

# ETSI TS 129 345 V15.1.0 (2019-10)



TECHNICAL SPECIFICATION

**Universal Mobile Telecommunications System (UMTS);  
LTE;  
Inter-Proximity-services (ProSe) function signalling aspects;  
Stage 3  
(3GPP TS 29.345 version 15.1.0 Release 15)**



## Reference

---

RTS/TSGC-0429345v10

## Keywords

---

LTE,UMTS

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

---

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

---

The present document can be downloaded from:  
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at <https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:  
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

---

**Copyright Notification**

---

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2019.  
All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

**GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

---

## Intellectual Property Rights

### Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

### Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

---

## Legal Notice

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

---

## Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

# Contents

Intellectual Property Rights .....	2
Legal Notice .....	2
Modal verbs terminology.....	2
Foreword.....	7
1 Scope .....	8
2 References .....	8
3 Definitions, symbols and abbreviations .....	9
3.1 Definitions .....	9
3.2 Abbreviations .....	9
4 General Description.....	10
4.1 Introduction .....	10
5 Procedures Description.....	10
5.1 introduction .....	10
5.2 ProSe Service Authorization .....	10
5.2.1 General.....	10
5.2.2 Detailed behaviour of the ProSe Function in the HPLMN .....	11
5.2.3 Detailed behaviour of the ProSe Function in the Local PLMN or VPLMN .....	12
5.3 ProSe Direct Discovery Authorization .....	12
5.3.1 General.....	12
5.3.2 Detailed behaviour of the HPLMN ProSe Function .....	13
5.3.3 Detailed behaviour of the ProSe Function in the Local PLMN or VPLMN .....	15
5.4 ProSe Match Report .....	17
5.4.1 General.....	17
5.4.2 Detailed behaviour of the HPLMN ProSe Function .....	18
5.4.3 Detailed behaviour of the ProSe Function in the local PLMN .....	18
5.5 ProSe Match Report info .....	19
5.5.1 General.....	19
5.5.2 Detailed behaviour of the requesting ProSe Function.....	20
5.5.3 Detailed behaviour of the receiving ProSe Function .....	20
5.6 ProSe Proximity Request.....	21
5.6.1 General.....	21
5.6.2 Detailed behaviour of the ProSe Function of the requesting UE .....	22
5.6.3 Detailed behaviour of the ProSe Function of the targeted UE.....	22
5.7 ProSe Location Update.....	23
5.7.1 General.....	23
5.7.2 Detailed behaviour of the ProSe Function of the requesting UE .....	24
5.7.3 Detailed behaviour of the ProSe Function of the targeted UE .....	24
5.8 ProSe Cancellation .....	24
5.8.1 General.....	24
5.8.2 Detailed behaviour of the ProSe Function of the requesting UE .....	25
5.8.3 Detailed behaviour of the ProSe Function of the targeted UE .....	25
5.9 ProSe Proximity Alert .....	25
5.9.1 General.....	25
5.9.2 Detailed behaviour of the ProSe Function of the targeted UE .....	26
5.9.3 Detailed behaviour of the ProSe Function of the requesting UE .....	26
5.10 ProSe Direct Discovery Authorization Update.....	27
5.10.1 General.....	27
5.10.2 Detailed behaviour of the HPLMN ProSe Function .....	28
5.10.3 Detailed behaviour of the ProSe Function in the local PLMN or VPLMN .....	28
5.11 ProSe Direct Discovery Authorization Update Result .....	28
5.11.1 General.....	28
5.11.2 Detailed behaviour of the ProSe Function in the local PLMN .....	29
5.11.3 Detailed behaviour of the HPLMN ProSe Function .....	29

6	Protocol Specification and Implementation .....	30
6.1	Introduction .....	30
6.1.1	Use of Diameter base protocol.....	30
6.1.2	Securing Diameter Messages .....	30
6.1.3	Accounting functionality .....	30
6.1.4	Use of sessions.....	30
6.1.5	Transport protocol .....	30
6.1.6	Routing considerations .....	30
6.1.7	Advertising Application Support .....	31
6.1.8	Diameter Application Identifier.....	31
6.1.9	Use of the Supported-Features AVP .....	31
6.2	Commands.....	31
6.2.1	Introduction.....	31
6.2.2	Command-Code values.....	32
6.2.3	ProSe-Authorization-Request (PAR) Command .....	32
6.2.4	ProSe-Authorization-Answer (PAA) Command.....	33
6.2.5	ProSe-Discovery-Request (PDR) Command .....	33
6.2.6	ProSe-Discovery-Answer (PDA) Command .....	34
6.2.7	ProSe-Match-Request (PMR) Command.....	34
6.2.8	ProSe-Match-Answer (PMA) Command.....	34
6.2.9	ProSe-Match-Report-Info-Request (PIR) Command.....	35
6.2.10	ProSe-Match-Report-Info-Answer (PIA) Command.....	35
6.2.11	ProSe-Proximity-Request (PRR) Command.....	36
6.2.12	ProSe-Proximity-Answer (PRA) Command .....	36
6.2.13	ProSe-Location-Update-Request (PLR) Command .....	37
6.2.14	ProSe-Location-Update-Answer (PLA) Command .....	37
6.2.15	ProSe-Alert-Request (ALR) Command .....	38
6.2.16	ProSe-Alert-Answer (ALA) Command .....	38
6.2.17	ProSe-Cancellation-Request (PCR) Command.....	38
6.2.18	ProSe-Cancellation-Answer (PCA) Command .....	39
6.3	Information Elements .....	39
6.3.1	General.....	39
6.3.2	App-Layer-User-Id .....	43
6.3.3	Assistance-info .....	43
6.3.4	Assistance-Info-Validity-Timer .....	44
6.3.5	Discovery-Type .....	44
6.3.6	EAP-Master-Session-Key .....	44
6.3.7	Feature-List-ID AVP .....	45
6.3.8	Feature-List AVP .....	45
6.3.9	Filter-Id .....	45
6.3.10	Location-Estimate.....	45
6.3.11	MAC-Address .....	45
6.3.12	Match-Report .....	45
6.3.13	MSISDN .....	46
6.3.14	Operating-Channel.....	46
6.3.15	P2P-Features .....	46
6.3.16	ProSe-App-Code.....	46
6.3.17	ProSe-App-Id .....	46
6.3.18	ProSe-App-Mask .....	46
6.3.19	ProSe-Direct-Allowed .....	46
6.3.20	ProSe-Discovery-Filter .....	46
6.3.21	PRR-Flags.....	47
6.3.22	ProSe-Validity-Timer .....	47
6.3.23	Requesting-EPUIID .....	47
6.3.24	Supported-Features .....	47
6.3.25	SSID.....	47
6.3.26	Targeted-EPUIID .....	47
6.3.27	Time-Window .....	47
6.3.28	User-Identifier.....	48
6.3.29	Visited-PLMN-Id.....	48
6.3.30	WiFi-P2P-Assistance-Info .....	48
6.3.31	WLAN-Assistance-Info .....	48

6.3.32	WLAN-Link-Layer-Id .....	48
6.3.33	WLAN-Link-Layer-Id-List.....	49
6.3.34	OC-Supported-Features .....	49
6.3.35	OC-OLR .....	49
6.3.36	Validity-Time-Announce.....	49
6.3.37	Validity-Time-Monitor .....	49
6.3.38	Validity-Time-Communication.....	49
6.3.39	ProSe-App-Code-Info.....	49
6.3.40	MIC.....	49
6.3.41	UTC-based-Counter.....	50
6.3.42	Location-Update-Trigger.....	50
6.3.43	Location-Update-Event-Type .....	50
6.3.44	Change-Of-Area-Type .....	50
6.3.45	Location-Update-Event-Trigger .....	51
6.3.46	Report-Cardinality .....	51
6.3.47	Minimum-Interval-Time.....	51
6.3.48	Periodic-Location-Type .....	51
6.3.49	Location-Report-Interval-Time.....	52
6.3.50	Total-Number-Of-Reports .....	52
6.3.51	Authorized-Discovery-Range .....	52
6.3.52	ProSe-Match-Refresh-Timer.....	52
6.3.53	Discovery-Auth-Request .....	52
6.3.54	Discovery-Auth-Response .....	53
6.3.55	Match-Request .....	54
6.3.56	Match-Report-Info .....	55
6.3.57	PMR-Flags .....	55
6.3.58	ProSe-Application-Metadata.....	55
6.3.59	Discovery-Entry-ID .....	55
6.3.60	ProSe-Metadata-Index-Mask .....	55
6.3.61	App-Identifier .....	55
6.3.62	OS-ID.....	56
6.3.63	OS-App-ID .....	56
6.3.64	Requesting-RPAUID .....	56
6.3.65	Target-RPAUID .....	56
6.3.66	Target-PDUID .....	56
6.3.67	ProSe-Restricted-Code.....	56
6.3.68	ProSe-Restricted-Code-Suffix-Range .....	56
6.3.69	Beginning-Suffix .....	56
6.3.70	Ending-Suffix .....	57
6.3.71	Match-Timestamp.....	57
6.3.72	DRMP .....	57
6.3.73	Banned-RPAUID.....	57
6.3.74	Banned-PDUID.....	57
6.3.75	Code-Receiving-Security-Material .....	57
6.3.76	Code-Sending-Security-Material .....	57
6.3.77	DUSK .....	58
6.3.78	DUIK .....	58
6.3.79	DUCK.....	58
6.3.80	MIC-Check-Indicator.....	58
6.3.81	Encrypted-Bitmask .....	58
6.3.82	ProSe-App-Code-Suffix-Range .....	58
6.3.83	Load .....	59
6.3.84	PC5-tech .....	59
6.4	Result-Code and Experimental-Result Values .....	59
6.4.1	General.....	59
6.4.2	Success.....	59
6.4.3	Permanent Failures .....	59
6.4.3.1	DIAMETER_ERROR_USER_UNKNOWN (5001) .....	59
6.4.3.2	DIAMETER_ERROR_UNAUTHORIZED_SERVICE (5511) .....	59
6.4.3.3	DIAMETER_ERROR_NO_ASSOCIATED_DISCOVERY_FILTER (5630).....	59
6.4.3.4	DIAMETER_ERROR_ANNOUNCING_UNAUTHORIZED_IN_PLMN (5631).....	59
6.4.3.5	DIAMETER_ERROR_INVALID_APPLICATION_CODE (5632).....	59

6.4.3.6	DIAMETER_ERROR_PROXIMITY_UNAUTHORIZED (5633).....	60
6.4.3.7	DIAMETER_ERROR_PROXIMITY_REJECTED (5634).....	60
6.4.3.8	DIAMETER_ERROR_NO_PROXIMITY_REQUEST (5635).....	60
6.4.3.9	DIAMETER_ERROR_UNAUTHORIZED_SERVICE_IN_THIS_PLMN (5636) .....	60
6.4.3.10	DIAMETER_ERROR_PROXIMITY_CANCELLED (5637).....	60
6.4.3.11	DIAMETER_ERROR_INVALID_DISCOVERY_TYPE (5641).....	60
6.4.3.12	DIAMETER_ERROR_INVALID_TARGET_PDUID (5638).....	60
6.4.3.13	DIAMETER_ERROR_INVALID_TARGET_RPAUID (5639) .....	60
6.4.3.14	DIAMETER_ERROR_NO_ASSOCIATED_RESTRICTED_CODE (5640).....	60
6.4.3.15	DIAMETER_ERROR_REVOCATION_FAILURE (56x1).....	60
6.4.3.16	DIAMETER_ERROR_ALREADY_BANNED (56x2).....	60
6.4.4	Transient Failures .....	60
<b>Annex A (normative): Diameter overload control mechanism .....</b>		<b>62</b>
A.1	General .....	62
A.2	Responding ProSe Function behaviour .....	62
A.3	Requesting ProSe Function behaviour .....	62
<b>Annex B (Informative): Diameter overload node behaviour .....</b>		<b>63</b>
B.1	Message prioritization .....	63
<b>Annex C (normative): Diameter message priority mechanism.....</b>		<b>64</b>
C.1	General .....	64
C.2	PC6/PC7 interfaces.....	64
C.2.1	General.....	64
C.2.2	ProSe Function behaviour.....	64
<b>Annex D (normative): Diameter load control mechanism.....</b>		<b>65</b>
D.1	General .....	65
D.2	Responding ProSe Function behaviour .....	65
D.3	Requesting ProSe Function behaviour.....	65
<b>Annex E (informative): Change history .....</b>		<b>66</b>
History .....		68

ITC-STANDARD-PREVIEW  
 Full standard:  
<https://standards.iteh.ai/catalog/standards/sis/0997d4931-fada-4e90-b1a6-f674ef9d1bed/etsi-ts-129-345-v15-10-2019-10>

---

# Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/997d4031-fa04-4e90-b1a6-f674ef9d7bed/etsi-ts-129-345-v15.1.0-2019-10>



---

# 1 Scope

The present document describes the Diameter-based interfaces between the Proximity Services (ProSe) Function in the HPLMN and the ProSe Function in a local PLMN (PC6 interface) or between the Proximity Services (ProSe) Function in the HPLMN and the ProSe Function in a visited PLMN (PC7 interface).

This specification defines the Diameter application for PC6/PC7 reference points between the ProSe Functions. The interactions between the ProSe Functions are specified.

The stage 2 description for Proximity Services (ProSe) features in EPS is specified in 3GPP TS 23.303 [2].

---

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23 303: "Proximity-based services (ProSe); Stage 2".
- [3] 3GPP TS 29 228: "IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents".
- [4] 3GPP TS 23.003: "Numbering, addressing and identification".
- [5] 3GPP TS 29.329: "Sh interface based on the Diameter protocol; Protocol details".
- [6] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".
- [7] Void.
- [8] 3GPP TS 33.210: "3G security; Network Domain Security (NDS); IP network layer security".
- [9] IETF RFC 4960: "Stream Control Transport Protocol".
- [10] 3GPP TS 29.229: "Cx and Dx interfaces based on the Diameter protocol; protocol details".
- [11] IETF RFC 5234: "Augmented BNF for Syntax Specifications: ABNF".
- [12] IETF RFC 4072: "Diameter Extensible Authentication Protocol (EAP) Application".
- [13] 3GPP TS 32.299: "Charging management; Diameter charging applications".
- [14] 3GPP TS 29.344: "Proximity-services (Prose) Function to Home Subscriber Server (HSS) aspects (PC4); Stage 3".
- [15] 3GPP TS 29.273: "Evolved Packet System (EPS); 3GPP EPS AAA interfaces".
- [16] 3GPP TS 29.272: "Evolved Packet System (EPS); Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol".
- [17] Wi-Fi Alliance Technical Committee P2P Task Group, "Wi-Fi Peer-to-Peer (P2P) Technical Specification", Version 1.1.

- [18] 3GPP TS 29.336: "Home Subscriber Server (HSS) diameter interfaces for interworking with packet data networks and applications".
- [19] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- [20] IEEE Std 802.11-2012: "IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications".
- [21] IETF RFC 7683: "Diameter Overload Indication Conveyance".
- [22] 3GPP TS 24.334: "Proximity-services (ProSe) User Equipment (UE) to ProSe function protocol aspects; Stage 3".
- [23] 3GPP TS 33.303: "Proximity-based Services (ProSe); Security aspects".
- [24] 3GPP TS 23.271: "Functional stage 2 description of Location Services (LCS)".
- [25] Open Mobile Alliance, OMA AD SUPL: "Secure User Plane Location Architecture", (<http://www.openmobilealliance.org>).
- [26] 3GPP TS 24.333: "Proximity-services (ProSe) Management Objects (MO)".
- [27] IETF RFC 7944: "Diameter Routing Message Priority".
- [28] IETF RFC 8583: "Diameter Load Information Conveyance".
- [29] IETF RFC 6733: "Diameter Base Protocol".

## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.303 [2] apply:

#### Local PLMN

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

ALUID	Application Layer User ID
DRMP	Diameter Routing Message Priority
DSCP	Differentiated Services Code Point
DUCK	Discovery User Confidentiality Key
DUIK	Discovery User Integrity Key
DUSK	Discovery User Scrambling Key
EPUIID	EPC ProSe User ID
MIC	Message Integrity Check
PDUID	ProSe Discovery UE ID
ProSe	Proximity-based Services
RPAUID	Restricted ProSe Application User ID
UTC	Universal Time Coordinated
WLLID	WLAN Link Layer ID

---

## 4 General Description

### 4.1 Introduction

The PC6 reference point is defined between a ProSe Function in the HPLMN and a ProSe Function in a local PLMN.

The PC7 reference point is defined between ProSe Function in the HPLMN and a ProSe Function in a visited PLMN.

The definition of the PC6/PC7 reference points and related functionalities are given in 3GPP TS 23.303 [2].

As defined in 3GPP TS 23.303 [2], the PC6/PC7 reference points are used for:

- HPLMN control of service authorization for ProSe;
- Authorization of ProSe Direct Discovery requests;
- Retrieval of Discovery Filter(s) corresponding ProSe Application ID name(s);
- Translation of ProSe Application Code(s) to the associated ProSe Application Name.

---

## 5 Procedures Description

### 5.1 introduction

This clause describes the Diameter-based PC6 and PC7 interfaces related procedures and Information elements exchanged between functional entities.

In the tables that describe the Information Elements transported by each Diameter command, each Information Element is marked as (M) Mandatory, (C) Conditional or (O) Optional in the "Cat." column. For the correct handling of the Information Element according to the category type, see the description detailed in clause 6 of the 3GPP TS 29.228 [3].

### 5.2 ProSe Service Authorization

#### 5.2.1 General

The ProSe Service Authorization Procedure shall be used between the ProSe Function in the HPLMN and the ProSe Function in Local PLMN or VPLMN to obtain service authorization information for ProSe Direct Discovery, ProSe Direct Communication or both. The procedure shall be invoked by the ProSe Function in the HPLMN by the UE and is used:

- to request service authorization information for ProSe related to the UE from the ProSe Function in the local PLMN or VPLMN;
- to provide the ProSe Function in the local PLMN or VPLMN with the UE identity (IMSI or MSISDN) in order to allow to perform charging;

This procedure is mapped to the commands ProSe-Authorization-Request/Answer (PAR/PAA) in the Diameter application specified in clause 6.

Table 5.2.1-1 specifies the involved information elements for the request.

Table 5.2.1-2 specifies the involved information elements for the answer.

Table 5.2.1-1: ProSe Service Authorization Request

Information element name	Mapping to Diameter AVP	Cat.	Description
UE Identity (See 6.3.28)	User-Identifier	M	This information element shall contain either the user IMSI, formatted according to 3GPP TS 23.003 [4], clause 2.2, or the user MSISDN, formatted according to 3GPP TS 29.329 [5].
PLMN Id (See 6.3.29)	Visited-PLMN-Id	M	This IE shall contain the PLMN-Id (3GPP TS 23.003 [4]) of the network in which the ProSe Function is located.
Supported Features (See 6.3.24)	Supported-Features	O	If present, this information element shall contain the list of features supported by the origin host.

Table 5.2.1-2: ProSe Service Authorization Answer

Information element name	Mapping to Diameter AVP	Cat.	Description
Supported Features (See 6.3.24)	Supported-Features	O	If present, this information element shall contain the list of features supported by the origin host.
Result (See 6.4)	Result-Code / Experimental-Result	M	This IE shall contain the result of the operation. The Result-Code AVP shall be used to indicate success / errors as defined in the Diameter Base Protocol. The Experimental-Result AVP shall be used for PC6/PC7 errors. This is a grouped AVP which shall contain the 3GPP Vendor ID in the Vendor-Id AVP, and the error code in the Experimental-Result-Code AVP. The following errors are applicable: - User Unknown - Unauthorized Service - Unauthorized Service in this PLMN
ProSe Direct Allowed (See 6.3.42)	ProSe-Direct-Allowed	C	This Information Element shall contain the ProSe authorization information of the user. It shall be present if success is reported.
Validity Time of Announcing (see.6.3.36)	Validity-Time-Announce	C	This Information Element shall contain the validity time for a UE authorization to perform ProSe direct discovery announcing in this PLMN. It shall be present if success is reported.
Validity Time of Monitoring (see.6.3.37)	Validity-Time-Monitor	C	This Information Element shall contain the validity time for a UE authorization to perform ProSe direct discovery monitoring in this PLMN. It shall be present if success is reported.
Validity Time of Communication (see.6.3.38)	Validity-Time-Communication	C	This Information Element shall contain the validity time for a UE authorization to perform ProSe direct communication in this PLMN. It shall be present if success is reported.
Authorized Discovery Range (See 3GPP TS 29.344 [14])	Authorized-Discovery-Range	C	This information element shall contain the authorised range (short/medium/long) at which the UE is allowed to announce in the given PLMN according to the defined announcing authorisation policy for this UE. It shall be present if the discovery authorization type is for announcing. Otherwise it shall be absent.

## 5.2.2 Detailed behaviour of the ProSe Function in the HPLMN

The ProSe Function in the HPLMN shall make use of this procedure to request service authorization information for ProSe related to the UE from the ProSe Function in local PLMN or VPLMN. The ProSe Function shall include in the request the UE identity (IMSI or MSISDN) and the PLMN-Id identifying the PLMN of the requesting ProSe Function.

When receiving a ProSe Service Authorization response from the ProSe Function in the local PLMN or VPLMN, the ProSe Function in the HPLMN shall check the result code. If it indicates SUCCESS, the ProSe Function shall merge with its own policy.

## 5.2.3 Detailed behaviour of the ProSe Function in the Local PLMN or VPLMN

When receiving a ProSe Service Authorization request, the ProSe Function in the local PLMN or VPLMN shall, in the following order:

1. Check whether the UE Identity (IMSI or MSISDN) exists. If not, a Result Code of `DIAMETER_ERROR_USER_UNKNOWN` shall be returned.
2. Check whether ProSe is authorized for this UE Identity. If not, a Result Code of `DIAMETER_ERROR_UNAUTHORIZED_SERVICE` shall be returned.

If there is an error in any of the above steps then the ProSe Function shall stop processing the request and shall return the error code specified in the respective step.

If the ProSe Function cannot fulfil the received request for reasons not stated in the above steps, e.g. due to a database error or any of the required actions cannot be performed, it shall stop processing the request and set the Result Code to `"DIAMETER_UNABLE_TO_COMPLY"`.

Otherwise, when the UE is authorized to use ProSe Direct Discovery or ProSe Direct Communication in this PLMN, the ProSe Function shall return the authorization data in the response, according to the supported/unsupported features of the ProSe Function in the Local PLMN or VPLMN, and the authorised announcing range (short/medium/long) at which and if the UE is allowed to announce in the VPLMN according to the defined announcing authorisation policy for this UE (see 3GPP TS 24.333 [26] for the possible values of the range) and shall set the Result Code to `"DIAMETER_SUCCESS"`.

## 5.3 ProSe Direct Discovery Authorization

### 5.3.1 General

The ProSe Direct Discovery Authorization Procedure shall be used between the ProSe Function in the HPLMN and the ProSe Function in a Local PLMN or VPLMN to obtain authorization for access to the discovery resources and perform ProSe Direct Discovery. The procedure shall be invoked by the ProSe Function in the HPLMN and is used:

- to request the ProSe Function in the VPLMN or Local PLMN for the authorization for ProSe Direct Discovery announcing when the announcing UE is roaming in the VPLMN or announcing in a Local PLMN;
- to perform the resolution ProSe Application ID Name to ProSe Application Code and/or ProSe Application Mask when the ProSe Application ID has PLMN-specific scope for open ProSe Direct discovery;
- to notify the ProSe Function in Local PLMN that the previously allocated ProSe Discovery Filter for a ProSe Application ID which has PLMN-specific scope is no longer monitored by a monitoring UE of the HPLMN;
- to perform the resolution of a target RPAUID to a ProSe Restricted Code or ProSe Restricted Code Prefix for restricted ProSe Direct Discovery;
- to provide the ProSe Function in the Local PLMN or VPLMN with the application identity in order to allow it to perform charging;
- to provide the ProSe Function in the Local PLMN or VPLMN with the UE identity (i.e. IMSI or MSISDN) in order to allow to perform charging;
- to provide the ProSe Function in VPLMN with the allocated ProSe Application Code, ProSe Restricted Code or ProSe Restricted Code Prefix/Suffix Pool, and the corresponding validity timer, or a notification of the termination or change of the allocated ProSe-related codes, in order to allow to perform charging.
- to provide the ProSe Function in VPLMN with the allocated ProSe Query Code or ProSe Response Code and the corresponding validity timer when such a code is announced in restricted ProSe Direct Discovery model B procedure, in order to allow to perform charging.
- to provide the ProSe Function in VPLMN/Local PLMN with the allocated ProSe Query Code, ProSe Response Code and associated validity timer for a given RPAUID using restricted ProSe Direct Discovery model B.