**3GPP TSG-SA5 Meeting #144-e *S5-*224049**

**e-meeting, 27 June - 1 July 2022**

**Source: Huawei, China Mobile**

**Title: pCR TR 28.910 Add key issue for enhancement of network optimization**

**Document for: approval**

**Agenda Item: 6.7.1.1**

# 1 Decision/action requested

***The group is asked to discuss and approval.***

# 2 References

[1] 3GPP draft TR 28.910: “Management and orchestration; Study on enhancement of autonomous network levels v0.2.0”.

[2] 3GPP TS 28.100: "Management and orchestration; Levels of autonomous network"

# 3 Rationale

**First proposal:** In TS 28.100 [2], the solutions for generic MnS requirements of autonomous network level for network optimization is defined. Regarding the solutions for MnS requirements for level 2, only solutions for the the network issues which can be detected based on threshold is specified. In R17, the group defined the MDA capabilities for analysis more network issues (e.g. coverage issue, SLS issue, network slice throughput issue) in TS 28.104, however, such MDA MnS is missing in the solutions for MnS requirements for level 2. So this contribution proposes to add MDA MnS as the solution for MnS requirements for level 2.

**Second proposal**: In TS 28.100 [2], the workflow and classification of autonomous network level for RAN UE throughput optimization is defined, however the solution for generic MnS requirements of autonomous network level for RAN UE optimization is missing. Following the same pattern as Key Issue# 5.1a: Enhancement of autonomous network level for radio network coverage optimization in TR 28.910[1], this contribution proposes to add key issues for the enhancement of generic autonomous network level for RAN UE throughput optimization with the following aspects:

- Add the solution for RAN UE throughput optimization (documented in TS 28.100 clause A.2) with explicit MnS component type A (operation and notification), MnS component type B (Information model) and MnS component type C (management data) to support the MnS requirements.

# 4 Detailed proposal

It proposes to make the following changes to TR 28.910[1].

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| **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 TS 28.310: "Management and orchestration; Energy efficiency of 5G"

[3] 3GPP TR 28.813: "Management and orchestration; Study on new aspects of Energy Efficiency (EE) for 5G"

[4] 3GPP TS 28.100: "Management and orchestration; Levels of autonomous network"

[5] 3GPP TS 28.312:" Management and orchestration; Intent driven management services for mobile networks"

[6] 3GPP TS 28.104: "Management and orchestration; Management Data Analytics"

[7] 3GPP TS 28.532: "Management and orchestration; Generic management services".

[8] 3GPP TS 28.541: "Management and orchestration; 5G Network Resource Model (NRM); Stage 2 and stage 3".

[9] 3GPP TS 28.622: "Telecommunication management; Generic Network Resource Model (NRM) Integration Reference Point (IRP); Information Service (IS)".

[10] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[11] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[12] 3GPP TS 28.313: "Management and orchestration; Self-Organizing Networks (SON) for 5G networks".

[X] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

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| **2nd Change** |

## 5.1 Key Issue# 5.1: Enhancement of generic autonomous network level for radio network optimization

#### 5.1.1 Description

#### 5.1.1.1 Issue description

The generic autonomous network level for network optimization is defined in Clause 7.1 in TS 28.100 [4], which includes generic workflow, generic classification of autonomous network level, generic autonomy capability description for management system, generic MnS requirements and solutions for generic MnS requirements.

Based on current definition, the generic autonomy capability description for management system for level 4 is documented in clause 7.1.3 in TS 28.100 [4]. However, the additional MnS requirements for level 4 are not specified in clause 7.1.4 in TS 28.100 [4].

Regarding the solutions for MnS requirements for level 2, currently only solutions for the network issues which can be detected based on threshold is specified. The MDA MnS specified in TS 28.104[6] delivers the capabilities for analysis more network issues (e.g. coverage issue, SLS issue, network slice throughput issue), however, such MDA MnS is missing in the solutions for MnS requirements for level 2.

#### 5.1.1.2 Potential requirements

Following additional MnS requirements for level 4 needs to be specified to support generic autonomy capability description for management system for level 4.

**REQ-ANL-NetOpt-Level\_4-MnS-1** The 3GPP management system shall have the capability allowing its authorized consumer to specify the network optimization intent.

**REQ-ANL-NetOpt-Level\_4-MnS-2** The 3GPP management system shall have the capability allowing its authorized consumer to obtain the fulfilment information of the network optimization intent.

5.1.2 Potential solutions

Following solutions for MnS requirements for level 4 needs to be added in TS 28.100 [4] Table 7.1.5-1: Solutions for generic MnS requirements of autonomous network level for network optimization.

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| **Level4** | **REQ-ANL-NetOpt-Level\_4-MnS-1** | This can be implemented by using generic provisioning MnS (e.g, createMOI) defined in TS 28.532 [4] to specify the network optimization intent defined in TS 28.312 [5]. |
| **REQ-ANL-NetOpt-Level\_4-MnS-2** | This can be implemented by using generic provisioning MnS (e.g, getMOIAttribbutes) defined in TS 28.532 [7] to obtain network optimization fulfilment information defined in TS 28.312 [5]. |

Following solutions MnS requirements for level 2 needs to be added in TS 28.100 [4] Table 7.1.5-1: Solutions for generic MnS requirements of autonomous network level for network optimization.

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| **Level2** | **REQ-ANL-NetOpt-Level\_2-MnS-1** | For the network issues which can be detected based on MDA capability, this can be implemented by generic provisioning MnS defined in TS 28.532 [4] with MDA information model in TS 28.104 [4]. |
| **REQ-ANL-NetOpt-Level\_2-MnS-2** | For the network issues which can be detected based on MDA capability, this can be implemented by generic provisioning MnS (e.g., getMOIAttributes) defined in TS 28.532 [7] to obtain Analytics outputs defined in TS 28.104 [4]. |
| **REQ-ANL-NetOpt-Level\_2-MnS-3** | For the network issues which can be detected based on MDA capability, this can be implemented by generic provisioning MnS defined in TS 28.532 [4] with MDA information model in TS 28.104 [4].]. |
| **REQ-ANL-NetOpt-Level\_2-MnS-4** | For the network issues which can be detected based on MDA capability, this can be implemented by generic provisioning MnS (e.g., getMOIAttribbutes) defined in TS 28.532 [7] to obtain Analytics outputs defined in TS 28.104 [4]. |
| **REQ-ANL-NetOpt-Level\_2-MnS-5** | For the network issues which can be detected based on MDA capability, this can be implemented by generic provisioning MnS defined in TS 28.532 [4] with MDA information model in TS 28.104 [4]. |

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| **3rd Change** |

## 5.1b Key Issue# 5.1b: Enhancement of autonomous network level for RAN UE throughput optimization

### 5.1b.1 Description

Autonomous network level for RAN UE throughput optimization is documented in clause A.2 in TS 28.100[4]. In TS 28.100[4], corresponding workflow and classification of autonomous network level for RAN UE throughput optimization is defined, however the solution (i.e. MnS component type A (operation and notification), MnS component type B (Information model) and MnS component type C (management data)) for generic MnS requirements of autonomous network level for RAN UE optimization is missing.

5.1b.2 Potential solutions

Based on the existing generic MnS requirements of Level 1-Level 3 for the generic network optimization in TS 28.100 [4] and additional MnS requirements for Level 4 for the generic network optimization in clause 5.1, following are the solutions description for generic MnS requirements of autonomous network level for RAN UE throughput optimization.

Note: the solutions below are not used to evaluate the autonomous network level, which are MnS solutions to support MnS requirements for 3gpp management system derived from autonomy capability of each level.

**Table 5.Xa.2-1: Solutions for generic MnS requirements of autonomous network level for RAN UE throughput optimization**

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| **ANL** | **Requirements** | **Corresponding solutions** | | |
| **MnS Component**  **type A** | **MnS Component**  **type B** | **MnS Component**  **type C** |
| **Level1** | **REQ-ANL-NetOpt-Level\_1-MnS-1** | createMOI of provisioning MnS defined in TS 28.532[7] | NR NRM (e.g. NRCellCU, NRCellRelation,NRCellDU) defined in TS 28.541[8] | Not applicable |
| **REQ-ANL-NetOpt-Level\_1-MnS-2** | createMOI of provisioning MnS defined in TS 28.532[7] | PerfMetricJob IOC defined in TS 28.622[9] | Not applicable |
| **REQ-ANL-NetOpt-Level\_1-MnS-3** | operations of file data reporting MnS and streaming data report MnS defined in TS 28.532[7] | NR NRM (e.g. NRCellCU, NRCellRelation and SubNetwork IOC) defined in TS 28.541[8] | 1. UE throughput measurements (e.g. Average DL UE throughput in gNB, Distribution of DL UE throughput in gNB) defined in TS 28.552 [10].  2. RAN UE Throughput KPIs (e.g. DL RAN UE throughput for a sub-network, DL RAN UE throughput for a NRCellDU) defined in TS 28.554 [X]. |
| **Level2** | **REQ-ANL-NetOpt-Level\_2-MnS-1** | createMOI of provisioning MnS defined in TS 28.532[7] | ThresholdMonitor IOC defined in Threshold monitoring control NRM fragment TS 28.622 [9] with "DL RAN UE throughput" and "UL RAN UE throughput" performance metrics threshold value defined in TS 28.554 [X] | Not applicable |
| **REQ-ANL-NetOpt-Level\_2-MnS-3** |
| **REQ-ANL-NetOpt-Level\_2-MnS-2** | notifyThresholdCrossing of performance assurance MnS defined in TS 28.532[7] | NR NRM (e.g. NRCellCU, and SubNetwork IOC) defined in TS 28.541[8] with observedPerfMetricName "DL RAN UE throughput" and "UL RAN UE throughput" | Not applicable |
| **REQ-ANL-NetOpt-Level\_2-MnS-4** |
| **Level4** | **REQ-ANL-NetOpt-Level\_4-MnS-1** | createMOI of provisioning MnS defined in TS 28.532[7] | "aveULRANUEThptTarget", "aveDLRANUEthptTarget","lowULRANUEThptRatioTarget" and "lowDLRANUEThptRatioTarget" of RadioNetworkExpectation in intent information model in TS 28.312[5] as expectation targets for RAN UE throughput assurance. | Not applicable |
| **REQ-ANL-NetOpt-Level\_4-MnS-2** | getMOIAttributes of provisioning MnS defined in TS 28.532[7] | "targetfulfillmeInfo" for "aveULRANUEThptTarget", "aveDLRANUEthptTarget","lowULRANUEThptRatioTarget" and "lowDLRANUEThptRatioTarget"of RadioNtworkExpectation in intent information model in TS 28.312[5]. | Not applicable |

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| **End of Changes** |