**3GPP TSG-SA3 Meeting #100e *S3-20xxxx***

**e-meeting, 17 - 28 August 2020 *revision of S3-201998***

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **33.926** | **CR** | **DraftCR** | **rev** | **-** | **Current version:** | **16.3.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Analysis of threats over SCP internal network interfaces | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | S3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SCAS\_5G\_SECOP | | | | |  | ***Date:*** | | | 07-08-2020 |
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| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | The work item of Security Assurance Specification for Service Communication Proxy (SCP) was approved at SA3#98e meeting. Before defining a test case for security assurance, it is essential to first analyse the threats that an attacker may launch on the SCP when the requirement is not fulfilled.  According to TS 23.501 [8] clauses 6.2.19, 7.1.1 and G.2.1, the SCP can be deployed in a distributed manner. For such a SCP, its internal network interfaces are not contained within a single physically protected element. Therefore, it’s defined in TS 33.501 "*The SCP shall provide confidentiality, integrity and replay protection for its internal communication over SCP internal network interfaces*”. If the communication over its internal interfaces are not well protected, the risk of the SCP’s critical assets being attacked is high.  Therefore, it is proposed to add a clause in an new Annex for the SCP network product class in TR 33.926 R17 for analysing the potential threats. | | | | | | | | |
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| ***Summary of change:*** | | Added a new clause to analyse the threats of unprotected internal interfaces in a normative Annex for the SCP network product class in TR 33.926 R17. | | | | | | | | |
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| ***Consequences if not approved:*** | | Lack of threat anslysis for the purpose of the test case for security assurance. | | | | | | | | |
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| ***Clauses affected:*** | | New clauses X.Y.Z, X.Y.Z.1 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of the 1st Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

# 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 33.916: "Security Assurance Methodology for 3GPP network products classes".

[3] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".

[4] 3GPP TR 33.821: "Rationale and track of security decisions in Long Term Evolution (LTE) RAN/3GPP System Architecture Evolution (SAE)".

[5] 3GPP TS 33.116: "Security Assurance Specification for MME network product class".

[6] 3GPP TS 33.511: "5G Security Assurance Specification (SCAS); NR Node B (gNB)"

[7] 3GPP TS 38.300 v15: "NR; NR and NR-RAN Overall Description; Stage 2".

[8] 3GPP TS 23.501 v15: "System Architecture for 5G System; Stage 2".

[9] 3GPP TS 38.323 v15: "NR; Packet Data Convergence Protocol (PDCP) specification".

[10] 3GPP TS 38.322 v15: "NR; Radio Link Control (RLC) protocol specification".

[11] 3GPP TS 33.250: "Security assurance specification for the PGW network product class".

[12] 3GPP TS 33.516: "5G Security Assurance Specification (SCAS) for the AUSF network product class".

[13] 3GPP TS 33.517: "5G Security Assurance Specification (SCAS) for the Security Edge Protection Proxy (SEPP) network product class".

[14] 3GPP TS 33.501 Release 15: "Security architecture and procedures for 5G system".

[15] 3GPP TS 33.518: "5G Security Assurance Specification (SCAS) for the Network Repository Function (NRF) network product class".

[16] 3GPP TS 33.519: "5G Security Assurance Specification (SCAS) for the Network Exposure Function (NEF) network product class".

[17] 3GPP TS 33.117: "Catalogue of general security assurance requirements".

[18] 3GPP TS 33.513: "5G Security Assurance Specification (SCAS); User Plane Function (UPF)".

[19] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN);Overall description;Stage 2."

[20] 3GPP TS 33.216: "Security Assurance Specification (SCAS) for the evolved Node B (eNB) network product class."

[21] 3GPP TS 33.514: "5G Security Assurance Specification (SCAS) for the Unified Data Management (UDM) network product class".

[22] 3GPP TS 33.512: "5G Security Assurance Specification (SCAS); Access and Mobility management Function (AMF)".

[x] 3GPP TS 23.501: "System Architecture for 5G System; Stage 2" (Release 16).

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of the 2nd Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## X.Y.Z Threats related to communication within the SCP

### X.Y.Z.1 Unprotected Internal Interfaces of the SCP

*- Threat name:* Unprotected internal interfaces of the SCP

*- Threat Category*: Denial of Service, Spoofing Identity, Tampering of Data, Information Disclosure

*- Threat Description*: According to TS 23.501 [x] clauses 6.2.19 and 7.1.1, the SCP can be deployed in a distributed manner.

Note: Deployment examples of the SCP in distributed mode are described in TS 23.501 [x] clause G.2.1,

When the SCP is a distributed system, if its internal interfaces are not securely protected, an attacker can obtain all kinds of sensitive information included in the Service Messages forwarded between NFs/NF services (e.g. security data attached to the service requests by the SCP), and tamper the data related to routing, selection, discovery, leading to failed or incorrect selection and forwarding. All these can result in information disclosure, data tampering, denial of service, as well as waste of system resources.

*- Threatened Asset*: SCP Application, Service Messages forwarded/routed between NFs/NF services, Data related to routing, selection, discovery, Security Data attached to service requests, Sufficient Processing Capacity

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* End of the Changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*