

IPWorks 3GPP AAA Server-EIR S13 Interface

INTERWORK DESCRIPTION

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1 Introduction

This document describes the S13 interface between the 3GPP AAA server and the EIR.

Scope

The scope of this document includes the S13 interface protocol described in 3GPP TS 29.273.

This document covers the following topics:

- Interface Overview
- Interface Role
- Services
- Encapsulation and Addressing
- Procedures
- Information Model
- Diameter AVPs
- 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:

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



The standard, related to the S13 interface, can be found in the section Reference.



2 Interface Overview

The S13 interface is defined between the 3GPP AAA server and EIR. The interface is used by the 3GPP AAA server to check the validity of the ME (Mobile Equipment) Identity towards EIR when the Untrusted Non-3GPP IP Access Network executes the authentication process.

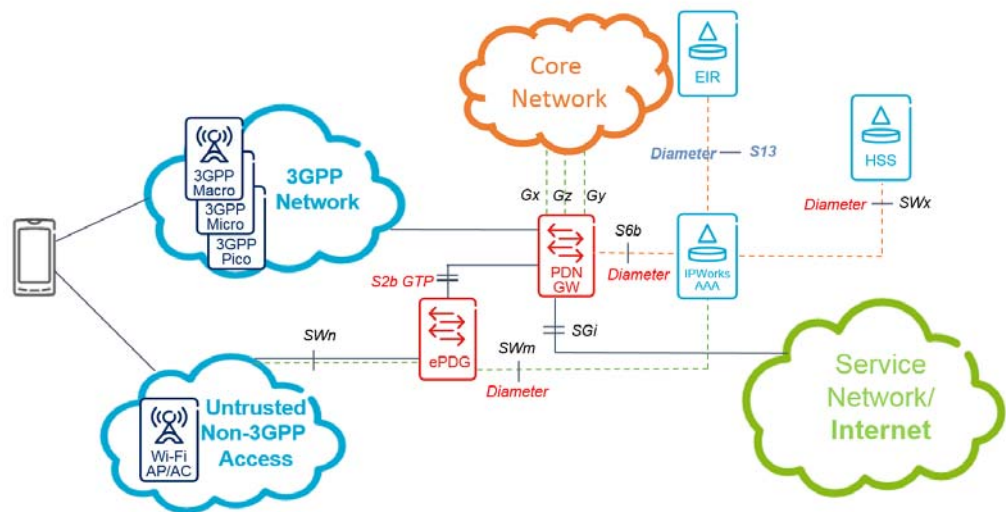


Figure 1 S13 Interface Entities

2.1 Interface Role

In the S13 interface, the IPWorks AAA server will take the role of 3GPP AAA server in EPC network.

2.2 Services

This section describes the services that the S13 Interface offers.

The services offered by the S13 interface are shown in Table 1.

Table 1 Offered Services

Offered Service	Description
ME Identity Check	The 3GPP AAA server is used to check the validity of ME Identity with EIR from Non-3GPP IP Access Network.



2.3 Encapsulation and Addressing

The following lower level protocols are used on this interface:

- SCTP
- TCP
- DIAMETER



3 Procedures

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

— ME Identity Check

3.1 ME Identity Check

This procedure will be triggered when 3GPP AAA server executes the authentication process for untrusted Non-3GPP IP Access Network.

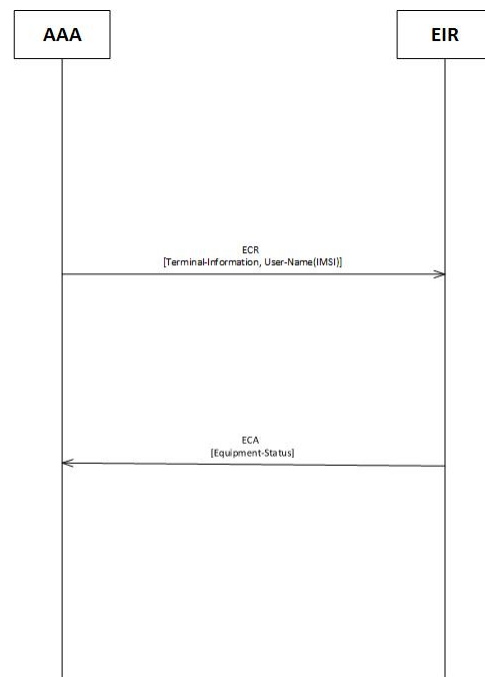


Figure 2 ME Identity Check Procedure





4 Information Model

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

4.1 General

This section describes the commands and the AVPs involved in the application. In this document, only the messages and the AVPs are described.

Table 2 indicates the Naur Form (ABNF) format in Augmented Backus.

Table 2 Naur Form (ABNF) format

{ }	Mandatory
< >	Mandatory with fixed place
[]	Optional
*	Zero or more Occurrences
*n	At most
n	Occurrences

4.2 ME Identity Check

4.2.1 ME-Identity-Check-Request (ECR) Command

The ME-Identity-Check-Request (ECR) command, indicated by the Command-Code field set to 324 and the 'R' bit set in the Command Flags field, is sent from AAA server to EIR.

Message Format:

```
< ME-Identity-Check-Request > ::= < Diameter Header: 324, REQ, PXY >
< Session-Id >
{ Auth-Session-State }
{ Origin-Host }
{ Origin-Realm }
{ Destination-Realm }
{ Terminal-Information }
[ Destination-Host ]
[ DRMP ]
[ Vendor-Specific-Application-Id ]
[ User-Name ]
*[ AVP ]
```



```
*[ Proxy-Info ]  
*[ Route-Record ]
```

4.2.2 ME-Identity-Check-Answer (ECA) Command

The ME-Identity-Check-Answer (ECA) command, indicated by the Command-Code field set to 324 and the 'R' bit cleared in the Command Flags field, is sent from EIR to AAA server.

Message Format:

```
< ME-Identity-Check-Answer > ::= < Diameter Header: 324, PXY >  
< Session-Id >  
{ Auth-Session-State }  
{ Origin-Host }  
{ Origin-Realm }  
[ DRMP ]  
[ Vendor-Specific-Application-Id ]  
[ Result-Code ]  
[ Experimental-Result ]  
[ Equipment-Status ]  
*[ AVP ]  
*[ Failed-AVP ]  
*[ Proxy-Info ]  
*[ Route-Record ]
```

5 Diameter AVPs

5.1 IETF Protocol AVPs

Diameter Base Protocol (RFC3588) AVPs that are included in the S13 messages, are described in Reference [4].

Table 3 IETF Protocol AVPs

Attribute Name	AVP Code	Value Type	Must	May	Should not	Must not
Proxy-Info	284	Grouped	M	-	P	V
Route-Record	282	DiamIdent	M	-	-	V
DRMP	301	Enumerated	-	P	-	M

5.1.1 Proxy-Info

The Proxy-Info AVP is of type Grouped defined in RFC 6733. This AVP shall contain the identity and local state information of the Diameter node that creates and adds it to a message.

5.1.2 Route-Record

The Route-Record AVP is of type DiameterIdentity defined in RFC 6733. The identity added in this AVP must be the same as the one received in the Origin-Host of the Capabilities Exchange message.

5.1.3 DRMP

The DRMP (AVP code 301) is of type Enumerated. The value of the AVP indicates the routing message priority for the transaction.

The priority level defines the relative importance of a resource request from PRIORITY 0 to PRIORITY 15. The related values 0 to 15 are defined, with value 0 as the highest level of priority.

5.2 3GPP AVPs

The following table describes the 3GPP AVPs defined in the S13 application, their AVP Code values, types and possible AVP flag values. The 3GPP AVPs have Vendor-ID=10415.



Table 4 3GPP AVPs

Attribute Name	AVP Code	Value Type	Must	May	Should not	Must not
Terminal-Information	1401	Grouped	M			
Equipment-Status	1445	Enumerated	M,V			
IMEI	1402	UTF8String	M,V			
Software-Version	1403	UTF8String	M,V			
3GPP2-MEID	1471	OctetString	M,V			

5.2.1 Terminal-Information

The Terminal-Information AVP is of type Grouped. This AVP shall contain the information about the user's terminal.

AVP format:

```
Terminal-Information ::= <AVP header: 1401 10415>
[ IMEI ]
[ 3GPP2-MEID ]
[ Software-Version ]
*[ AVP ]
```

5.2.2 Equipment-Status

The Equipment-Status AVP is of type Enumerated, and shall contain the status of the mobile equipment. The following values are defined:

```
WHITELISTED (0)
BLACKLISTED (1)
GREYLISTED (2)
```

5.2.3 IMEI

The IMEI AVP is of type UTF8String. This AVP shall contain the International ME Identity, as specified in 3GPP TS 23.003 [3]. It should consist of 14 digits, including the 8-digit Type Allocation Code (TAC) and the 6-digit Serial Number (SNR). It may also include a 15th digit.



5.2.4 Software-Version

The Software-Version AVP is of type UTF8String. This AVP shall contain the 2-digit Software Version Number (SVN) of the International Mobile Equipment Identity, as specified in 3GPP TS 23.003 [3].

5.2.5 3GPP2-MEID

This AVP is of type OctetString. This AVP contains the Mobile Equipment Identifier of the user's terminal. For further details on the encoding of the AVP data, refer to the encoding of the Mobile Identity (MEID) octets 3 to 10 in 3GPP2 A.S0022 [28] Annex A.





6 Error Handling

Table 5 Diameter Error Handling

Error Scenario	Return Code
ME Identity is unknown in EIR	EIR returns error DIAMETER_ERROR_EQUIPMENT_UNKNOWN AAA returns error DIAMETER_ERROR_ILLEGAL_EQUIPMENT





7 Related Standards

- 3GPP TS 29.272 V14.2.0 Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol (Release 14)
- 3GPP TS 29.273 V14.2.0 3GPP EPS AAA interfaces (Release 14)
- Diameter Base Protocol RFC 3588
- Diameter Routing Message Priority RFC 7944





Reference List

IPWorks Library Documents

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

Standards

- [4] [Diameter Base Protocol RFC 3588](#)
- [5] [Diameter Routing Message Priority RFC 7944](#)
- [6] [3GPP TS 29.272 V14.2.0 Mobility Management Entity \(MME\) and Serving GPRS Support Node \(SGSN\) related interfaces based on Diameter protocol \(Release 14\)](#)
- [7] [3GPP TS 29.273 V14.2.0 3GPP EPS AAA interfaces \(Release 14\)](#)