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Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Security Assurance Specification (SCAS) for the Unified Data Repository (UDR) (Release 19)

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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.

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.

1 Scope

The present document contains requirements and test cases that are specific to the UDR network product class. It refers to the Catalogue of General Security Assurance Requirements [2] and formulates specific adaptions of the requirements and test cases given there, as well as specifying requirements and test cases unique to the UDR network product class.

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 33.117: "Catalogue of general security assurance requirements"

[3] 3GPP TS 23.501: "System Architecture for 5G System (5GS)"

[4] 3GPP TS 33.501: "Security architecture and procedures for 5G System"

3 Definitions of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in 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 TR 21.905 [1].

3.2 Symbols

Void

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 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 TR 21.905 [1].

UDR Unified Data Repository

4 UDR-specific security requirements and related test cases

4.1 Introduction

The present clause contains security requirements and related test cases for the UDR. Security requirements include both requirements derived from UDR specific security functional requirements in relevant specifications as well as referenced security requirements introduced in the catalogue of general security assurance requirements described in TS 33.117 [2].

4.2 UDR-specific adaptations of security functional requirements and related test cases

4.2.1 Introduction

The present clause describes the security functional requirements and the corresponding test cases for UDR network product class. The proposed security requirements are classified in two groups:

- Security functional requirements derived from TS 33.501 [2] and detailed in clause 4.2.2.
- General security functional requirements which include requirements not already addressed in TS 33.501 [2] but whose support is also important to ensure that UDR conforms to a common security baseline detailed in clause 4.2.2.0.

4.2.2 Security functional requirements on the UDR deriving from 3GPP specifications and related test cases

4.2.2.1 General

The general approach in TS 33.117 [3] clause 4.2.2.1 and all the requirements and test cases in TS 33.117 [3] clause 4.2.2.2 related to SBA/SBI aspect apply to the UDR network product class.

4.2.2.2 Specific UE security-related information update in the UDR

Requirement Name: Ability of NFs to update UE security-related information in the UDR

Requirement Reference: TS 33.501 [4], clause 5.8b Requirements on the UDR

Threat References: TR 33.926 [5], clause AA.2 Assets and threats specific to the UDR

Requirement Description: Only the UDM is able to update security-related information in the UDR.

Test Case:

Test Name: TC_ONLY_UDM_CAN_UPDATE_UDR

Purpose:

- Verify that only the UDM is able to update the security related information in the UDR.

Procedure and execution steps:

Pre-Condition:

- The test case is applicable if UDR and UDM are implemented as separate network functions (non-colocated)
- The network environment, such as the UDM, can be simulated.

- The network environment, such as the non-UDM, can be simulated.

Execution Steps:

Test Case 1:

1) The tester correctly calculates an access token with valid audience and scope claims reflecting the UDM network function to access the UDR resources.
2) The tester includes the access token into an update request to the UDR, e.g., update the SQN or the Authentication Status.

Test Case 2:

1) The tester correctly calculates an access token with valid audience and scope claims reflecting a non-UDM network function to access the UDR resources.
2) The tester includes the access token into an update request to the UDR, e.g., update the SQN or the Authentication Status.

Expected Results:

For test case 1: The UDR **accepts** the service request.

For test case 2: The UDR **rejects** the service request.

Expected format of evidence:

Evidence suitable for the interface, e.g., pcap file or screenshot containing the operational results.

4.3 UDR-specific adaptations of hardening requirements and related test cases.

There are no UDR-specific additions to clause 4.3 of TS 33.117 [2].

4.4 UDR-specific adaptations of basic vulnerability testing requirements and related test cases

4.4.1 Introduction

There are no UDR-specific additions to clause 4.4.1 of TS 33.117 [2].

4.4.2 Port Scanning

There are no UDR-specific additions to clause 4.4.2 of TS 33.117 [2].

4.4.3 Vulnerability scanning

There are no UDR-specific additions to clause 4.4.3 of TS 33.117 [2].

4.4.4 Robustness and fuzz testing

The test cases under clause 4.4.4 of TS 33.117 [2] are applicable to UDR.

According to clause 4.4.4 of TS 33.117 [2], the transport protocols available on the interfaces providing IP-based protocols need to be robustness tested. The interface defined for the UDR in clause 4.2.3 of TS 23.501 [3] is Nudr.

Following TCP/IP layer model and considering all the protocols over transport layer, for UDR, the following interface and protocols are under testing:

- For Nudr: The TCP, HTTP2 and JSON protocols.

NOTE: There could be other interfaces and/or protocols requiring testing under clause 4.4.4 of TS 33.117 [2]

Annex A (informative): Change history

Change history							
Date	**Meeting**	**TDoc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
2024-01	SA3#114 Adhoc-e	S3-240021				TS skeleton	0.0.0
2024-01	SA3#114 Adhoc-e	S3-240136				draft TS, adding scope, introduction and clause 4 content	0.1.0
2024-11	SA3#119 Orlando, US	S3-245330				Adding specific UDR test cases to clause 4.2	0.2.0
2024-12	SA#106	SP-241784				Presented for information and approval	1.0.0
2025-01						Upgraded to change control version	19.0.0