**3GPP TSG-SA5 Meeting #158 *S5-247164***

Orlando, USA, 18 - 22 November 2024

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.104** | **CR** | **0150** | **rev** | **1** | **Current version:** | **18.5.0** |  |
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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 | **x** | Core Network | **x** |

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| ***Title:*** | Rel-19 CR TS 28.104 Update MDA capability for control plane congestion analysis | | | | | | | | | |
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| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | SA5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | DUMMY | | | | |  | ***Date:*** | | | 2024-11-08 |
|  |  | | | |  | |  | | |  |
| ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | This contribution is related to WT-8 Control plane congestion analytics of S5-246126 WID on Management Data Analytics phase 3. The existing use case and requirement of control plane congestion analysis in TS 28.104 need to be updated to support the conclusion in TR 28.866. | | | | | | | | |
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| ***Summary of change:*** | | Update use case description and requirements related to control plane congestion analysis. | | | | | | | | |
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| ***Consequences if not approved:*** | | The conclusion of control plane congestion analysis in TR 28.866 can not be fulfiled. | | | | | | | | |
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| ***Clauses affected:*** | | 7.2.7.2 | | | | | | | | |
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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:*** | |  | | | | | | | | |

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| **1st Change** |

7.2.7.2 Control plane congestion analysis

7.2.7.2.1 Description

This MDA capability is for analysis of control plane congestion.

7.2.7.2.2 Use case

As described in TS 23.501 [28], a 5GC NF can become overloaded when it is operating over its nominal capacity resulting in diminished performance (including impacts to handling of incoming and outgoing traffic). Some mechanism, such as control plane congestion control as described in TS 23.501 [28] is designed for the purpose of avoiding and handling of 5GC NF overload. For example, as described in clause 5.19.7 of TS 23.501 [28], when the AMF is under overload conditions, it may reject the received request from the UE depending on various aspects. And the UE will send a new request after some time. It is possible that the new request will be rejected again because of the load of the AMF. In virtualized environment, the signaling request may be rejected due to inadequacy of available resources at the target 5GC NF e.g. AMF or SMF. If such situation can not be resolved, it will probably cause signalling storm for the whole network and affect the services (e.g. calls and data connections) provided by the network.

It is desirable to use MDA to assist control plane congestion analysis in order to detect, prevent or resolve identified congestion issue happened at the control plane. MDAS producer may utilize the collected PM, FM, network topology data, virtual resource information provided from ETSI NFV MANO and etc.) for control plane congestion analysis and provides analytics report containing identified or predicted congestion issue for the target 5GC NF (e.g. AMF, SMF). The analytics report also provides recommended actions to optimize the target 5GC NF for avoiding or resolving congestion issue. Based on the recommendation in the report, 3GPP management system can adjust (e.g., scale-up the virtual resource) the resources to better facilitate processing of the received control plane messages. MDA MnS consumer may need to take further action on control plane congestion issue based on the analytics output from MDAF. The root cause of the congestion issue and the predicted duration of congestion issue may be of interest to the consumer and can be provided in the analytics report.

7.2.7.2.3 Requirements

**Table 7.2.7.2.3-1**

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| **Requirement label** | **Description** | **Related use case(s)** |
| **REQ-CP\_ANA-01** | MDA capability for control plane congestion analysis shall include identifying the 3GPP 5GC NFs with congestion issue. | Control plane congestion analysis |
| **REQ-CP\_ANA-02** | MDA capability for control plane congestion analysis shall include providing the prediction of congestion issue for a 3GPP 5GC NF. | Control plane congestion analysis |
| **REQ-CP\_ANA-03** | MDA capability for control plane congestion analysis shall include providing recommended actions to prevent congestion issue for 3GPP 5GC NFs. | Control plane congestion analysis |
| **REQ-CP\_ANA-04** | MDA capability for control plane congestion analysis shall include providing recommended actions to resolve identified congestion issue for 3GPP 5GC NFs. | Control plane congestion analysis |
| **REQ-CP\_ANA-05** | MDA capability for control plane congestion analysis should include providing root cause of the congestion issue and the predicted duration of congestion issue. | Control plane congestion analysis |

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| **End of changes** |