**3GPP TSG SA WG5 Meeting #138e S5-214441**

**Online, , 23 Aug 2021- 31 Aug 2021**

**Source: Samsung**

**Title: InputToDraftCR 28.537 Targeted management data collection**

**Document for: Approval**

**Agenda Item: 6.4.8**

# 1 Decision/action requested

***The group is asked to discuss and approve the proposals.***

# 2 References

None

# 3 Rationale

Since the consumer of MADCOL is considered to be not aware of network details it would be beneficial to provide a functionality using which the consumer can reduce and target the number of selected object instance from where the data is to be collected. The target managed object instances can be selected based on the following criteria.

* A geographical area or a tracking area: In a very big network, it makes more senses to mention a particular location that the NF or measurements belongs. It will keep measurements reporting swift and efficient.
* Virtual resource utilization percentage: Consumer may mention a threshold for virtual resource (vRAM, vCPU, vDisk) utilization as a criteria of target nodes for measurement reporting. This can be done in order to assist the resource-deprived nodes. The management data will only be collected from the nodes whose average virtual resource consumption is crossing the defined threshold.
* The provider and domain e.g RAN, CN: In case of recurrent issues, a consumer may want to have understanding of a particular provider’s products for further actions. Further, a consumer might only specializes in analysing and understanding a particular domain performance like RAN or Core. In such scenario, it should be possible to indicate the domain from where consumer wants measurements for its usage.
* The traffic type e.g user plane or control plane: 5G brings clear separation (CUPS) of user plane and control plane NFs in a network, a consumer may leverage it to identify target nodes to have measurements from. For example, the measurement report may be expected from user plane nodes only.
* The service type e.g data, voice and video: Service in a telecom network can be classified as data, voice or video. Suppose if a consumer mentions voice here, it means only those NFs need to be checked for measurements reporting which are involved in a voice services.
* The slice type e.g eMBB, URLLC: Consumer may mention a particular slice type (eMBB, URLLC, mIoT, V2X, HMTC) as the filteration criteria. It may help in narrowing down the target NF(s), which are part of provided slice type(s).

# 4 Detailed proposal

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| **First modification** |

# 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 28.532: "Management and orchestration; Generic management services".

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

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

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

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| **Next modification** |

# X Managing management data

## X.1 Producing and reporting management data

### X.1.1 Description

Management data is referring to data produced by radio access network functions, core network functions or management functions and used for management purposes. Management data specified by 3GPP for 5G management is classified into 5G performance measurements as defined by TS 28.552 [x], 5G end to end key performance indicators as defined by TS 28.554 [y] and Trace/MDT data as defined by TS 32.422 [z]. The combined performance measurements and key performance indicators are also called performance metrics.

Management data is produced on request. Therefore, the 3GPP management system needs to enable a data consumer to request management data to be produced. The data requestor must specify the type of data to be produced as well as the radio access network functions, core network functions and management functions where the data shall be produced. The target managed object instances can be identified in multiple ways:

* The requestor can specify the target managed object instances based on the managed object tree (as defined in the SA5 Network Resourece Models) representing the network and management functions. The simplest approach is to directly identify the managed object instances where data shall be produced. More sophisticated approaches allow to specify one or more subtrees where data shall be produced and may specify also managed object classes.
* The requestor can specify one or multiple of the following filteration criteria. The system needs to select the target managed object instances based on these criteria.
  + A geographical area or a tracking area: In a very big network, it makes more senses to mention a particular location that the NF or measurements belongs. It will keep measurements reporting swift and efficient.
  + Virtual resource utilization percentage: Consumer may mention a threshold for virtual resource (vRAM,vCPU,vDisk) utilization as a criteria of target nodes for measurement reporting. This can be done in order to assist the resource-deprived nodes. The management data will only be collected from the nodes whose average virtual resource consumption is crossing the defined threshold.
  + The domain e.g RAN, CN: In case of recurrent issues, a consumer may want to have understanding of a particular provider’s products for further actions. Further, a consumer might only specializes in analysing and understanding a particular domain performance like RAN or Core. In such scenario, it should be possible to indicate the domain from where consumer wants measurements for its usage.
  + The traffic type e.g user plane or control plane: 5G brings clear separation (CUPS) of user plane and control plane NFs in a network, a consumer may leverage it to identify target nodes to have measurements from. For example, the measurement report may be expected from user plane nodes only.
  + The service type e.g data, voice and video: Service in a telecom network can be classified as data, voice or video. Suppose if a consumer mentions voice here, it means only those NFs need to be checked for measurements reporting which are involved in a voice services.
  + The slice type e.g eMBB, URLLC: Consumer may mention a particular slice type (eMBB, URLLC, mIoT, V2X, HMTC) as the filteration criteria. It may help in narrowing down the target NF(s), which are part of provided slice type(s).

After production the data needs to be reported to the data consumers. Reporting can be based on multiple reporting methods such as file or streaming. Data reporting needs to be requested by the data consumer. The requestor must specify the control parameters for reporting such as the reporting method and the address the data shall be delivered to.

Depending on access rights and security settings, data consumers may be subject to restrictions regarding the data they can access.

### X.1.2 Requirements

REQ-MDMPR-CON-1: The 3GPP management system shall enable an authorized data consumer to request management data specified by 3GPP to be produced.

REQ-MDMPR-CON-2: The 3GPP management system shall enable an authorized data consumer to request management data specified by 3GPP to be reported to the requesting or another authorized data consumer.

Note: The term "management data specified by 3GPP" relates to

* 5G performance measurements as defined by TS 28.552 [x]
* 5G end to end key performance indicators as defined by TS 28.554 [y], and
* Trace/MDT data as defined by TS 32.422 [z].

REQ-MDMPR-CON-3: The 3GPP management system shall enable an authorized data consumer to request management data, specified by 3GPP, produced by certain managed object instance(s) only. The managed object instances can be targeted based on:

* The geographical area
* The virtual resource utilization percentage
* The domain (CN or RAN)
* CP management data and UP management data
* The slice type (eMBB, URLLC, mIoT, V2X, HMTC)
* S-NSSAI

*Editor's note: Functional (FUN) requirements are ffs.*

## X.2 Coordinating management data production

### X.2.1 Description

Many consumers can request network or management functions to produce management data. In this context it is beneficial to coordinate data requests at the management level to optimize management data production.

### X.2 Requirements

REQ-MDMC-CON-1: The 3GPP management system shall coordinate requests from several data consumers to avoid producing multiple times the same data at a certain point of time.

*Editor's note: It is tbc what exactly is "same data".*

## X.3 Storing management data

### X.3.1 Description

Storing management data enables reusage of management data for multiple management purposes.

For example, AI/ML models need input data collected over a certain period of time for training purposes. A specific set of collected data may serve different purposes and can therefore be input to multiple AI/ML services. For example, management data collected in a geographical area may be used also for another geographical area when the scenarios in the areas are statistically similar.

Another use case for storing produced data is related to the fact that multiple sets of training data from similar scenarios are typically required. For example, one set of data produced for the rush hour in a subway station on a single weekday is typically not enough for profiling. Many sets produced on many workdays are required.

Stored data is useful when management functions can discover which data has been produced and stored in the past to check if the currently needed data is already available.

### X.3.2 Requirements

REQ-MDMS-CON-1: The 3GPP management system shall support the storing of produced management data.

REQ-MDMS-CON-2: The 3GPP management system shall enable an authorized data consumer to discover stored management data.

REQ-MDMS-CON-3: The 3GPP management system shall enable an authorized data consumer to retrieve stored management data.

## X.4 Managing external management data

### X.4.1 Description

Management data which is specified by 3GPP (clause X.1.1) can be enriched by additional data not specified by 3GPP. This so-called external management data can be produced by data sources of different nature (e.g. sensors) with different formats.

External management data can be used for example as additional input for network optimization and prediction.

The management system should be able to manage this kind of data. That means data consumers should be able to request external management data to be produced and reported. The management system should provide support for storing it.

The definition of external data sources and the data formats they use is out of scope of this specification.

The target is to define generic management mechanisms that can cope with any kind of external data sources and data formats.

### X.4.2 Requirements

REQ-MDMED-CON-1: The 3GPP management system shall enable an authorized data consumer to request external management data to be produced.

REQ-MDMED-CON-2: The 3GPP management system shall enable an authorized data consumer to request external management data to be reported to the requesting or another authorized data consumer.

REQ-MDMED-CON-3: The 3GPP management system shall support the storing of produced external management data.

REQ-MDMED-CON-4: The 3GPP management system shall enable an authorized data consumer to discover stored external management data.

REQ-MDMED-CON-5: The 3GPP management system shall enable an authorized data consumer to retrieve stored external management data.

Note: The term "external management data" relates to data not specified by 3GPP.

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| **End of modifications** |