**3GPP TSG CT WG3 Meeting #138C3-246110**

Orlando, US, 18th – 22nd November 2024 (revision of C3-24xxxx)

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.552** | **CR** | **0128** | **rev** | **-** | **Current version:** | **19.0.0** |  |
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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:*** | Support of signalling storm mitigation and prevention | | | | | | | | | |
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| ***Source to WG:*** | China Telecom | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
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| ***Work item code:*** | AIML\_CN | | | | |  | ***Date:*** | | | 2024-11-18 |
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| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *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:*** | | As described in S2-2410976 (TS23.288 CR#1104), new analytics ID (Signalling Storm) is added to support signalling storm mitigation and prevention. | | | | | | | | |
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| ***Summary of change:*** | | Add new procedures for Signalling Storm Analytics. | | | | | | | | |
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| ***Consequences if not approved:*** | | Stage2 requirement of signalling storm mitigation and prevention is not supported. | | | | | | | | |
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| ***Clauses affected:*** | | 5.7.23(new) | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS 23.288 CR 1104 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
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| ***Other comments:*** | | This CR does not impact the OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

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**Proposed changes:**

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| **First change** |

### 5.7.23 Signalling Storm Analytics

This procedure is used by the NWDAF service consumer to obtain Signalling Storm Analytics provided by NWDAF based on the information collected from AMF, SMF, NRF, AF, OAM, SCP and/or MDAF. If the NWDAF service consumer is an AF which is untrusted, the AF will request analytics via the NEF as described in clause 5.2.3.2.



Figure 5.7.23-1: Procedure for Signalling Storm Analytics

1a. In order to obtain the Signalling Storm analytics, the NF may invoke Nnwdaf\_AnalyticsInfo\_Request service operation as described in clause 5.2.3.1.

1b-1c. In order to obtain the Signalling Storm analytics, the NF may invoke Nnwdaf\_EventsSubscription\_Subscribe service operation as described in clause 5.2.2.1.

2a-2b. The NWDAF may invoke Namf\_EventExposure\_Subscribe service operation as described in clause 5.3.2.2.2 of 3GPP TS 29.518 [18] to subscribe to the notification of"SIGNALLING\_STORM" event from the AMF. The AMF responds to the NWDAF an HTTP "201 Created" response.

3a-3b. If step 2a and step 2b are performed, the AMF invokes Namf\_EventExposure\_Notify service operation as described in 3GPP TS 29.518 [18] clause 5.3.2.4. The NWDAF responds to the AMF an HTTP "204 No Content" response.

4a-4b. The NWDAF may invoke Nsmf\_EventExposure\_Subscribe service operation to subscribe to the notification of "SIGNALLING\_STORM" event from the SMF. The SMF responds to the NWDAF an HTTP "201 Created" response.

5a-5b. If step 4a and step 4b are performed, the SMF may invoke Nsmf\_EventExposure\_Notify service operation by sending an HTTP POST request to the NWDAF identified by the notification URI received in step 4a. The NWDAF responds to the SMF an HTTP "204 No Content" response.

6a-6b. If the AF is trusted, the NWDAF may invoke Naf\_EventExposure\_Subscribe service operation to subscribe to the notification of "SIGNALLING\_STORM" event from the AF directly. The AF responds to the NWDAF an HTTP "201 Created" response.

7a-7b. If step 6a and step 6b are performed, the AF may invoke Naf\_EventExposure\_Notify service operation by sending an HTTP POST request to the NWDAF identified by the notification URI received in step 6a. The NWDAF responds to the AF an HTTP "204 No Content" response.

8a-8d. If the AF is untrusted, the NWDAF may invoke Nnef\_EventExposure\_Subscribe service operation to the NEF and then the NEF invokes Naf\_EventExposure\_Subscribe service operation to subscribe to the notification of "SIGNALLING\_STORM" event from the AF via the NEF. The AF responds to the NEF an HTTP "201 Created" response and then the NEF responds to the NWDAF an HTTP "201 Created" response.

9a-9d. If step 8a to step 8d are performed, the AF may invoke Naf\_EventExposure\_Notify service operation by sending an HTTP POST request to the NEF identified by the notification URI received in step 8b and the NEF invokes Nnef\_EventExposure\_Notify service operation by sending an HTTP POST request to the NWDAF identified by the notification URI received in step 8a. The NWDAF responds to the NEF an HTTP "204 No Content" response and then the NEF responds to the AF an HTTP "204 No Content" response.

10a-10b. The NWDAF may invoke Nnrf\_NFManagement\_NFStatusSubscribe service operation as described in clause 5.2.2.5 of 3GPP TS 29.510 [26] to subscribe to the notification of "SIGNALLING\_STORM" event from the NRF. The NRF responds to the NWDAF an HTTP "201 Created" response.

11a-11b. If step 10a and step 10b are performed, the NRF may invoke Nnrf\_NFManagement\_NFStatusNotify service operation as described in clause 5.2.2.6 of 3GPP TS 29.510 [26]. The NWDAF responds to the NRF an HTTP "204 No Content" response.

Editor’s Note: Whether the Nnrf\_NFManagement\_NFStatus service is re-used to expose signalling storm related information will be updated based on SA2 output.

12a. The NWDAF may collect Number of NF service registration requests, Number of NF service update requests and Number of NF discovery requests as specified in clause 5.10 of TS 28.552 [27] from OAM.

12b. The NWDAF may collect control plane congestion analysis as specified in clause 8.4.7.1.3.3 and of TS 28.104 [38] from MDAF. The information element of the analysis from MDAF include AffectedObject and CPCongestionIssueID.

13. The NWDAF calculates the Signalling Storm analytics based on the data collected from AMF, SMF, NRF, AF, OAM and/or MDAF.

14a. If step 1a is performed, the NWDAF responds to the Nnwdaf\_AnalyticsInfo\_Request service operation as described in clause 5.2.3.1.

14b-14c. If step 1b and step 1c are performed, the NWDAF invokes Nnwdaf\_EventsSusbcription\_Notify service operation as described in clause 5.2.2.1.

NOTE 1: For details of Nnwdaf\_EventsSubscription\_Subscribe/Unsubscribe/Notify or Nnwdaf\_AnalyticsInfo\_Request service operations refer to 3GPP TS 29.520 [5].

NOTE 2: For details of Nsmf\_EventExposure\_Subscribe/Notify service operations refer to 3GPP TS 29.508 [6].

NOTE 3: For details of Naf\_EventExposure\_Subscribe/Notify service operations refer to 3GPP TS 29.517 [12].

NOTE 4: For details of Nnef\_EventExposure\_Subscribe/Notify service operations refer to 3GPP TS 29.591 [11].

Editor’s Note: Which service will be used for SCP to expose information to the NWDAF is FFS.

Editor’s Note: Which NF will expose Request type and number from NF and/or NF heart-beat related information to the NWDAF is FFS.

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| **End of changes** |