurable | Access-Request, Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 25 | 3GPP-Packet-Filter | Exactly one packet filter used for this PDP context. If more than one filter is to be sent, one VSA per filter must be used. | Optional-Configurable | Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |
| 26 | 3GPP-Negotiated-DSCP | DSCP used to mark the IP packets of this PDP context on the Gi interface | Optional-Configurable | Accounting-Request (Start), Accounting-Request (Stop), Accounting-Request (Interim-Update) |



5.2 Access-Control-Group Sub Attributes

Table 13 describes the sub attributes of the Access-control-group attribute in the Access-Accept and Change-of-Authorization messages.

Table 13 Access-Control-Group Subattributes

| Sub Attr # | Subattribute Name | Description | Presence | Content | Associated Attribute (Location of Subattr) |
|------------|-------------------------|---------------------------------------|-----------|----------------|--|
| 33 | Access-control-group-id | Gx Access-control-group ID (4 Octets) | Mandatory | OctetString(4) | Access-Accept, Change-of-Authorization |
| 34 | Authorization-code | Ericsson proprietary Gx+ cause code. | Optional | OctetString(4) | Access-Accept, Change-of-Authorization |

5.3 Radius-Supported-VSA Related Messages

This section describes the Vendor Specific AVPs(VSAs) related messages supported by IPWorks AAA Radius Server when communicating with Ericsson Network Gateway by using Redback (RB) VSAs and Broadband Forum (BBF) VSAs.

Note: The RB Vendor-Id=2352. BBF Vendor-Id=3561. More BBF related information can be found in RFC 4679.

5.3.1 Access-Request Radius Message

5.3.1.1 PPP Circuit Type

The format of Point to Point Protocol (PPP) Access-Request packet is listed as follows:

```
Access-Request ::= <RADIUS Header>
{ User-Name }
{ User-Password | CHAP-Password }
[ Called-Station-Id ]
[ Calling-Station-Id ]
{ Framed-Protocol }
{ NAS-Identifier }
{ NAS-IP-Address }
{ NAS-Port }
{ NAS-Port-Id }
{ NAS-Port-Type }
{ RB-Medium-Type }
{ RB-MAC-Address }
{ RB-NAS-Real-Port }
{ RB-OS-Version }
{ RB-Platform-Type }
{ Service-Type }
[ State ]
*[AVP]
```



Note: PPP Access-Request packets are used by the following access methods:

- PPP over Ethernet (PPPoE)

5.3.1.2 DHCP Circuit Type

The format of Dynamic Host Configuration Protocol (DHCP) Access-Request packet is listed as followings:

```
Access-Request ::= <RADIUS Header>
    { User-Name }
    [ Called-Station-Id ]
    [ Calling-Station-Id ]
    { Framed-Protocol }
    { NAS-Identifier }
    { NAS-IP-Address }
    { NAS-Port }
    { NAS-Port-Id }
    { NAS-Port-Type }
    { RB-Agent-Circuit-Id }
    { RB-Agent-Remote-Id }
    { RB-Medium-Type }
    { RB-MAC-Address }
    { RB-NAS-Real-Port }
    { RB-OS-Version }
    { RB-Platform-Type }
    { Service-Type }
    [ State ]
    *[AVP]
```

Note: DHCP Access-Request packets are used by the following access methods:

- IP over Ethernet (IPoE)
- WiFi

5.3.1.3 EAP Authentication

The format of Extensible Authentication Protocol (EAP) is listed as follows:

```
Access-Request ::= <RADIUS Header>
    { User-Name }
    [ Called-Station-Id ]
    [ Calling-Station-Id ]
    { Framed-Protocol }
    { NAS-Identifier }
    { NAS-IP-Address }
    { NAS-Port }
    { NAS-Port-Id }
    { NAS-Port-Type }
    { Service-Type }
    { EAP-Message }
    { Message-Authenticator }
    [ Chargeable-User-Identity ]
```



```
[ State ]
{ RB-Medium-Type }
{ RB-MAC-Address }
{ RB-NAS-Real-Port }
{ RB-OS-Version }
{ RB-Platform-Type }
*[AVP]
```

Where:

- Calling-Station-Id: User's MAC address
- User-Name: User's IMSI in full format: MCC+MNC+MSIN@realm
- Chargeable-User-Identity: Not sent from Ericsson Broadband Network Gateway (BNG) to the Service-Aware Policy Controller (SAPC).

The SAPC adds Chargeable-User-Identity (containing the null character, that is '\0') when proxying Access-Request to the AAA server.

5.3.2 Access-Accept Radius Message

Any RADIUS attribute returned by an external AAA RADIUS server which is not listed in the subsections must be configured within a default profile so that the SAPC can generate the correct CoA-Request for the user session.

5.3.2.1 PPP Circuit Type

The format of PPP Access-Accept packet is listed as follows:

```
Access-Accept ::= <RADIUS Header>
[ Class ]
{ Framed-IP-Address | Framed-IPv6-Prefix }
[ Framed-IP-Netmask ]
* [ Framed-Route | Framed-IPv6-Route ]
[ Port-Limit ]
{ RB-Context-Name }
*[AVP]
```

5.3.2.2 DHCP Circuit Type

The format of DHCP Access-Accept packet is listed as follows:

```
Access-Accept ::= <RADIUS Header>
[ Framed-IP-Address ]
[ Framed-IPv6-Prefix ]
[ Framed-IP-Netmask ]
* [ Framed-Route ]
[ Port-Limit ]
[ Filter-Id ]
[ Idle-Timeout ]
{ RB-Context-Name }
```



```

[ RB-ATM-Profile-Name ]
[ RB-Deactivate-Service-Name ]
*[ RB-Dynamic-Qos-Param ]
[ RB-Forward-Policy ]
[ RB-HTTP-Redirect-Profile-Name | RB-HTTP-Redirect
[ RB-IGMP-Service-Profile-Name ]
[ RB-Mcast-MaxGroups ]
[ RB-Mcast-Receive ]
[ RB-Mcast-Send ]
[ RB-NAT-Profile-Name ]
[ RB-Qos-Metering-Profile-Name ]
[ RB-Qos-Policing-Profile-Name ]
[ RB-Qos-Queuing-Profile-Name ]
[ RB-Qos-Rate-Inbound ]
[ RB-Qos-Rate-Outbound ]
[ RB-Service-Name ]
[ RB-Service-Options ]
[ RB-Service-Parameter ]
{ RB-Context-Name }
{ RB-DHCP-Max-Leases}
[ Session-Timeout ]
*[AVP]

```

5.3.2.3 EAP Authentication

The format of EAP Access-Accept packet is listed as follows:

```

Access-Accept ::= <RADIUS Header>
[ EAP-Message ]
[ Message-Authenticator ]
[ Framed-IP-Netmask ]
* [ Framed-Route ]
[ Port-Limit ]
[ Chargeable-User-Identity ]
* [ Vendor-Specific ]
[ State ]
*[AVP]

```

Where:

Chargeable-User-Identity is sent from AAA server to the SAPC, and proxied back from the SAPC to Ericsson BNG and it contains the user's MSISDN.

5.3.3 Accounting-Request Radius Message

The format of Accounting-Request packet is listed as follows:

```

Accounting-Request ::= <RADIUS Header>
<Standard Accounting Attributes>
[ RB-Acct-Input-Octets-64 ]
[ RB-Acct-Output-Octets-64 ]
[ RB-Acct-Reason ]

```



```
[ RB-Agent-Circuit-Id ]
[ RB-Agent-Remote-Id ]
[ RB-Assigned-IP-Address ]
[ RB-ATM-Profile-Name ]
{ RB-Context-Name }
* [ RB-Dynamic-Qos-Param ]
[ RB-Forward-Policy ]
[ RB-HTTP-Redirect-Profile-Name ]
  RB-HTTP-Redirect-URL ]
[ RB-IGMP-Service-Profile-Name ]
* [ RB-IPv6-DNS ]
* [ RB-IPv6-Profile ]
{ RB-MAC-Address }
[ RB-Mcast-MaxGroups ]
[ RB-Mcast-Receive ]
[ RB-Mcast-Send ]
[ RB-Medium-Type ]
{ RB-NAS-Real-Port }
[ RB-NAT-Profile-Name ]
{ RB-OS-Version }
{ RB-Platform-Type }
[ RB-Qos-Metering-Profile-Name ]
[ RB-Qos-Policing-Profile-Name ]
[ RB-Qos-Queuing-Profile-Name ]
[ RB-Qos-Rate-Inbound ]
[ RB-Qos-Rate-Outbound ]
[ RB-Service-Name ]
[ RB-Service-Options ]
[ RB-Service-Parameter ]
*[ RB-Session-Traffic-Limit ]
[ RB-vCPE-Device-Policy ]
[ RB-vCPE-Id ]
[ RB-vCPE-MAC-IP-Pairs ]
[ RB-vCPE-Profile ]
[ RB-vCPE-Transport-Policy ]
*[AVP]
```

5.3.4 Radius Supported RB and BBF Attributes

Table 14 shows the Radius supported RB and BBF attributes:

Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct- Request | Received in Access-Response | Description |
|---|----------------|------------------------|-----------------------|-----------------------------|---------------------------------------|
| 1 | Client-DNS-Pri | No | Yes | Yes | IP address of the primary connection. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|--------------------|------------------------|----------------------|-----------------------------|--|
| 2 | Client-DNS-Sec | No | Yes | Yes | IP address of the secondary subscriber's connection. |
| 3 | DHCP-Max-Leases | No | Yes | Yes | Integer. The maximum number of subscribers that the subscriber can allocate to host. 1 to 255. |
| 4 | Context-Name | No | Yes | Yes | It binds the subscriber session overriding the structured user name. Only interpreted when global. |
| 5 | Bridge-Group | No | No | Yes | String. Bridge group name; It named bridge group. |
| 6 | BG-Aging-Time | No | No | Yes | String. bg-name:val; It config for the subscriber attached to |
| 7 | BG-Path-Cost | No | No | Yes | String. bg-name:val; It config for the subscriber attached to |
| 8 | BG-Span-Dis | No | No | Yes | String. bg-name:val; It disables subscriber attaching to the named bridge. The argument can be either of the following: 1=TRUE 0=FALSE |
| 9 | BG-Trans-BPDU | No | No | Yes | String. bg-name:val; It sends tree bridge protocol data unit to the subscriber attached to the named bridge. The argument can be either of the following: 1=TRUE 0=FALSE |
| 14 | Source-Validation | No | Yes | Yes | Integer. It enables the source validation according to one of the following values: 1=TRUE 0=FALSE |
| 15 | Tunnel-Domain | No | No | Yes | Integer. It binds the subscriber domain name portion of the user name to one of the following values: 1=TRUE 0=FALSE |
| 16 | Tunnel-Local-Name | No | No | Yes | String. It defines the local host name of the remote peer during the tunnel establishment. |
| 17 | Tunnel-Remote-Name | No | No | Yes | String. It defines an alias for the remote peer during the tunnel establishment. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|---------------------|------------------------|----------------------|-----------------------------|--|
| 18 | Tunnel-Function | No | Yes | Yes | Integer. It determines this LAC-only endpoint or an L of the following values: 1=LAC only 2=LNS only |
| 19 | Tunnel_Flow_Control | Yes | Yes | No | Integer. It specifies using for the L2TP peer (LAC or |
| 20 | Tunnel_Static | Yes | Yes | No | Integer. It specifies the st given tunnel. |
| 21 | Tunnel-Max-Sessions | No | Yes | Yes | Integer. It limits the numb this tunnel configuration. |
| 22 | Tunnel-Max-Tunnels | No | Yes | Yes | Integer. It limits the numb initiated using this tunnel |
| 23 | Tunnel-Session-Auth | No | No | Yes | Integer. It specifies the au during PPP authentication following values: 1=CHAP 2=PAP 3=CHAP-PAP |
| 24 | Tunnel-Window | No | No | Yes | Integer. It configures the incoming L2TP messages. |
| 25 | Tunnel-Retransmit | No | No | Yes | Integer. It specifies the nu retransmits a control mess |
| 26 | Tunnel-Cmd-Timeout | No | No | Yes | Integer. It specifies the nu interval between the contr |
| 27 | PPPOE-URL | No | Yes | Yes | String in PPPoE URL form that is sent to the remote packet. |
| 28 | PPPOE-MOTM | No | Yes | Yes | String. It defines the PPPo to the remote PPPoE client |
| 29 | Tunnel-Group | No | Yes | Yes | Integer. It indicates wheth with a list of member peer 1=TRUE 0=FALSE |
| 30 | Tunnel-Context | No | Yes | Yes | String. Context name. It is and this attribute specifies peer should be found. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|----------------------|------------------------|----------------------|-----------------------------|--|
| 31 | Tunnel-Algorithm | No | No | Yes | Integer. It specifies the session used to choose between the peer and the RADIUS response. This VSA is used on how to interpret standard Tunnel-Preference, according to the following values: 1=Priority 2=Load-Balance 3=Weighted round-robin |
| 32 | Tunnel-Deadtime | No | No | Yes | Integer. It specifies the number of sessions attempted to the peer is down. |
| 33 | Mcast-Send | No | Yes | Yes | Integer. It defines whether to send multicast packets, according to the following values: 1=NO SEND 2=SEND 3=UNSOLICITED SEND |
| 34 | Mcast-Receive | No | Yes | Yes | Integer. It defines whether to receive multicast packets, according to the following values: 1=NO RECEIVE 2=RECEIVE |
| 35 | Mcast-MaxGroups | No | Yes | Yes | Integer. It specifies the maximum number of groups of which the subscriber can be a member. |
| 36 | Ip-Address-Pool-Name | No | Yes | Yes | String. Name of the interface or IP pool address to the subscriber. |
| 37 | Tunnel-DNIS | No | Yes | Yes | Integer. L2TP peer parameter that indicates if sessions from this peer are to be terminated if incoming DNIS AVP is present. DNIS AVP only (terminated if no DNIS AVP is present). 1 = DNIS 2 = DNIS ONLY |
| 38 | Medium-Type | Yes | Yes | No | Integer. It contains the medium type of the subscriber. The system sets this value to the subscriber's medium type. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|------------------------|------------------------|----------------------|-----------------------------|---|
| 39 | PVC-Encapsulation-Type | No | No | Yes | Integer. Encapsulation type 2 = Routed 1483 4 = ATM multi 5 = Bridged 1483 6 = ATM PPP 7 = ATM PPP serial 8 = ATM PPP NLPID 9 = ATM PPP auto 10 = ATM PPPoE 12 = ATM PPP LLC 22 = Ethernet IPoE 23 = Ethernet PPPoE 24 = Ethernet dot1q 26 = Ethernet dot1q pppoe 31 = Ethernet dot1q tunnel 32 = Ethernet dot1q multi 33 = Ethernet dot1q tunnel |
| 40 | PVC-Profile-Name | No | No | Yes | String. Name of the ATM profile, using the shaping profile configuration mode), to use |
| 42 | Bind-Type | No | No | Yes | Integer. Binding type to be used 1 = authentication 3 = interface 4 = subscriber 14 = autosubscriber CCOD circuits support only subscriber |
| 43 | Bind-Auth-Protocol | No | No | Yes | Integer. Authentication protocol 1 = PAP 2 = CHAP 4 = CHAP PAP 5 = AAA-PPP-CHAP-WAIT 7 = PAP CHAP |
| 44 | Bind-Auth-Max-Sessions | No | No | Yes | Integer. It is the maximum number of sessions allowed to be created for the same for PPPoE session encapsulation over L2TP |
| 45 | Bind-Bypass-Bypass | No | No | Yes | String. Name of the bypass |
| 46 | Bind-Auth-Context | No | No | Yes | String. It is the bind authentication context, also specifies the same for Ethernet encapsulation over |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|--------------------------|------------------------|----------------------|-----------------------------|---|
| 47 | Bind-Auth-Service-Group | No | No | Yes | String. It is the bind authentication service group. It also specifies the same for IP bridging sessions with Ethernet encapsulation over L2TP on tunnel. |
| 48 | Bind-Bypass-Context | No | No | Yes | String. Bind bypass context name. |
| 49 | Bind-Int-Context | No | No | Yes | String. It is the bind interface context name. It specifies the same for IP bridging sessions with Ethernet encapsulation over L2TP on tunnel. |
| 50 | Bind-Tun-Context | No | No | Yes | String. Bind tunnel context name. |
| 51 | Bind-Ses-Context | No | No | Yes | String. Bind session context name. |
| 52 | Bind-Dot1q-Slot | No | No | Yes | Integer. Bind 802.1Q slot number. |
| 53 | Bind-Dot1q-Port | No | No | Yes | Integer. Bind 802.1Q port number. |
| 54 | Bind-Dot1q-Vlan-Tag-Id | No | No | Yes | Integer. Bind 802.1Q VLAN tag ID. |
| 55 | Bind-Int-Interface-Name | No | No | Yes | String. It is the bind interface name. It specifies the same for IP bridging sessions with Ethernet encapsulation over L2TP on tunnel. |
| 56 | Bind-L2TP-Tunnel-Name | No | No | Yes | String. Bind L2TP tunnel name. |
| 57 | Bind-L2TP-Flow-Control | No | No | Yes | Integer. Bind L2TP flow control. |
| 58 | Bind-Sub-User-At-Context | No | No | Yes | String. Bind subscriber context name. |
| 59 | Bind-Sub-Password | No | No | Yes | String. Bind subscriber password. |
| 60 | Ip-Host-Addr | No | No | Yes | String in the form A.B.C.D.H where A, B, C, D, H are host address and MAC address respectively. It separates the IP address from the MAC address. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|---------------------------------|------------------------|----------------------|-----------------------------|--|
| 61 | Ip_Tos_Field | No | No | Yes | <p>Integer. It specifies the value for soft QoS:</p> <p>0 = normal 1 = min-cost only 2 = max-reliability only 3 = max-reliability plus min-cost 4 = max-throughput only 5 = max-throughput plus min-cost 6 = max-throughput plus max-reliability 7 = max-throughput plus max-reliability plus min-cost 8 = min-delay only 9 = min-delay plus min-cost 10 = min-delay plus max-throughput 11 = min-delay plus max-throughput plus min-cost 12 = min-delay plus max-throughput plus max-reliability 13 = min-delay plus max-throughput plus max-reliability plus min-cost 14 = min-delay plus max-throughput plus max-reliability plus min-cost plus max-throughput 15 = min-delay plus max-throughput plus max-reliability plus min-cost plus max-throughput plus min-cost</p> |
| 62 | NAS-Real-Port | Yes | Yes | No | <p>Integer. It indicates the port number (in bits) on which the session is established (S = Slot, P = Port, C = Circuit (for ATM, 8-bits)) is: SSSSPPPPPCCCCCCCC</p> <p>Where: S = Slot P = Port C = Circuit (for ATM, 8-bits)</p> |
| 63 | Tunnel-Session-Auth-Ctx | No | Yes | Yes | String. It is the L2TP peer name of the context in which L2TP sessions should be established in the domain specified in the user profile. |
| 64 | Tunnel-Session-Auth-Service-Grp | No | Yes | Yes | String. It is the L2TP peer service group (service account) used for all incoming PPP sessions. |
| 67 | Tunnel-Police-Rate | No | Yes | Yes | 4-byte integer. It is the L2TP peer policing rate that specifies the policing rate. The valid value range is from 1 to 4294967295. If the parameter is configured, the policing rate should also be configured. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|----------------------------|------------------------|----------------------|-----------------------------|--|
| 68 | Tunnel-Police-Burst | No | Yes | Yes | 4-byte integer. It is the L2TP attribute that specifies the policing burst size. The valid value range is from 0 to 4096. If this parameter is configured, the Tunnel-Police-Burst parameter also be configured. |
| 69 | Tunnel-L2F-Second-Password | No | Yes | Yes | String. It is L2F peer parameter. The password string used to authenticate the peer. |
| 70 | ACL-Definition | No | Yes | Yes | String. It is used to define the ACL in the RADIUS database. The ACL-Definition contains the ACL username and the Service-Type. The ACL-Definition is an Access-Control-List. The data format is similar to the CLI interface (CLI). |
| 71 | PPPoE-IP-Route-Add | No | Yes | Yes | String. It allows the PPPoE session to be populated in terms of what routes multiple PPPoE sessions exist. The routes can be achieved when the session is established to the client. The format is h.h.h.h.nn.g.g.g.g. Where: h.h.h.h=IP address of destination (nn=optional netmask size in bits (0 to 32)). g.g.g.g=IP address of gateway for this route. If the first byte of VSA 71 is 1, this VSA is used to handle the route. |
| 72 | TTY-Level-Start | No | No | Yes | Integer. It indicates the start level of the administrator. The value range is from 0 to 255. The value must be less than or equal to TTY-Level-Max. |
| 73 | TTY-Level-Max | No | No | Yes | Integer. It indicates the maximum level of the administrator. The value range is from 0 to 255. The value must be greater than or equal to TTY-Level-Start. |
| 74 | Tunnel-Checksum | No | Yes | Yes | Integer. It enables GRE checksum. If the checksum is computed for each packet, this allows the remote system to verify each packet. Incoming packets with a bad checksum are discarded. A value of 1 equals enabled. A value of 0 for this attribute equals disabled. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|--------------------|------------------------|----------------------|-----------------------------|--|
| 75 | Tunnel-Profile | No | No | Yes | String. It attaches a profile when configuring a tunnel. Tunnel-Profile attribute in |
| 78 | Tunnel-Client-VPN | No | Yes | Yes | String. Name of the target private network [VPN] on tunnel. It is required for G automatically sets the value Tunnel-Server-VPN attribute |
| 79 | Tunnel-Server-VPN | No | Yes | Yes | String. Name of the target side of the tunnel. |
| 85 | Tunnel-Hello-Timer | No | No | Yes | Integer. Hello timer (in seconds the tunnel is silent before it is configured using the hello peer configuration mode). |
| 86 | Redback-Reason | No | Yes | No | Integer. If the NetOp Policy router (through SNMP) a router trying to clear (bounce) the reason value is sent to the accounting Stop packet in |
| 87 | Qos_Policing | No | Yes | Yes | String. It attaches a QoS policy session. |
| 88 | Qos_Metering | No | Yes | Yes | String. It attaches a QoS metering session. |
| 89 | Qos_Queueing | No | Yes | Yes | String. It attaches a QoS queueing supported by the circuit to |
| 90 | Igmp_Svc_Prof_Id | No | Yes | Yes | String. Name of the IGMP profile to the subscriber session. |
| 91 | Sub_Profile_Name | No | Yes | Yes | Name of the subscriber profile subscriber session. |
| 92 | Forward-Policy | No | Yes | Yes | String. It attaches an in/out subscriber session. The format: in:forward-policy-name |

Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|----|------------------|------------------------|----------------------|-----------------------------|--|
| 94 | Reauth-String | No | No | Yes | <p>String. The format is: ID-type;subID;attr-num;attr-value; .</p> <ul style="list-style-type: none"> When the ID-type is 1, the subID is the accounting session ID. When the ID-type is 2, the subID is read as a name. The semicolon (;) acts as a separator. Attr-num is an integer that identifies the attribute. For example, start with 1 (Filter-Id) for an access control list, 87 (Qos_Policing) for a QoS policy, etc. VSAs include the Ericsson proprietary VSAs. Attr-value is the value of the attribute specified by attr-num. |
| 95 | Reauth-More | No | No | Yes | Integer. 0 or 1 (False or True). |
| 96 | Agent-Remote-Id | Yes | Yes | No | <p>String. It is used for two types of sessions:</p> <ul style="list-style-type: none"> Incoming CLIPS sessions to a relay network. This is suboption 82 packet. PPPoE sessions. Sent by the access concentrator. <p>This attribute can also be set by calling-station-id and radius commands in the context configuration.</p> |
| 97 | Agent-Circuit-Id | Yes | Yes | No | <p>String. It is used for two types of sessions:</p> <ul style="list-style-type: none"> CLIPS sessions coming into a relay network. This is suboption 82 packet PPPoE sessions. It is sent by the access concentrator. <p>This attribute can also be set by calling-station-id and radius commands in the context configuration.</p> |
| 98 | Platform-Type | Yes | Yes | No | <p>Integer. It indicates the Ericsson platform type, which the RADIUS access request values are listed as follows:</p> <p>2=PLATFORM_TYPE_SE8000 3=PLATFORM_TYPE_SE4000</p> |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|-----|----------------------------|------------------------|-----------------------------------|-----------------------------|--|
| 99 | Client_NBNS_Pri | No | Yes | Yes | IP address. It configures the NetBios Name Server (NBNS) use. |
| 100 | Client_NBNS_Sec | No | Yes | Yes | IP address. It configures the NetBios Name Server (NBNS) that the subscriber uses. |
| 101 | Shaping-Profile-Name | No | Yes | Yes | String. Name of the ATM shaping profile. |
| 104 | IP-Interface-Name | No | Yes | Yes | String. Interface name. It specifies the interface. This VSA is used in VSA 3, DHCP-Max-Leases. This attribute can also be used in the interface name command (in subscriber configuration). |
| 105 | NAT-Policy-Name | No | Yes | Yes | String. NAT policy name. It specifies the NAT policy to a subscriber. |
| 107 | HTTP-Redirect-Profile-Name | No | Yes (alive/and stop records only) | Yes | String of up to 32 characters. |
| 108 | Bind-Auto-Sub-User | No | No | Yes | String. Subscriber name prefix for the bind auto-subscriber command. It is used in the dot1q PVC configuration mode in the automatically generated configuration for more information about the configuration for the automatically generated configuration. Configuring Bindings. |
| 109 | Bind-Auto-Sub-Context | No | No | Yes | String. Name of context in which the bind auto-subscriber command is used. It is used in the CLIPS PVC, or dot1q PVC configuration mode for more information about the configuration. Configuring Bindings. |
| 110 | Bind-Auto-Sub-Password | No | No | Yes | String. Password prefix for the bind auto-subscriber command. It is used in the dot1q PVC configuration mode in the automatically generated configuration for more information about the configuration for the automatically generated configuration. Configuring Bindings. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|-----|------------------------|------------------------|----------------------|-----------------------------|--|
| 111 | Circuit-Protocol-Encap | No | Yes | Yes | Integer. Circuit encapsulation supported values are listed as: 27 = PPPoE encapsulation 34 = PPPoE multiencapsulation 35 = PPPoE tunnel multiencapsulation |
| 112 | OS-Version | Yes | Yes | No | String. Software version number |
| 113 | Session-Traffic-Limit | No | Yes | Yes | <p>String.</p> <ul style="list-style-type: none">• It specifies that inbound or outbound traffic is limited. Use the in: limit or aggregate: limit where limits are independent of each other. The limit values set for inbound and outbound traffic are independent of each other.• It specifies that inbound, outbound, or aggregate traffic to be limited. Use the in: limit or aggregate: limit where limits are independent of each other. The limit values set for inbound, outbound, and aggregate traffic are in Kilobytes (KB). The limit value set for aggregate traffic is the sum of both inbound and outbound traffic. <p>When configuring Session-Traffic-Limit, you must configure the limit for either inbound or outbound traffic.</p> <ul style="list-style-type: none">• Inbound traffic• Outbound traffic• Both Aggregate traffic <p>Users cannot configure the limit for both inbound and outbound traffic.</p> |
| 114 | QoS-Reference | No | Yes | Yes | String. It specifies the node name, the group name, and the group ID. The group name separates the node-name and the group ID. |
| 125 | DHCP-Vendor-Class-Id | Yes | Yes | No | String. DHCP option 60 value |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|-----|---------------------------|------------------------|----------------------|-----------------------------|--|
| 127 | DHCP-Vendor-Encap-Options | No | Yes | Yes | <p>String. DHCP option 43 value:code:value:code:value</p> <p>Where: code = DHCP vendor-encap value = option data in one</p> <ul style="list-style-type: none"> • IP address type = dot no • Number = decimal integ • string = ASCII characters • Binary string = Hex valu commas (",") <p>For descriptions of the ver found in RFC 2132, DHCP Extension, see the tables i</p> |
| 128 | Acct-Input-Octets-64 | No | Yes | No | Integer. 64-bit value for th attribute per RFC 2139. |
| 129 | Acct-Output-Octets-64 | No | Yes | No | Integer. 64-bit value for th attribute per RFC 2139. |
| 130 | Acct-Input-Packets-64 | No | Yes | No | Integer. 64-bit value for th attribute per RFC 2139. |
| 131 | Acct-Output-Packets-64 | No | Yes | No | Integer. 64-bit value for A per RFC 2139. |
| 133 | Acct-Mcast-In-Octets-64 | No | Yes | No | Integer. 64-bit value for t attribute. |
| 134 | Acct-Mcast-Out-Octets-64 | No | Yes | No | Integer. 64-bit value for t attribute. |
| 135 | Acct-Mcast-In-Packets-64 | No | Yes | No | Integer. 64-bit value for t attribute. |
| 136 | Acct-Mcast-Out-Packets-64 | No | Yes | No | Integer. 64-bit value for t attribute. |
| 137 | LAC-Port | Yes | Yes | No | Integer. It contains the cir session on an L2TP LAC. T for a subscriber on an L2T The circuit can be virtual f |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|-----|--------------------|------------------------|----------------------|-----------------------------|--|
| 138 | LAC-Real-Port | Yes | Yes | No | Integer. It contains the circuit ID of an incoming PPPoE session. This attribute should be present for a tunnel switch or LNS only. |
| 139 | LAC-Port-Type | Yes | Yes | No | <p>Integer. It contains the port type on an L2TP LAC. This attribute should be present for a subscriber on an L2TP tunnel. The port can be virtual for a PPPoE session.</p> <p>The values for port types are:</p> <ul style="list-style-type: none"> 40 = NAS_PORT_TYPE_10BT 41 = NAS_PORT_TYPE_100E 42 = NAS_PORT_TYPE_DS3 43 = NAS_PORT_TYPE_DS3F 44 = NAS_PORT_TYPE_OC3 45 = NAS_PORT_TYPE_HSSI 46 = NAS_PORT_TYPE_EIA5 47 = NAS_PORT_TYPE_T1 48 = NAS_PORT_TYPE_CHANN 49 = NAS_PORT_TYPE_DS1 50 = NAS_PORT_TYPE_E3_A 51 = NAS_PORT_TYPE_IMA 52 = NAS_PORT_TYPE_DS3F 53 = NAS_PORT_TYPE_OC3F 54 = NAS_PORT_TYPE_1000 55 = NAS_PORT_TYPE_E1_F 56 = NAS_PORT_TYPE_E1_A 57 = NAS_PORT_TYPE_E3_F 58 = NAS_PORT_TYPE_OC3F 59 = NAS_PORT_TYPE_OC12 60 = NAS_PORT_TYPE_PPPO |
| 140 | LAC-Real-Port-Type | Yes | Yes | No | Integer. It contains the port type of an incoming PPPoE session on a tunnel switch or LNS. This attribute should be present for a subscriber on a tunnel switch or LNS only. See VSA 139. |
| 142 | Session-Error-Code | No | Yes | No | Integer. 32 bits. Stop record only. It contains specific error code information. |
| 143 | Session-Error-Msg | No | Yes | No | String. Stop record only. It contains error message information. It is terminated by a null character. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|-----|------------------------|------------------------|----------------------|-----------------------------|---|
| 144 | Acct_Reason | No | Yes | No | <p>Integer. It is the reason code that the router generates an account for the subscriber to RADIUS.</p> <p>The reason code values are:</p> <ul style="list-style-type: none"> 1 = AAA_LOAD_ACCT_SESSION_EXPIRED 2 = AAA_LOAD_ACCT_SESSION_EXPIRED 3 = AAA_LOAD_ACCT_SESSION_EXPIRED 7 = AAA_ACCT_RC_SUBSCRIPTION_EXPIRED 16 = AAA_LOAD_ACCT_SESSION_EXPIRED 17 = AAA_LOAD_ACCT_SESSION_EXPIRED 18 = AAA_LOAD_ACCT_SESSION_EXPIRED 19 = AAA_LOAD_ACCT_SESSION_EXPIRED 28 = AAA_LOAD_ACCT_SESSION_EXPIRED 34 = AAA_ACCT_RC_V6_USAGE_EXCEEDED 35 = AAA_ACCT_RC_V6_USAGE_EXCEEDED 36 = AAA_ACCT_RC_V4_USAGE_EXCEEDED 37 = AAA_ACCT_RC_V4_USAGE_EXCEEDED 38 = AAA_ACCT_RC_DHCP_SESSION_EXPIRED 39 = AAA_ACCT_RC_DHCP_SESSION_EXPIRED |
| 145 | Mac-Addr | Yes | Yes | No | String. MAC address. The MAC address is sent for all interfaces. The supported media include Ethernet (tagged or untagged VLAN). |
| 147 | Acct-Mcast-In-Octets | No | Yes | No | Integer. Number of inbound multicast octets. |
| 148 | Acct-Mcast-Out-Octets | No | Yes | No | Integer. Number of outbound multicast octets. |
| 149 | Acct-Mcast-In-Packets | No | Yes | No | Integer. Number of inbound multicast packets. |
| 150 | Acct-Mcast-Out-Packets | No | Yes | No | Integer. Number of outbound multicast packets. |
| 151 | Reauth-Session-Id | No | No | Yes | String. It identifies the reauthentication session. The value in this attribute is a session ID for the identified subscriber. |
| 156 | Qos-Rate-Inbound | No | Yes | Yes | String. It changes the inbound QoS rate: burst:excess-burst:excess-burst values is optional. |
| 157 | Qos-Rate-Outbound | No | Yes | Yes | String. It changes the outbound QoS rate: burst:excess-burst:excess-burst values is optional. |

Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct- Request | Received in Access-Response | Description |
|-----|-----------------------------|------------------------|-----------------------|-----------------------------|--|
| 158 | Route-Tag | No | Yes | Yes | Integer. It assigns a route tag to a route address (Framed-IP-Route), and to route statements (Framed-IP-Route-Filter). |
| 164 | Dynamic-Policy-Filter | No | Yes | Yes | String. The string consists of tokens separated by one or more spaces. Spaces are allowed. The tokens are specified in Section 3.5 section along with the keywords and arguments in the configuration. |
| 165 | HTTP-Redirect-URL | No | Yes | Yes | String. URL to which the router redirects the client. |
| 166 | DSL-Actual-Rate-Up | Yes | Yes | No | Integer 32-bit value. The actual rate in the upstream direction. |
| 167 | DSL-Actual-Rate-Down | Yes | Yes | No | Integer 32-bit value. The actual rate in the downstream direction. |
| 168 | DSL-Min-Rate-Up | Yes | Yes | No | Integer 32-bit value. The minimum rate in the upstream direction. |
| 169 | DSL-Min-Rate-Down | Yes | Yes | No | Integer 32-bit value. The minimum rate in the downstream direction. |
| 170 | DSL-Attainable-Rate-Up | Yes | Yes | No | Integer 32-bit value. The attainable rate in the upstream direction. |
| 171 | DSL-Attainable-Rate-Down | Yes | Yes | No | Integer 32-bit value. The attainable rate in the downstream direction. |
| 172 | DSL-Max-Rate-Up | Yes | Yes | No | Integer 32-bit value. The maximum rate in the upstream direction. |
| 173 | DSL-Max-Rate-Down | Yes | Yes | No | Integer 32-bit value. The maximum rate in the downstream direction. |
| 174 | DSL-Min-Low-Power-Rate-Up | Yes | Yes | No | Integer 32-bit value. The DSL minimum low power rate in the upstream direction. |
| 175 | DSL-Min-Low-Power-Rate-Down | Yes | Yes | No | Integer 32-bit value. The DSL minimum low power rate in the downstream direction. |
| 176 | DSL-Max-Inter-Delay-Up | Yes | Yes | No | Integer 32-bit value. The maximum inter-delay in the upstream direction. |
| 177 | DSL-Actual-Inter-Delay-Up | Yes | Yes | No | Integer 32-bit value. The actual inter-delay in the upstream direction. |
| 178 | DSL-Max-Inter-Delay-Down | Yes | Yes | No | Integer 32-bit value. The maximum inter-delay in the downstream direction. |
| 179 | DSL-Actual-Inter-Delay-Down | Yes | Yes | No | Integer 32-bit value. The actual inter-delay in the downstream direction. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|-----|---------------------------------|------------------------|----------------------|-----------------------------|--|
| 180 | DSL-Line-State | Yes | Yes | No | Integer 32-bit value. The value 0 = BUSY 1 = IDLE 2 = IDLE 3 = SILENT |
| 181 | DSL-L2-Encapsulation | Yes | Yes | No | Integer 32-bit value. The data link encapsulation: The value as follows: 0 = ATM AAL5 1 = ETHERNET Encapsulation 2 = Ethernet Encapsulation LLC 2 = PPPoA NULL 3 = IPoA LLC 4 = IPoA NULL 5 = Ethernet over AAL5 LLC 6 = Ethernet over AAL5 LLC 7 = Ethernet over AAL5 NULL 8 = Ethernet over AAL5 NULL |
| 182 | DSL-Transmission-System | Yes | Yes | No | Integer 32-bit value. The transmission system are listed as follows: 1 = ADSL1 2 = ADSL2 3 = ADSL2+ 4 = VDSL1 5 = VDSL2 6 = SDSL 7 = UNKNOWN |
| 183 | DSL-PPPOA-PPPOE-Inter-Work-Flag | Yes | Yes | No | Integer. PPPoA-to-PPPoE |
| 184 | DSL-combined-Line-Info | Yes | Yes | No | String. The value of the T.38 Extensions for Layer 2 Configuration and Line Configuration, see T.38 Discovery." |
| 185 | DSL-Actual-Rate-Down-Factor | Yes | Yes | No | Integer. The rate that can be used or from a PPPoE or DHCP configuration of the access subscriber configuration management |
| 189 | Flow_FAC_Profile | No | Yes | No | String. IT specifies the name of the profile. Ttribute is used to identify the configured subscriber profile. attribute can only be configured for the profile. |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct- Request | Received in Access-Response | Description |
|-----|---------------------|------------------------|-----------------------|-----------------------------|--|
| 190 | Service-Name | No | Yes | Yes | <p>String. The name of the service with the following optional fields:</p> <ul style="list-style-type: none">• service id: Used when there is more than one instance of the same service.• service-parameter: Zero or more pairs of name-value pairs, formatted as name=value pairs, separated by an equals sign. Pairs are separated by spaces. <p>Users can also specify service options. See VSA 192 for formatting details.</p> |
| 191 | Service-Options | No | No | Yes | <p>Integer. It specifies whether the service is managed by the service management:</p> <p>ACCT-DISABLED = 0x00 ACCT-ENABLED = 0x01</p> |
| 192 | Service-Parameter | No | Yes | Yes | <p>String. Service parameters for the service specified in VSA 190, formatted as name=value pairs. Values are separated by an equals sign. Pairs are separated by spaces.</p> <p>If a parameter needs an array, the values are separated by commas (,) and the array is enclosed in brackets around it. Pairs are separated by spaces.</p> <p>If the value is a string that contains commas, enclose the string in quotes.</p> |
| 193 | Service-Error-Cause | No | Yes | No | <p>Integer. It specifies a service error code according to one of the following:</p> <ul style="list-style-type: none">0 = Service success401 = Unsupported attribute402 = Missing attribute404 = Invalid request506 = Resource unavailable550 = Generic service error551 = Service not found552 = Service already active553 = Service accounting disabled554 = Service duplicate parameter <p>If the RADIUS server does not support the standard Error-Cause codes, the server returns 551, and 552, 553, and 554 are used to the standard Error-Cause codes (processing error).</p> |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|-----|-------------------------|------------------------|----------------------|-----------------------------|--|
| 194 | Deactivate-Service-Name | No | No | No | String. The service profile deactivated together with <ul style="list-style-type: none"> • service id: Used when instance of the same ser • service-parameter: Ze formatted as name-value separated by an equals s it. Pairs are separated by |
| 195 | QoS-Overhead | No | Yes | Yes | String. It attaches a QoS subscriber session. If the c in the RADIUS record of th has the specified overhead session comes up. |
| 196 | Dynamic-QoS-Param | No | No | Yes | String. The format varies more information, see Sec Dynamic-QoS-Param VSA Access-Accept or CoA-Re |
| 199 | Double_Authentication | No | No | Yes | Integer. The integer value session needs one more au it is received from a global |
| 201 | DHCP-Field | Yes | Yes | No | Binary. It identifies a stan generic VSA is used to ide fields that must be sent in accounting requests. To d DHCP client field, a unique used within this VSA to inc corresponds to a specific D this VSA supports only dho the giaddr or gateway ad uses the gateway address clients based on this addre |
| 202 | DHCP-Option | Yes | Yes | No | Binary. It identifies a DHCP is a generic VSA, which is supported DHCP client op RADIUS authentication or distinguish each supported dhcp-sub-type field is use a specific value that corre option. Currently, this VSA (hostname), 61 (client ider |



Table 14 Radius Supported RB and BBF Attributes

| # | VSA Name | Sent in Access-Request | Sent in Acct-Request | Received in Access-Response | Description |
|-----|------------------|------------------------|----------------------|-----------------------------|---|
| 203 | Security-Service | No | Yes | Yes | <p>String configured in RADIUS profile. Optionally it specifies following format:</p> <p>Security-Service="ike pr hex-value ASCII-value"</p> <p>The IKE preshared key is only in the Access-Response message; it is not in the Access-Request or Acct-Request message.</p> <p>The ASE DPI traffic management policy is configured in the Access-Request and sent in the Access-Response in the following format:</p> <p>Security-Service="dpi traffic management policy policy-name".</p> <p>To enable DPI security service through COA or reauthorization, the RADIUS server must send the Access-Accept message to the subscriber with the following format:</p> <p>Security-Service="dpi traffic management enable-coa".</p> |

5.4 Suggested-Rule-Space Sub Attributes

Table 15 describes the sub attributes of the Suggested-Rule-Space attribute in the Access-Accept message.

Table 15 Suggested-Rule-Space Subattributes

| Sub Attr # | Subattribute Name | Description | Presence | Content | Associated Attribute (Location of Subattr) |
|------------|--------------------------------|--------------------------------|----------|--------------|--|
| 30 | Suggested-Primary-Rule-Space | Suggested Primary Rule Space | Optional | UTF-8 String | Access-Accept |
| 31 | Suggested-Secondary-Rule-Space | Suggested Secondary Rule Space | Optional | UTF-8 String | Access-Accept |



6 Error Handling

Table 16 describes the behaviors of different error scenarios:

Table 16 Error Handling

| Scenario | Return Code |
|--|-----------------------|
| ACCOUNTING_REQUEST and ACCOUNTING_REQUEST Duplicated | discard |
| ACCOUNTING_REQUEST failed to check the accounting request authenticator | discard |
| PROXY_RESPONSE failed to check the reply authenticator | discard |
| PROXY_RESPONSE failed to get the proxy message record | discard |
| DA_RESPONSE failed to get the DA message record | discard |
| DA_RESPONSE failed to check the reply authenticator for DA message | discard |
| Failed to validate Message-Authenticator | discard |
| ACCESS_REQUEST The number of attributes is wrong | ACCESS_REJECT |
| DM_REQUEST and COA_REQUEST The number of attributes is wrong | ACCESS_REJECT |
| The number of attributes is wrong for other messages | discard |
| Access-Request message contains both CHAP-Password and User-Password | discard |
| Access-Request message contains both ARAP-Password and User-Password | discard |
| Access-Request message contains both ARAP-Password and CHAP-Password | discard |
| Access-Request message does not contain a User-Name or a Calling-Station-ID or a Called-station-ID | discard |
| Access-Request User-Password or CHAP-Password or State is not contained in the message | discard |
| Access-Request a NAS-IP-Address or a NAS-Identifier or a NAS-IPv6-Address (or all) is not contained in the message | discard |
| Access-Request EAP-Message existed with no Message-Authenticator contained in the message | discard |
| Accounting-Request a NAS-IP-Address or a NAS-Identifier (or both) is not contained in the message | discard |
| an Acct-Status-Type is not contained in the Accounting-Request message | discard |
| Accounting-Request message does not include Acct-Session-Id | discard |
| Acct-Status-Type is not set to stop in the Accounting -Request message | discard |
| Acct-Status-Type is not set to start in the Accounting -Request message | discard |
| Attribute with wrong length ⁽¹⁾ | ACCESS_REJECT/discard |
| unsupported attribute ⁽¹⁾ | ACCESS_REJECT/discard |
| Attribute of string type value error ⁽¹⁾ | ACCESS_REJECT/discard |
| Attribute of integer value error ⁽¹⁾ | ACCESS_REJECT/discard |
| AVP SERVICE_TYPE with wrong attribute ⁽¹⁾ | ACCESS_REJECT/discard |
| Attribute of IPv4 type value error ⁽¹⁾ | ACCESS_REJECT/discard |

(1) This ACCESS_REJECT scenario is only for the ACCESS_REQUEST, COA_REQUEST and DM_REQUEST messages. The AAA server discards the other types of messages.





7 Formal Syntax

Not Applicable.





8 Related Standards

This section states the related standards and explains any deviations from them.

For details, refer to **Standards**.





Reference List

IPWorks Library Documents

- [1] Trademark Information
- [2] Glossary of Terms and Acronyms
- [3] Typographic Conventions

PCAT and Other Ericsson Documents

- [4] Gi Interface Description, 1/1551-AXB 250 10/4

Standards

- [5] [Remote Authentication Dial In User Service \(RADIUS\) - RFC 2865](#)
- [6] [RADIUS Accounting - RFC 2866](#)
- [7] [RADIUS Accounting Modifications for Tunnel Protocol Support - RFC 2867](#)
- [8] [RADIUS Attributes for Tunnel Protocol Support - RFC 2868](#)
- [9] [RADIUS Extensions - RFC 2869](#)
- [10] [RADIUS and IPv6 - RFC 3162](#)
- [11] [Microsoft Vendor-specific RADIUS Attributes - RFC 2548](#)
- [12] [Dynamic Authorization Extensions to Remote Authentication Dial In User Service \(Radius\) - RFC 5176](#)
- [13] [Interworking between the Public Land Mobile Network \(PLMN\) supporting packet based services and Packet Data Networks \(PDN\) - 3GPP TS 29.061 V8.2.0](#)