3GPP TSG SA WG5 Meeting 142-e S5-222496

**e-meeting, 4 -12 April 2022**

**Source: Nokia**

**Title: Enhancing MDA request IOC**

**Document for: Approval**

**Agenda Item: 6.6.5**

# 1 Decision/action requested

This contribution is for approval.

# 2 References

[x] TR 28.809 Study on enhancement of management data analytics

# 3 Rationale

This contribution introduces several enhancements related to the MDA request IOC. It introduces the analytics window related to the duration of the reported MDA output, which can be in the past for the case of statistics or in the future for predictions depending on the use case [x]. It also introduces the option for selecting a reporting time schedule related to MDA output. Finally, it introduces the option of time out when a MDA MnS consumer requests a report in order to indicate that beyond this time the MDA out is no longer needed.

# 4 Detailed proposal

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| **1st Modified Section** |

## 9.3 Class definitions

### 9.3.1 MDARequest

#### 9.3.1.1 Definition

The IOC MDARequest represents the MDA output request created by an MnS consumer.

The attribute requestedMDAOutputs contains one or multiple RequestedMDAOutputPerMDAType elements, and each RequestedMDAOutputPerMDAType element supports filtering of MDA output for a certain MDA type.

#### 9.3.1.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| requestedMDAOutputs | M | T | T | F | T |
| reportingMethod | M | T | T | F | T |
| analyticsScope | M | T | T | F | T |
| startTime | M | T | T | F | T |
| stopTime | M | T | T | F | T |
| analyticsWindow | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |

#### 9.3.1.3 Attribute constraints

None.

#### 9.3.1.4 Notifications

The common notifications defined in clause 9.6 are valid for this IOC, without exceptions or additions.

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| **2nd Modified Section** |

## 9.4 Data type definitions

### 9.4.1 RequestedMDAOutputPerMDAType <<dataType>>

#### 9.4.1.1 Definition

The <<dataType>> represents the analytics output filters for each MDA type for an MDA request.

If only mDAType element is present (i.e., mDAOutputIEFilters element is not present), then all of the MDA output information elements for this mDAType (see analytics output definitions per MDA capability in clause 8) are requested.

if mDAOutputIEFilters element is present, then only the listed analytics output information elements are requested and shall be reported according to the corresponding threshold.

#### 9.4.1.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| mDAType | M | T | T | F | T |
| mDAOutputIEFilters | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |

#### 9.4.1.3 Attribute constraints

None.

#### 9.4.1.4 Notifications

The <<IOC>> using this <<dataType>> for one of its attributes, shall be applicable.

### 9.4.2 MDAOutputIEFilter <<dataType>>

#### 9.4.2.1 Definition

The <<dataType>> represents the filter for an MDA output information element for an MDA request.

If only mDAOutputIEName element is present (i.e., mDAOutputIEFilterValue and mDAOutputIEThreshold elements are not present), then the MDA output information element indicated by the mDAOutputIEName is requested and reported without filter or threshold.

If mDAOutputIEFilterValue element is present (only applicable when the MDA output information element indicated by mDAOutputIEName is non-numeric type (e.g., enum, string)), then the MDA output information element indicated by the mDAOutputIEName is only requested and reported when its value equals to the value of mDAOutputIEFilterValue.

If mDAOutputIEThreshold element is present (only applicable when the MDA output information element indicated by mDAOutputIEName is numeric type (e.g., integer, real)), then the MDA output information element indicated by the mDAOutputIEName is only requested and reported when its value reaches or crosses the threshold.

If mDAOutputIEAnalyticsPeriod element is present (only applicable when mDAOutputIEFilterValue and mDAOutputIEThreshold elements are not present), then the MDA output information element indicated by the mDAOutputIEName is only requested and reported, at specified time or periodically, i.e., when time reaches the indicated time schedule.

mDAOutputIETimeOut element is present optionally when an MDA MnS consumer needs an mDAOutputIEName element before a specified time only.

#### 9.4.2.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| mDAOutputIEName | M | T | T | F | T |
| mDAOutputIEFilterValue | CO | T | T | F | T |
| mDAOutputIEThreshold | CO | T | T | F | T |
| mDAOutputIEAnalyticsPeriod | CO | T | T | F | T |
| mDAOutputIETimeOut | O | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |

#### 9.4.2.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| mDAOutputIEFilterValue | Condition: the MDA output information element indicated by the mDAOutputIEName element is non-numeric type (e.g., enum, string). |
| mDAOutputIEThreshold | Condition: the MDA output information element indicated by the mDAOutputIEName element is numeric type (e.g., integer, real). |
| mDAOutputIEAnalyticsPeriod | Condition: the MDA output information element does not support mDAOutputIEFilterValue or mDAOutputIEThreshold |

#### 9.4.2.4 Notifications

The <<IOC>> using this <<dataType>> for one of its attributes, shall be applicable.

### 9.4.3 AnalyticsScopeType <<choice>>

#### 9.4.3.1 Definition

The <<choice>> represents the scope of analytics.

When the managedEntitiesScope attribute is present, the MnS producer identify the analytics scope by the DNs of the managed entities.

When the areaScope attribute is present, the MnS producer identify the analytics scope by the geographical area information.

The managedEntitiesScope attribute and areaScope attribute shall not be present at the same time.

#### 9.4.3.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| Choice\_1 managedEntitiesScope | CM | T | T | F | T |
| Choice\_2 areaScope | CM | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |

#### 9.4.3.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| Choice\_1 managedEntitiesScope | Condition: the MDA MnS producer supports to identify the scope by managed entities. |
| Choice\_2 areaScope | Condition: MDA MnS producer supports to identify the scope by geographical area information. |

#### 9.4.3.4 Notifications

The <<IOC>> using this <<dataType>> for one of its attributes, shall be applicable.

### 9.4.x TimeWindow <<dataType>>

#### 9.4.x.1 Definition

The <<dataType>> represents the time duration related to the MDA output towards the MDA MnS consumer.

#### 9.4.x.1 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| startTime | M | T | T | F | T |
| endTime | M | T | T | F | T |
| **Attribute related to role** |  |  |  |  |  |
|  |  |  |  |  |  |

#### 9.4.x.1 Notifications

The <<IOC>> using this <<dataType>> both of its attributes, shall be applicable.

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| **3rd Modified Section** |

## 9.5 Attribute definitions

### 9.5.1 Attribute properties

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| mDAType | It indicates the type of MDA type (corresponding to the MDA capability).  AllowedValues: the value of MDA type defined for each MDA capability in clause 8. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| requestedMDAOutputs | It indicates the requested analytics outputs for an MDA request | type: RequestedMDAOutputPerMDAType  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| mDAOutputIEFilters | It provides the filters for the analytics output information elements of an MDA type for an MDA request. | type: MDAOutputIEFilter  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| mDAOutputIEName | It indicates the analytics output information element name of an MDA type for an MDA request.  AllowedValues: the analytics output information element names for each MDA type as specified in clause 8. | type: string  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| mDAOutputIEFilterValue | It indicates the filter value for analytics output information element for an MDA request.  The MDA output information element is only requested and reported when its value equals to the value of this attribute.  allowedValues: depends on the definitions of the analytics output information element (see clause 8) indicated by mDAOutputIEName attribute. | type: string  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| mDAOutputIEThreshold | It indicates the threshold for analytics output information element for an MDA request. | type: TBD  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True  Editor’s note: it is TBD to whether reuse the ThresholdInfo data type defined in 28.622. |
| mDAOutputIEAnalyticsPeriod | It indicates a list of times, which may determine a time-period related to a time schedule for analytics period. | type: DateTime  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| mDAOutputIETimeOut | It indicates a time until which an MDA MnS consumer needs to obtain an MDA output. Beyond this time the MDA output is no loner needed by the MDA MnS consumer. | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| reportingMethod | It indicates the reporting method of the analytics output selected by the MnS consumer.  allowedValues: File, Streaming, Notification.  Editor’s note: the detailed solution for Notification based solution is FFS. | type: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| analyticsScope | It indicates the scope of the analytics requested by the MnS consumer. | type: AnalyticsScopeType  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| managedEntitiesScope | It indicates the scope of the analytics by the DNs of the managed entities.  It carries the DN(s) of SubNetwork MOI(s), ManagedElement MOI(s), and/or the MOI(s) of the derivative IOCs of ManagedFunction (see TS 28.622 [19]).  For each MOI provided by this attribute, the MOI itself and all of its subordinated MOIs are in the scope of analytics. | type: DN  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| areaScope | It indicates the scope of the analytics by the geographical area information. | type: GeoArea (see TS 28.622)  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| startTime | It indicates the start time of the analytics requested by the MnS consumer. | type: DateTime (see TS 32.156 [18])  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| stopTime | It indicates the stop time of the analytics requested by the MnS consumer. | type: DateTime (see TS 32.156 [18])  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |
| analyticsWindow | It indicates the time duration related with the analytics output towards the MDA MnS consumer. | type: TimeWindow  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True |

### 9.5.2 Constraints

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| --- | --- | --- |
| Name | Affected attribute(s) | Definition |
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| **End of Modified Section** |