**3GPP TSG-SA3 Meeting #111 *S3-23xxxx***

**Berlin, Germany, 22 -26 May 2023**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **33.512** | **CR** | **<CR#>** | **rev** | **<Rev#>** | **Current version:** | **17.3.0** |  |
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| *For* [***HE***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)***LP*** *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:*** | Clarification of test applicability | | | | | | | | | |
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| ***Source to WG:*** | Federal Office for Information Security (BSI) | | | | | | | | | |
| ***Source to TSG:*** | S3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eSCAS\_5G | | | | |  | ***Date:*** | | | 2023-05-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | Currently, the applicability of a test case is not stated in consistent style at a specific section. | | | | | | | | |
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| ***Summary of change:*** | | Altering the corresponding test cases by moving the applicability paragraph to the Pre-Condition section. | | | | | | | | |
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| ***Consequences if not approved:*** | | Confusion of tester who cannot easily determine, if the current test case is applicable. | | | | | | | | |
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| ***Clauses affected:*** | | 4.2.2.1.3, 4.2.2.8.1, 4.2.2.9.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 1st CHANGE \*\*\*\*\*\*\*\*\*\*

##### 4.2.2.1.3 NAS based redirection from 5GS to EPS

*Requirement Name*: NAS based redirection from 5GS to EPS

*Requirement Reference:* TS 33.501 [7], clause 6.16.4., TS 23.501 [8], clause 5.31.3.

*Requirement Description*: "When a UE initiates registration procedure with the AMF, the AMF may redirect the UE from 5GC to EPC by including a EMM cause indicating to the UE that it shall not use 5GC, as described in clause 5.31.3 in TS 23.501 [2]. The following requirements apply to Registration Reject message with an EMM cause which indicates to the UE that the UE shall not use 5GC:

- the AMF shall only send such a Registration Reject message once NAS security has been established between the AMF and the UE; and

- the UE shall only act upon such Registration Reject message if received integrity protected and if UE has verified the integrity of the Registration Reject message successfully.

NOTE 1: This solution does not apply to unauthenticated emergency calls.

" as specified in TS 33.501 [7], clause 6.16.4. "

"In networks that support CIoT features in both EPC and 5GC, the operator may steer UEs from a specific CN type due to operator policy, e.g. due to roaming agreements, Preferred and Supported Network Behaviour, load redistribution, etc. Operator policies in EPC and 5GC are assumed to avoid steering UEs back and forth between EPC and 5GC.

" as specified in TS 23.501 [8], clause 5.31.3".

*Threat Reference*: TBD

**Test Name:** TC\_AMF\_REDIRCTION\_5GS\_EPS

**Purpose:**

Verify that AMF under test does not send a Registration Reject message containing an EMM cause indicating to the UE that the UE shall not use 5GC, if NAS security is not established. .

**Pre-Conditions:**

- This test case is only applicable to an AMF under test which supports the security handling in CIoT.

- Test environment with UE. The UE may be simulated.

- AMF under test is connected in emulated/real network environment.

- Tester configures the operator policy of the AMF that all the UEs sending initial registration request should be redirected from 5GS to EPS.

**Execution Steps**

1. UE initiates initial registration procedure with the AMF.

2. The AMF under test determines that the UE shall not use 5GC, and needs to redirect the UE from 5GC to EPC.

3. The AMF under test sends a Registration Reject message with a 5GMM cause indicating to the UE that the UE shall not use 5GC.

**Expected Results:**

The NAS SMC is performed before sending the Registration Reject message.

**Expected format of evidence:**

Screenshot containing the operational results.

\*\*\*\*\*\*\*\*\*\* END OF 1stCHANGE \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* START OF 2nd CHANGE \*\*\*\*\*\*\*\*\*\*

#### 4.2.2.7 RRCRestablishment in Control Plane CIoT 5GS Optimization

*Requirement Name:* RRCRestablishment in Control Plane CIoT 5GS Optimization

*Requirement Reference:* TS 38.413 [9], clause 8.3.8.2

*Requirement Description:* *"*Upon receiving the RAN CP RELOCATION INDICATION message, the AMF shall authenticate the request using the NAS-level security information received in the UL CP Security Information IE and if the authentication is successful initiate the Connection Establishment Indication procedure including NAS-level security information in the DL CP Security Information IE.

In case the AMF cannot authenticate the UE's request, the CONNECTION ESTABLISHMENT INDICATION message does not contain security information, and the NG-RAN node shall fail the RRC Re-establishment.

In case of authentication failure, the NG-RAN node and the AMF should locally release the allocated NG resources, if any." as specified in TS 38.413 [9], clause 8.3.8.2.

*Threat References:* TR 33.926 [5], clause K.2.9.1 –Failed Verification of UE Identity during RRC Reestablishment Procedure for CP CIoT 5GS Optimization.

***Test Case****:*

**Test Name:** TC\_AMF\_REEST\_CP\_CIOT

**Purpose:** Toverify that the verification of RRC Reestablishment is applied correctly.

**Pre-Condition:**

- This test is only applicable if the AMF under test is able to support the CIoT scenario.

- Test environment with UE and ng-eNB, which may be simulated. The UE is using Control Plane CIoT 5GS Optimization.

**Execution Steps:**

A. Test Case 1

1) The UE sends the RRC Connection Reestablishment Request message to the ng-eNB.

2) The ng-eNB sends RAN CP RELOCATION INDICATION message to the AMF.

B. Test Case 2

1) The UE sends the RRC Connection Reestablishment Request message to the ng-eNB.

2) The ng-eNB sends RAN CP RELOCATION INDICATION message to the AMF. The ng-eNB modifies UL NAS MAC in UL CP Security Information

**Expected Results:**

For test case 1, the AMF sends CONNECTION ESTABLISHMENT INDICATION to the ng-eNB, and DL CP Security Information is included.

For test case 2, the AMF sends CONNECTION ESTABLISHMENT INDICATION to the ng-eNB, and DL CP Security Information is not included.

**Expected format of evidence:**

Evidence suitable for the interface, e.g., Screenshot containing the operational results.

\*\*\*\*\*\*\*\*\*\* END OF 2ndCHANGE \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* START OF 3rd CHANGE \*\*\*\*\*\*\*\*\*\*

##### 4.2.2.8.1 Validation of S-NSSAIs in PDU session establishment request

*Requirement Name*: validation of S-NSSAIs in PDU session establishment request

*Requirement Reference:* TS 24.501 [5], clause 5.4.5.2.5

*Requirement Description*:"

*13) if the Request type IE is set to "initial request" and the S-NSSAI IE contains an S-NSSAI that is not allowed by the network, then the AMF shall send back to the UE the 5GSM message which was not forwarded as specified in subclause 5.4.5.3.1 case e) or case f);*" as specified in TS 24.501 [5], clause 5.4.5.2.5.

*Threat References*: TR 33.926 [6], clause K.2.X, Incorrect Validation of S-NSSAIs

*Test Case*:

**Test Name:** TC\_VALIDTATION\_SNSSAI\_IN\_PDU\_REQUEST

**Purpose:**

Verify that S-NSSAIs which are not within Allowed NSSAI list are not accepted by the AMF under test in PDU session establishment procedure.

**Pre-Conditions:**

- This test is only applicable, if the AMF under test supports the Network Slice Specific Authentication and Authorization scenario.

- Test environment with UE, UDM, SMF and NSSAAF, which may be simulated.

- The tester configures UDM with an S-NSSAI that require Network Slice-Specific Authentication and Authorizationin in UE’s subscription information.

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**Execution Steps**

A. Test Case 1

1) The UE sends the S-NSSAI that require NSSAA to the AMF under test using registration request message.

2) After receiving the NSSAA request from the AMF, the NSSAAF sends EAP success to AMF.

3) The UE sends PDU session establishment request to the AMF with the S-NSSAI.

B. Test Case 2

1) The UE sends the S-NSSAI that require NSSAA to the AMF under test using registration request message.

2) After receiving the NSSAA request from the AMF, the NSSAAF sends EAP failure to AMF.

3) The UE sends PDU session establishment request to the AMF with the S-NSSAI.

**Expected Results:**

For test case 1, the AMF continues the PDU session establishment procedure by sending a Nsmf\_PDUSession\_CreateSMContext Request to the SMF.

For test case 2, the AMF aborts the PDU session establishment procedure by sending back the 5GSM message to the UE.

**Expected format of evidence**

Evidence suitable for the interface, e.g., Screenshot containing the operational results.

\*\*\*\*\*\*\*\*\*\* END OF 3rdCHANGE \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* START OF 4th CHANGE \*\*\*\*\*\*\*\*\*\*

##### 4.2.2.9.1 NSSAA revocation

*Requirement Name*: NSSAA revocation

*Requirement Reference:* TS 33.501 [7], clause 16.5

*Requirement Description*: " If no S-NSSAI is left in Allowed NSSAI for an access after the revocation, and no Default NSSAI can be provided to the UE in the Allowed NSSAI or a previous NSSAA failed for the Default NSSAI over this access, then the AMF shall execute the Network-initiated Deregistration procedure for the access as described in subclause 4.2.2.3.3 in TS 23.502 [8], and it shall include in the explicit De-Registration Request message the list of Rejected S-NSSAIs, each of them with the appropriate rejection cause value. "

as specified in TS 33.501[7], clause 16.5

*Threat References*: TR 33.926, clause K.2.X

*Test Case*:

**Test Name:** TC\_NSSAA\_REVOCATION

**Purpose:**

Verify that AMF deregisters UE when, after slice specific authorization revocation, there is no allowed NSSAI or Default NSSAI that can be used by UE.

**Pre-Conditions:**

- This test case is only applicable to AMF supporting Network Slice Specific Authentication and Authorization.

- Test environment with UE. The UE may be simulated.

- The AMF under test is configured with one S-NSSAI in the Allowed NSSAI and no default S-NSSAI.

**Execution Steps**

A message requesting the AMF under test to revoke the authorization of the S-NSSAI in the Allowed NSSAI is simulated and sent the AMF under test.

**Expected Results:**

The Deregistration Request message is sent by the AMF under test to the UE.

**Expected format of evidence:**

Evidence suitable for the interface, e.g., Screenshot containing the operational results.

\*\*\*\*\*\*\*\*\*\* END OF 4thCHANGE \*\*\*\*\*\*\*\*\*\*