



**Universal Mobile Telecommunications System (UMTS);
LTE;
Representational State Transfer (REST)
reference point between Application Function (AF)
and Protocol Converter (PC)
(3GPP TS 29.201 version 12.4.0 Release 12)**



Reference

RTS/TSGC-0329201vc40

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 only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

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
<http://portal.etsi.org/tb/status/status.asp>

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.

© European Telecommunications Standards Institute 2016.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.
GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Intellectual Property Rights

IPRs essential or potentially essential to the present document 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.

Foreword

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, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 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 |
| Foreword..... | 2 |
| Modal verbs terminology..... | 2 |
| Foreword..... | 5 |
| 1 Scope | 6 |
| 2 References | 6 |
| 3 Definitions and abbreviations..... | 7 |
| 3.1 Definitions | 7 |
| 3.2 Abbreviations | 7 |
| 4 Representational State Transfer (REST) reference point based on Protocol Converter (PC) architecture | 8 |
| 4.1 Overview | 8 |
| 4.2 Reference model..... | 8 |
| 4.3 Functional elements..... | 13 |
| 4.3.1 Application function | 13 |
| 4.3.2 Protocol converter..... | 13 |
| 4.4 Location of the PC within the PLMN..... | 13 |
| 4.4.1 General..... | 13 |
| 4.4.2 Protocol converter located in the PLMN but outside of the PCRF realm | 14 |
| 4.4.3 Protocol converter located in the PCRF realm..... | 14 |
| 4.5 PCC Procedures over the RESTful reference point..... | 15 |
| 4.5.1 General..... | 15 |
| 4.5.2 Initial Provisioning of Session Information | 15 |
| 4.5.3 Modification of Session Information | 16 |
| 4.5.4 AF Session Termination | 17 |
| 4.5.5 Gate Related Procedures | 17 |
| 4.5.6 Subscription to Notification of Signalling Path Status | 17 |
| 4.5.7 Traffic Plane Events..... | 17 |
| 5 Protocol | 18 |
| 5.1 Introduction | 18 |
| 5.2 Transport layer | 18 |
| 5.3 Application delivery layer | 18 |
| 5.3.1 Methods | 19 |
| 5.3.2 Void | 20 |
| 5.3.3 Resources and URI design | 20 |
| 5.3.4 HTTP request/response dialogues..... | 20 |
| 5.3.5 AF Session ID..... | 22 |
| 5.4 Specific application communication | 22 |
| 5.4.0 General..... | 22 |
| 5.4.1 Content type XML..... | 22 |
| 5.4.1.1 XML schema..... | 22 |
| 5.4.1.2 Data types and mapping between XML elements..... | 22 |
| 5.4.1.3 Mapping between Diameter AVPs and XML elements and groups..... | 23 |
| 5.5 PC discovery | 25 |
| 6 Routing..... | 25 |
| 6.1 PC located in the PLMN but outside of the PCRF realm | 25 |
| 6.2 PC located in the PCRF realm..... | 25 |
| 7 Secure communication | 26 |
| Annex A (informative): Call Flows | 27 |

| | | |
|-------------------------------|---|-----------|
| A.1 | General | 27 |
| A.2 | AF session establishment | 27 |
| A.3 | AF Session Modification Initiated by AF | 27 |
| A.4 | AF Session Termination | 28 |
| A.5 | Gate Related Procedures | 28 |
| A.6 | Subscription to Notification of Signalling Path Status | 29 |
| A.7 | Notification of Traffic Plane Events | 29 |
| A.7.1 | Traffic plane event reporting | 30 |
| A.7.2 | Service data flow deactivation when all service data flows are affected | 30 |
| A.7.3 | IP-CAN Session Termination | 31 |
| Annex B (normative): | XML Schema | 33 |
| B.1 | XML elements and groups | 33 |
| B.2 | Diameter message representation | 36 |
| Annex C (informative): | Change history | 40 |
| History | | 41 |

Foreword

This Technical Specification has been produced by the 3rd 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.

1 Scope

The present document describes the Representational State Transfer (REST) reference point, which is used to exchange application level session information between the Protocol Converter (PC) and the Application Function (AF). REST shall be used as an architectural style as appropriate.

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 TR 29.817: "Study on XML based access of AF to the PCRF".
- [3] 3GPP TS 29.213: "Policy and Charging Control signalling flows and Quality of Service (QoS) parameter mapping".
- [4] 3GPP TS 29.214: "Policy and Charging Control over Rx reference point".
- [5] 3GPP TS 23.203: "Policy and Charging Control architecture".
- [6] 3GPP TS 23.335: "User Data Convergence (UDC); Technical realization and information flows; Stage 2".
- [7] 3GPP TS 29.335: "User Data Convergence (UDC); User Data Repository Access Protocol over the Ud interface; Stage 3".
- [8] IETF RFC 793: "Transmission Control Protocol".
- [9] IETF RFC 2616: "Hypertext Transfer Protocol – HTTP/1.1".
- [10] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".
- [11] IETF RFC 1035: "Domain Names – Implementation and Specification".
- [12] IETF RFC 2131: "Dynamic Host Configuration Protocol".
- [13] 3GPP TS 33.310: "Network Domain Security (NDS); Authentication Framework (AF)".
- [14] IETF RFC 2818: "HTTP Over TLS".
- [15] IETF RFC 1786: "Uniform Resource Locators (URL)".
- [16] IETF RFC 3588: "Diameter Base Protocol".