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TECHNICAL SPECIFICATION

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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).

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Contents

Foreword

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

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  - 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.
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In the present document, modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

should not indicates a recommendation not to do something

may indicates permission to do something

need not indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

Introduction

The present specification details the stage 3 work related to all 3GPP AAA reference points used by the different non-3GPP accesses included in EPS. It also details the stage 3 work related to the SWa reference point used for Non-seamless WLAN offload (NSWO) in 5GS.

1 Scope

The present document defines the stage-3 protocol description for several reference points for the non-3GPP access in EPS:

- The SWa reference point between an un-trusted non-3GPP IP access and the 3GPP AAA Server/Proxy.
- The STa reference point between a trusted non-3GPP IP access and the 3GPP AAA Server/Proxy.
- The SWd reference point between the 3GPP AAA Proxy and 3GPP AAA Server.
- The SWx reference point between the 3GPP AAA Server and the HSS.
- The S6b reference point between the 3GPP AAA Server/Proxy and the PDN GW.
- The SWm reference point between the 3GPP AAA Server/Proxy and the ePDG.
- The reference point between the 3GPP AAA Server/Proxy and the EIR.

The present document also defines the stage 3 protocol description for the following reference points defined for Non-seamless WLAN offload in 5GS:

- the SWa' reference point between a non-3GPP WLAN access, possibly via a 3GPP AAA Proxy, and the NSWO NF; and
- the SWd' reference point between the 3GPP AAA Proxy, possibly via an intermediate 3GPP AAA Proxy, and the NSWO NF.

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] IETF RFC 5779: "Diameter Proxy Mobile IPv6: Mobility Access Gateway and Local Mobility Anchor Interaction with Diameter Server ".

[3] 3GPP TS 23.402: "Architecture enhancements for non-3GPP accesses".

[4] IETF RFC 4005: "Diameter Network Access Server Application"

[5] IETF RFC 4072: "Diameter Extensible Authentication Protocol (EAP) Application"

[6] IETF RFC 5447 "Diameter Mobile IPv6: Support for Network Access Server to Diameter Server Interaction".

[7] Void.

[8] IETF RFC 3748: "Extensible Authentication Protocol (EAP)".

[9] IETF RFC 5777: "Traffic Classification and Quality of Service (QoS) Attributes for Diameter".

[10] Void

[11] IETF RFC 5778: "Diameter Mobile IPv6: Support for Home Agent to Diameter Server Interaction".

[12] Void

[13] 3GPP TS 24.303: "Mobility management based on Dual-Stack Mobile IPv6; Stage 3".

[14] 3GPP TS 23.003: "Numbering, addressing and identification".

[15] IETF RFC 4282: "The Network Access Identifier".

[16] 3GPP TS 33.203: "3G security; Access security for IP-based services".

[17] 3GPP TS 29.230: "Diameter applications; 3GPP specific codes and identifiers".

[18] IETF RFC 4004: "Diameter Mobile IPv4 Application".

[19] 3GPP TS 33.402: "3GPP System Architecture Evolution (SAE); Security aspects of non-3GPP accesses".

[20] IETF RFC 4006: "Diameter Credit-Control Application".

[21] Void.

[22] 3GPP TS 29.228: "IP multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and Message Elements".

[23] 3GPP TS 29.212: "Policy and Charging Control (PCC); Reference points".

[24] 3GPP TS 29.229: "Cx and Dx interfaces based on the Diameter protocol; Protocol details".

[25] 3GPP2 X. S0057-B: "EUTRAN – eHRPD Connectivity and Interworking: Core Network Aspects".

[26] 3GPP TS 24.302: "Access to the 3GPP Evolved Packet Core (EPC) via non-3GPP access networks".

[27] IETF RFC 5448: "Improved Extensible Authentication Protocol Method for 3rd Generation Authentication and Key Agreement (EAP-AKA')".

[28] IETF RFC 6611: "Mobile IPv6 (MIPv6) Bootstrapping for the Integrated Scenario".

[29] 3GPP TS 29.272: "Evolved Packet System; MME and SGSN Related Interfaces Based on Diameter Protocol".

[30] 3GPP TS 32.299: "Charging management; Diameter charging applications".

[31] 3GPP TS 29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN)".

[32] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[33] Void.

[34] 3GPP TS 29.303: "Domain Name System Procedures; Stage 3".

[35] IETF RFC 1035: "Domain Names - Implementation and Specification".

[36] Void.

[37] IETF RFC 5729: "Clarifications on the Routing of Diameter Requests Based on the Username and the Realm".

[38] 3GPP TS 29.274: "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".

[39] 3GPP TS 23.139: "3GPP System-Fixed Broadband Access Network Interworking; Stage 2".