**3GPP TSG SA WG5 Meeting #142e S5-222101**

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**Source: Samsung, Ericsson**

**Title: Rel-17 InputToDraftCR 28.622 ManagementDataCollectio.docx**

**Document for: Approval**

**Agenda Item: 6.6.2**

# 1 Decision/action requested

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

# 2 References

None

# 3 Rationale

This is the updated proposal of 215100rev1

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.
* 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 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).

Introducing the new collection job for managemet data collection.

If not agreed, the main objective of MADCOL will not be fulfilled i.e an easy-to-use collection mechanism for consumer not aware of the network details (NRM)

|  |
| --- |
| **First modification** |



Figure 4.2.1-7: ManagementDataCollection control NRM fragment

|  |
| --- |
| **Second modification** |



Figure 4.2.2-7: ManagementDataSubscription control NRM fragment

|  |
| --- |
| **Third modification** |

4.3.A ManagementDataCollection

4.3.A.1 Definition

This IOC represents a management data collection request. The attribute managementDataType defines the category of data which shall be reported. This may include coverage, capacity, service experience, trace, mobility, energy efficiency, accessibilityetc. The mapping of exact measurement with the requested category will be done at the producer and is implementation specific.

The targetNodeFilter attribute can be used to target object instance(s) producing the required management data. It is assumed that the consumer may not have detail knowledge of the network and hence may not identify the exact object instance producing the required management data. In this case consumer can request management data, specified by 3GPP, produced by certain network function(s) based on a particular location, the domain (CN or RAN) of the network function, and the handled traffic (CP or UP) of the network function.

The MnS producer will derive multiple jobs (PrefMetricJob, Tracejob) from a single ManagementDataCollection job for collecting the required management data. Once it receives the measurement from multiple sources, it consolidate the data into a set of management data for reporting.

The attribute collectionTimePeriod specifies the duration for which the management data should be reported.

The attribute reportingCtrl specifies the method and associated control parameters for reporting the produced management data to MnS consumers. Three methods are available: file-based reporting with selection of the file location by the MnS producer, file-based reporting with selection of the file location by the MnS consumer and stream-based reporting.

The attribute dataScope configures, whether the management data should be reported per S-NSSAI or per 5QI, if applicable.

4.3.A.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| managementDataType | M | T | T | T | N/A |
| targetNodeFilter | M | T | T | T | N/A |
| collectionTimePeriod | M | T | T | T | N/A |
| reportingCtrl | M | T | T | T | N/A |
| dataScope | O | T | T | T | N/A |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

4.3.A.3 Attribute constraints

None.

4.3.A.4 Notifications

The common notifications defined in clause 4.5 are valid for this IOC. In addition, the following set of notifications is also valid.

| **Name** | **S** | **Notes** |
| --- | --- | --- |
| notifyFileReady | M | -- |
| notifyFilePreparationError | M | -- |

4.3.C CollectionDuration <<dataType>>

4.3.D.1 Definition

This data type defines a collection time duration for which the management data should be reported.

4.3.D.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| startTime | M | T | T | T | T |
| endTime | M | T | T | T | T |

4.3.D.3 Attribute constraints

None.

4.3.D.4 Notifications

The subclause 4.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

4.3.C NodeFilter <<dataType>>

4.3.B.1 Definition

This data type defines several selection criteria for the target node i.e the node producing the requested management data.

Note: If it is not possible to select the target node(s) (based on a particular selection criteria) deterministically, the selection criteria should not be used.

4.3.B.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **S** | **isReadable** | **isWritable** | **isInvariant** | **isNotifyable** |
| areaOfInterest | O | T | T | T | N/A |
| networkDomain | O | T | T | T | N/A |
| cpUpType | O | T | T | T | N/A |
| sst | O | T | T | T | N/A |

4.3.B.3 Attribute constraints

None.

4.3.B.4 Notifications

The subclause 4.5 of the <<IOC>> using this <<dataType>> as one of its attributes, shall be applicable.

***Next change***

4.4.1 Attribute properties

The following table defines the properties of attributes specified in the present document.

| **Attribute Name** | | | **Documentation and Allowed Values** | **Properties** | | |
| --- | --- | --- | --- | --- | --- | --- |
| heartbeatNtfPeriod | | | Periodicity of the heartbeat notification emission. The value of zero has the special meaning of stopping the heartbeat notification emission.  Unit is in seconds.  AllowedValues: non-negative integers | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 0  isNullable: False | | |
| triggerHeartbeatNtf | | | Setting this attribute to TRUE triggers an immediate additional heartbeat notification emission. Setting the value to FALSE has no observable result.  The periodicity of notifyHeartbeat emission is not changed.  AllowedValues: TRUE, FALSE | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: FALSE  isNullable: False | | |
| notificationRecipientAddress | | | Address of the notification recipient.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| notificationTypes | | | Notification types of notifications that are candidates for being forwarding to the notification recipient. If this attribute is absent, notifications of all types are candidates for being forwarding to the notification recipient.  If the notificationFilter attribute is absent, all candidate notifications are forwarded to the notification recipient, otherwise the candidate notifications are discriminated by the filter specified by the notificationFilter attribute.  AllowedValues:  - notifyMOICreation  - notifyMOIDeletion  - notifyMOIAttributeValueChanges  - notifyMOIChanges  - notifyEvent  - notifyNewAlarm  - notifyChangedAlarm  - notifyAckStateChanged  - notifyComments  - notifyCorrelatedNotificationChanged  - notifyChangedAlarmGeneral  - notifyAlarmListRebuilt  - notifyPotentialFaultyAlarmList  - notifyFileReady  - notifyFilePreparationError  - notifyThresholdCrossing | type: ENUM  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| notificationFilter | | | Filter to be applied to candidate notifications identified by the notificationTypes attribute. Only notifications that pass the filter criteria are forwarded to the notification recipient. All other notifications are discarded.  The filter can be applied to any field of a notification.  allowedValues: N/A | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| scope | | | Scopes the managed object instances included in the notification subscription. If this attribute is absent, all objects below and including the base object are scoped.  allowedValues: N/A | type: Scope  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| scopeType | | | If the optional scopeLevel attribute is not supported or absent, allowed values of scopeType are BASE\_ONLY and BASE\_ALL.  The value BASE\_ONLY indicates only the base object is selected.  The value BASE\_ALL indicates the base object and all of its subordinate objects (incl. the leaf objects) are selected.  If the scopeLevel attribute is supported and present, allowed values of scopeType are BASE\_NTH\_LEVEL and BASE\_SUBTREE.  The value BASE\_NTH\_LEVEL indicates all objects on the level, which is specified by the scopeLevel attribute, below the base object are selected. The base object is at scopeLevel zero.  The value BASE\_SUBTREE indicates the base object and all subordinate objects down to and including the objects on the level, which is specified by the scopeLevel attribute, are selected. The base object is at scopeLevel zero.  allowedValues: N/A | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| scopeLevel | | | See definition of scopeType attribute.  allowedValues: N/A | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| farEndEntity | | | The value of this attribute shall be the Distinguished Name of the far end network entity to which the reference point is related.  As an example, with EP\_Iucs, if the instance of EP\_Iucs is contained by one RncFunction instance, the farEndEntity is the Distinguished Name of the MscServerFunction instance to which this Iucs reference point is related.  allowedValues: N/A | type: DN  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| linkType | | | This attribute defines the type of the link.  allowedValues: Signalling, Bearer, OAM&P, Other or multiple combinations of this type. | type: String  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: No  isNullable: False | | |
| locationName | | | The physical location of this entity (e.g. an address).  allowedValues: N/A | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| monitorGranularityPeriod | | | Granularity period used to monitor measurements for threshold crossings. The period is defined in seconds.  See Note 5  allowedValues: Integer with a minimum value of 1 | type: Integer  multiplicity: 1  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False | | |
| monitorGranularityPeriods | | | Granularity periods supported for the monitoring of associated measurement types for thresholds. The period is defined in seconds.  allowedValues: Integer with a minimum value of 1 | type: Integer  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| thresholdInfoList | | | List of threshold infos. | type: ThresholdInfo  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False | | |
| thresholdValue | | | Value against which the monitored performance metric is compared at a threshold level in case the hysteresis is zero.  allowedValues: float or integer | type: Union  multiplicity: 1  isOrdered: NA  isUnique: NA  defaultValue: None  isNullable: False | | |
| hysteresis | | | Hysteresis of a threshold. If this attribute is present the monitored performance metric is not compared against the threshold value as specified by the thresholdValue attribute but against a high and low threshold value given by  highThresholdValue- = thresholdValue + hysteresis  lowThresholdValue = thresholdValue - hysteresis  When going up, the threshold is triggered when the performance metric reaches or crosses the high threshold value. When going down, the threshold is triggered when the performance metric reaches or crosses the low threshold value.  A hysteresis may be present only when the monitored performance metric is not of type counter that can go up only. If present for a performance metric of type counter, it shall be ignored.  allowedValues: non-negative float or integer | type: Union  multiplicity: 0..1  isOrdered: NA  isUnique: NA  defaultValue: None  isNullable: False | | |
| thresholdDirection | | | Direction of a threshold indicating the direction for which a threshold crossing triggers a threshold.  When the threshold direction is configured to "UP", the associated treshold is triggered only when the performance metric value is going up upon reaching or crossing the threshold value. The treshold is not triggered, when the performance metric is going down upon reaching or crossing the threshold value.  Vice versa, when the threshold direction is configured to "DOWN", the associated treshold is triggered only when the performance metric is going down upon reaching or crossing the threshold value. The treshold is not triggered, when the performance metric is going up upon reaching or crossing the threshold value.  When the threshold direction is set to "UP\_AND\_DOWN" the treshold is active in both direcions.  In case a threshold with hysteresis is configured, the threshold direction attribute shall be set to "UP\_AND\_DOWN".  allowedValues:  - UP  - DOWN  - UP\_AND\_DOWN | type: ENUM  multiplicity: 1  isOrdered: NA  isUnique: NA  defaultValue: None  isNullable: False | | |
| objectClass | | | Class of a managed object instance.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| objectInstance | | | Managed object instance identified by its DN.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| objectInstances | | | List of managed object instances. Each object instance is identified by its DN.  allowedValues: N/A | type: Dn  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| peeParametersList | | | This attribute contains the parameter list for the control and monitoring of power, energy and environmental parameters of ManagedFunction instance(s). This list contains the following parameters:  - siteIdentification  - siteLatitude (optional)  - siteLongitude (optional)  - siteDescription  - equipmentType  - environmentType  - powerInterface  siteIdentification: The identification of the site where the ManagedFunction resides.  allowedValues: N/A  siteLatitude: The latitude of the site where the ManagedFunction instance resides, based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to the northern hemisphere. This attribute is optional in case of BTSFunction and RNCFunction instance(s).  allowedValues: -90.0000 to +90.0000  siteLongitude: The longitude of the site where the ManagedFunction instance resides, based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to degrees east of 0 degrees longitude. This attribute is optional in case of BTSFunction and RNCFunction instance(s).  allowedValues: -180.0000 to +180.0000  siteDescription: An operator defined description of the site where the ManagedFunction instance resides.  allowedValues: N/A  equipmentType: The type of equipment where the managedFunction instance resides.  allowedValues: see clause 4.4.1 of ETSI ES 202 336-12 [18].  environmentType: The type of environment where the managedFunction instance resides.  allowedValues: see clause 4.4.1 of ETSI ES 202 336-12 [18].  powerInterface: The type of power.  allowedValues: see clause 4.4.1 of ETSI ES 202 336-12 [18]. | type: String  multiplicity: 0..\*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: True | | |
| priorityLabel | This is a label that consumer would assign a value on a concrete instance of the managed object. The management system takes the value of this attribute into account. The effect of this attribute value to the subject managed entity is not standardized | | | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| protocolVersion | | | Versions(s) and additional descriptive information for the protocol(s) used for the associated communication link. Syntax and semantic is not specified.  allowedValues: N/A | type: String  multiplicity: \*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False | | |
| setOfMcc | | | Set of Mobile Country Code (MCC). The MCC uniquely identifies the country of domicile of the mobile subscriber. MCC is part of the IMSI (TS 23.003 [5])  This list contains all the MCC values in subordinate object instances to this SubNetwork instance.  allowedValues: See clause 2.3 of TS 23.003 [5] for MCC allocation principles. | type: Integer  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: No default value  isNullable: False | | |
| swVersion | | | The software version of the ManagementNode or ManagedElement (this is used for determining which version of the vendor specific information is valid for the ManagementNode or ManagedElement).  allowedValues: N/A | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| systemDN | | | The Distinguished Name (DN) of IRPAgent (or consumer). Defined in 3GPP TS 32.300.  allowedValues: N/A | type: DN  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| userDefinedState | | | An operator defined state for operator specific usage.  allowedValues: N/A | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| userLabel | | | A user-friendly (and user assignable) name of this object.  allowedValues: N/A | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| vendorName | | | The name of the vendor.  allowedValues: N/A | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| vnfParametersList | | | This attribute contains the parameter set of the VNF instance(s) corresponding to an NE. Each entry in the list contains:  - vnfInstanceId  - vnfdId (optional)  - flavourId (optional)  - autoScalable  vnfInstanceId: VNF instance identifier (vnfInstanceId, see section 9.4.2 of [16] and section B2.4.2.1.2.3 of [17]).  See Note 1.  vnfdId: Identifier of the VNFD on which the VNF instance is based, see section 9.4.2 of [16]. This attribute is optional.  Note: the value of this attribute is identical to that of the same attribute in clause 9.4.2 of ETSI GS NFV-IFA 008 [16].  flavourId: Identifier of the VNF Deployment Flavour applied to this VNF instance, see section 9.4.3 of [16]. This attribute is optional.  Note: the value of this attribute is identical to that of the same attribute in clause 9.4.3 of ETSI GS NFV-IFA 008 [16].  autoScalable: Indicator of whether the auto-scaling of this VNF instance is enabled or disabled. The type is Boolean.  See Note2.  The presence of this attribute indicates that the ManagedFunction represented by the MOI is a virtualized function.  See Note 3.  allowedValues: N/A  A string length of zero for vnfInstanceId means the VNF instance(s) corresponding to the MOI does not exist (e.g. has not been instantiated yet, has already been terminated). | type: String  multiplicity: \*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: True | | |
| vsData | | | Vendor specific attributes of the type vsDataType. The attribute definitions including constraints (value ranges, data types, etc.) are specified in a vendor specific data format file.  allowedValues: -- | type: --  multiplicity: --  isOrdered: --  isUnique: --  defaultValue: --  isNullable: False | | |
| vsDataFormatVersion | | | Name of the data format file, including version.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| vsDataType | | | Type of vendor specific data contained by this instance, e.g. relation specific algorithm parameters, cell specific parameters for power control or re-selection or a timer. The type itself is also vendor specific.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| supportedPerfMetricGroups | | | A set of performance metric groups. When this attribute is contained in a managed object it may define performance metrics for this object and all descendant objects.  allowedValues: N/A | type: SupportedPerfMetricGroup  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  allowedValues: N/A  isNullable: False | | |
| performanceMetrics | | | List of performance metrics.  Performance metrics include measurements defined in TS 28.552 [20] and KPIs defined in TS 28.554 [28]. Performance metrics can also be those specified by other SDOs or vendor specific metrics. Performance metrics are identified with their names. A name can als identify a vendor specific group of performance metrics.  For measurements defined in TS 28.552 [20] the name is constructed as follows:  - "family.measurementName.subcounter" for measurement types with subcounters  - "family.measurementName" for measurement types without subcounters  - "family" for measurement families  For KPIs defined in TS 28.554 [28] the name is defined in the KPI definitions template as the component designated with e).  allowedValues: N/A | type: String  multiplicity: \*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False | | |
| rootObjectInstances | | | List of object instances. Each object instance is identified by its DN and designates the root of a subtree that contains the root object and all descendant objects. | Type: Dn  multiplicity: \*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False | | |
| reportingMethods | | | List of reporting methods for performance metrics  allowedValues:  - "FILE\_BASED\_LOC\_SET\_BY\_PRODUCER",  - "FILE\_BASED\_LOC\_SET\_BY\_CONSUMER",  - "STREAM\_BASED" | Type: ENUM  multiplicity: \*  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False | | |
| nFServiceType | | | The parameter defines the type of the managed NF service instance  allowedValues: See clause 7.2 of TS 23.501[22] | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False | | |
| operations | | | This parameter defines set of operations supported by the managed NF service instance.  allowedValues: See TS 23.502[23] for supporting operations | type: Operation  multiplicity: 1..\*  isOrdered: False  isUnique: False  defaultValue: No default value  isNullable: False | | |
| Operation.name | | | This parameter defines the name of the operation of the managed NF service instance.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: False  isUnique: False  defaultValue: None  isNullable: True | | |
| allowedNFTypes | | | This parameter identifies the type of network functions allowed to access the operation of the managed NF service instance.  allowedValues: See TS 23.501[22] for NF types | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| operationSemantics | | | This paramerter identifies the semantics type of the operation. See TS 23.502[23]  allowedValues: “Request/Response”, “Subscribe/Notify”. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| sAP | | | This parameter specifies the service access point of the managed NF service instance.  allowedValues: N/A | type: SAP  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| host | | | This parameter specifies the host address of the managed NF service instance. It can be FQDN (See TS 23.003 [5]) or an IPv4 address (See RFC 791 [24]) or an IPv6 address (See RFC 2373 [25]).  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: False  isUnique: N/A  defaultValue: None  isNullable: False | | |
| port | | | This parameter specifies the transport port of the managed NF service instance.  allowedValues: 1 - 65535 | type: Integer  multiplicity: 1  isOrdered: False  isUnique: False  defaultValue: None  isNullable: False | | |
| usageStae | | | Usage state of a managed object instance. It describes whether the resource is actively in use at a specific instant, and if so, whether or not it has spare capacity for additional users at that instant.  allowedValues: "IDLE", "ACTIVE", "BUSY".  The meaning of these values is as defined in 3GPP TS 28.625 [21] and ITU-T X.731 [19]. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| registrationState | | | This parameter defines the registration status of the managed NF service instance.  allowedValues: "Registered", "Deregistered". | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Deregistered  isNullable: False | | |
| jobId | | | Id for a PerfMetricJob job. | type: String  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| granularityPeriod | | | Granularity period used to produce measurements. The period is defined in seconds.  See Note 4.  allowedValues: Integer with a minimum value of 1 | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| granularityPeriods | | | Granularity periods supported for the production of associated measurement types. The period is defined in seconds.  allowedValues: Integer with a minimum value of 1 | type: Integer  multiplicity: \*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| reportingCtrl | | | Selecting the reporting method and defining associated control parameters. | type: ReportingCtrl  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| fileReportingPeriod | | | For the file-based reporting method this is the time window during which collected measurements are stored into the same file before the file is closed and a new file is opened. The period is defined in minutes.  allowedValues: Multiples of granularityPeriod | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| fileLocation | | | File location  allowedValues: Not applicable. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True | | |
| streamTarget | | | The stream target for the stream-based reporting method.  allowedValues: N/A | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: True | | |
| administrativeState | | | Administrative state of a managed object instance. The administrative state describes the permission to use or prohibition against using the object instance. The adminstrative state is set by the MnS consumer.  allowedValues: LOCKED, UNLOCKED. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: LOCKED  isNullable: False | | |
| operationalState | | | Operational state of manged object instance. The operational state describes if an object instance is operable ("ENABLED") or inoperable ("DISABLED"). This state is set by the object instance or the MnS producer and is hence READ-ONLY.  allowedValues: ENABLED, DISABLED. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: DISABLED  isNullable: False | | |
| alarmRecords | | | List of alarm records  allowedValues: N/A | type: AlarmRecord  multiplicity: \*  isOrdered: N/A  isUnique: True  default value: None  isNullable: True | | |
| numOfAlarmRecords | | | Number of alarm records in the AlarmList.  allowedValues: 0 to x where x is vendor specific. | type: integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| lastModification | | | Time an alarm record was modified the last time  allowedValues: N/A | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False | | |
| tjJobType | | | It specifies the MDT mode and it specifies also whether the TraceJob represents only MDT, Logged MBSFN MDT, Trace or a combined Trace and MDT job. The attribute is applicable for Trace, MDT, RCEF and RLF reporting.  See the clause 5.9a of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: TRACE\_ONLY  isNullable: False | | |
| tjListOfInterfaces | | | It specifies the interfaces that need to be traced in the given ManagedEntityFunction.The attribute is applicable only for Trace. In case this attribute is not used, it carries a null semantic.  See the clause 5.5 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjListOfNeTypes | | | It specifies in which type of ManagedFunction the trace should be activated. The attribute is applicable only for Trace with Signalling Based Trace activation. In case this attribute is not used, it carries a null semantic.  See the clause 5.4 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjPLMNTarget | | | It specifies which PLMN that the subscriber of the session to be recorded uses as selected PLMN. PLMN Target might differ from the PLMN specified in the Trace Reference.  See the clause 5.9b of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: No  isNullable: True | | |
| tjStreamingTraceConsumerURI | | | It specifies the URI of the Streaming Trace data reporting MnS consumer (a.k.a. streaming target).  See the clause 5.9 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjTraceCollectionEntityAddress | | | It specifies the address of the Trace Collection Entity when the attribute tjTraceReportingFormat is configured for the file-based reporting. The attribute is applicable for both Trace and MDT.  See the clause 5.9 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjTraceDepth | | | It specifies the trace depth. The attribute is applicable only for Trace. In case this attribute is not used, it carries a null semantic.  See the clause 5.3 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: MAXIMUM  isNullable: True | | |
| tjTraceReference | | | A globally unique identifier, which uniquely identifies the Trace Session that is created by the TraceJob.  In case of shared network, it is the MCC and  MNC of the Participating Operator that request the trace session that shall be provided.  The attribute is applicable for both Trace and MDT.  See the clause 5.6 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: True  defaultValue: None  isNullable: False | | |
| tjTraceReportingFormat | | | It specifies the trace reporting format - streaming trace reporting or file-based trace reporting.  See the clause 5.11 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: FILE  isNullable: False | | |
| tjTraceTarget | | | It specifies the target object of the Trace and MDT. The attribute is applicable for both Trace and MDT. This attribute includes the ID type of the target as an enumeration and the ID value.  See the 3GPP TS 32.422 [30] for additional details on the allowed values. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjTriggeringEvent | | | It specifies the triggering event parameter of the trace session. The attribute is applicable only for Trace. In case this attribute is not used, it carries a null semantic.  See the clause 5.1 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTAnonymizationOfData | | | It specifies the level of anonymization for management based MDT.  See the clause 5.10.12 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: NO\_IDENTITY  isNullable: True | | |
| tjMDTAreaConfigurationForNeighCell | | | It specifies the area for which UE is requested to perform measurement logging for neighbour cells which have list of frequencies. If it is not configured, the UE shall perform measurement logging for all the neighbour cells.  Applicable only to NR Logged MDT.  See the clause 5.10.26 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: String  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTAreaScope | | | It specifies MDT area scope when activates an MDT job.  For RLF and RCEF reporting it specifies the eNB or list of eNBs where the RLF or RCEF reports should be collected.  List of cells/TA/LA/RA for signaling based MDT or management based Logged MDT.  List of cells for management based Immediate MDT.  Cell, TA, LA, RA are mutually exclusive.  One or list of eNBs for RLF and RCEFreporting  See the clause 5.10.2 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: String  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTCollectionPeriodRrmLte | | | It specifies the collection period for collecting RRM configured measurement samples for M2, M3 in LTE. The attribute is applicable only for Immediate MDT. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.20 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTCollectionPeriodRrmUmts | | | It specifies the collection period for collecting RRM configured measurement samples for M3, M4, M5 in UMTS. The attribute is applicable only for Immediate MDT. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.21 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTEventListForTriggeredMeasurement | | | It specifies event types for event triggered measurement in the case of logged NR MDT. Each trace session may configure at most one event. The UE shall perform logging of measurements only upon certain condition being fulfilled:  - Out of coverage.  - A2 event.  See the clause 5.10.28 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTEventThreshold | | | It specifies the threshold which should trigger  the reporting in case A2 event reporting in LTE or 1F/1l event in UMTS. The attribute is applicable only for Immediate MDT and when reportingTrigger is configured for A2 event in LTE or 1F event or 1l event in UMTS. In case this attribute is not used, it carries a null semantic.  See the clauses 5.10.7 and 5.10.7a of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTListOfMeasurements | | | It specifies the UE measurements that shall be collected in an Immediate MDT job. The attribute is applicable only for Immediate MDT. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.3 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTLoggingDuration | | | It specifies how long the MDT configuration is valid at the UE in case of Logged MDT. The attribute is applicable only for Logged MDT and Logged MBSFN MDT. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.9 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTLoggingInterval | | | It specifies the periodicty for Logged MDT. The attribute is applicable only for Logged MDT and Logged MBSFN MDT. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.8 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTMBSFNAreaList | | | The MBSFN Area consists of a MBSFN Area ID and Carrier Frequency (EARFCN). The target MBSFN area List can have up to 8 entries. This parameter is applicable only if the job type is Logged MBSFN MDT.  See the clause 5.10.25 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: String  multiplicity: 1..8  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTMeasurementPeriodLTE | | | It specifies the measurement period for the Data Volume and Scheduled IP throughput measurements for MDT taken by the eNB. The attribute is applicable only for Immediate MDT. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.23 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTMeasurementPeriodUMTS | | | It specifies the measurement period for the Data Volume and Throughput measurements for MDT taken by RNC. The attribute is applicable only for Immediate MDT. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.22 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTCollectionPeriodRrmNR | | | It specifies the collection period for collecting RRM configured measurement samples for M4, M5 in NR. The attribute is applicable only for Immediate MDT. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.30 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTMeasurementQuantity | | | It specifies the measurements that are collected in an MDT job for a UMTS MDT configured for event triggered reporting.  See the clause 5.10.15 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTPLMList | | | It indicates the PLMNs where measurement collection, status indication and log reporting is allowed.  See the clause 5.10.24 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: PLMN  multiplicity: 1..16  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTPositioningMethod | | | It specifies what positioning method should be used in the MDT job.  See the clause 5.10.19 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTReportAmount | | | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected. The attribute is applicable only for Immediate MDT and when tjMDTReportingTrigger is configured for periodical measurements. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.6 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTReportingTrigger | | | It specifies whether periodic or event based measurements should be collected. The attribute is applicable only for Immediate MDT and when the tjMDTListOfMeasurements is configured for M1 (for both UMTS and LTE) or M2 (only for UMTS). In case this attribute is not used, it carries a null semantic.  See the clause 5.10.4 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTReportInterval | | | It specifies the interval between the periodical measurements that shall be taken when the UE is in connected mode. The attribute is applicable only for Immediate MDT and when tjMDTReportingTrigger is configured for periodical measurements. In case this attribute is not used, it carries a null semantic.  See the clause 5.10.5 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTReportType | | | It specifies report type for logged NR MDT as:  - periodical.  - event triggered.  See the clause 5.10.27 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTSensorInformation | | | It specifies which sensor information shall be included in logged NR MDT and immediate NR MDT measurement if they are available. The following sensor measurement can be included or excluded for the UE:  - Barometric pressure.  - UE speed.  - UE orientation.  See the clause 5.10.29 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| tjMDTTraceCollectionEntityID | | | It specifies the TCE Id which is sent to the UE in Logged MDT.  See the clause 5.10.11 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| managementDataType | | | This attributes defines the type of management data that are requested.  Allowed values: COVERAGE, CAPACITY, SERVICE EXPERIENCE, TRACE, ENERGY EFFICIENCY, MOBILITY, ACCESSIBILITY  Note: The above values can be further extended by the implementations, as appropriate | type: ENUM  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| targetNodeFilter | | | Set of information to target the Object Instance to collect the measurements from. | type: NodeFilter  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| areaOfInterest | | | It specifies a location(s) from where the management data shall be collected. It is defined in terms of TAI(s). | type: Tai  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: No  isNullable: True | | |
| networkDomain | | | It specifies the network domain of the target node. This will also result in collecting appropriate management data from the nodes belonging to the specified domain.  Allowed Values: CN, RAN | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: True | | |
| cpUpType | | | It specifies the traffic type of the target node. This will also result in collecting appropriate management data from the nodes handling the specified traffic (e.g AMF for CP and UPF for UP).  Allowed Values: CP, UP | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: True | | |
| sst | | | It specifies the slice service type (SST) of which the slice subnet should be targeted. Please refer to [22]. | type: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: True | | |
| collectionTimePeriod | | | Collection time duration for which the management data should be reported. | type: CollectionDuration  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: True | | |
| startTime | | | It specifies the start of collection period | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: True | | |
| endTime | | | It specifies the end of collection period | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: True | | |
| dataScope | | | It specifies whether the required data is reported per S-NSSAI or per 5QI.  Allowed Value: SNSSAI, 5QI | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: N/A  isNullable: True | | |
|  | | |  |  | | |
|  | | |  |  | | |
|  | | |  |  | | |
| NOTE 1: The value of this attribute is identical to that of the same attribute in clause 9.4.2 of ETSI GS NFV-IFA 008 [16].  NOTE 2: The value of this attribute is identical to that of the same attribute included in vnfConfigurableProperty in clause 9.4.2 of ETSI GS NFV-IFA 008 [16].  NOTE 3: The presence of the attribute vnfParametersList, whose vnfInstanceId with a string length of zero, in createMO operation can trigger the instantiation of the related VNF/VNFC instances.  NOTE 4: The GP defines the measurement data production rate. The supported rates are dependent on the capacity of the producer involved (e.g. the processing power of the producer, the complexity of the measurement type involved etc) and therefore, it cannot be standardized for all producers involved. The supported GPs reflects the agreement between producer and the consumer involved.  NOTE 5: The monitoring granularity period defines the measurements monitoring period. The supported monitoring periods are dependent on the capacity of the producer involved (e.g. the processing power of the producer, the complexity of the measurement type involved etc) and therefore, it cannot be standardized for all producers involved. The supported monitoring GPs reflect the agreement between producer and the consumer involved.  NOTE 6: The supported threshold levels are dependent on the capacity of the producer involved (e.g. the processing power of the producer, number of measurements being measured by the producer at the time, the complexity of the measurement type involved etc) and therefore, it cannot be standardized for all producers involved. The supported levels can only reflect the negotiated agreement between producer and the consumer involved. | | | | | | |

4.4.2 Constraints

None

***Next change***

## C.4.3 OpenAPI document "genericNrm.yaml"

openapi: 3.0.1

info:

title: Generic NRM

version: 16.8.0

description: >-

OAS 3.0.1 definition of the Generic NRM

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externalDocs:

description: 3GPP TS 28.623; Generic NRM

url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.623/

paths: {}

components:

schemas:

#-------- Definition of types-----------------------------------------------------

RegistrationState:

type: string

enum:

- REGISTERED

- DEREGISTERED

VnfParameter:

type: object

properties:

vnfInstanceId:

type: string

vnfdId:

type: string

flavourId:

type: string

autoScalable:

type: boolean

PeeParameter:

type: object

properties:

siteIdentification:

type: string

siteDescription:

type: string

siteLatitude:

$ref: 'comDefs.yaml#/components/schemas/Latitude'

siteLongitude:

$ref: 'comDefs.yaml#/components/schemas/Longitude'

equipmentType:

type: string

environmentType:

type: string

powerInterface:

type: string

ThresholdInfo:

type: object

properties:

thresholdDirection:

type: string

enum:

- UP

- DOWN

- UP\_AND\_DOWN

thresholdValue:

oneOf:

- type: integer

- $ref: 'comDefs.yaml#/components/schemas/Float'

hysteresis:

oneOf:

- type: integer

minimum: 0

- type: number

format: float

minimum: 0

Operation:

type: object

properties:

name:

type: string

allowedNFTypes:

$ref: '#/components/schemas/NFType'

operationSemantics:

$ref: '#/components/schemas/OperationSemantics'

NFType:

type: string

description: ' NF name defined in TS 23.501'

enum:

- NRF

- UDM

- AMF

- SMF

- AUSF

- NEF

- PCF

- SMSF

- NSSF

- UDR

- LMF

- GMLC

- 5G\_EIR

- SEPP

- UPF

- N3IWF

- AF

- UDSF

- DN

OperationSemantics:

type: string

enum:

- REQUEST\_RESPONSE

- SUBSCRIBE\_NOTIFY

SAP:

type: object

properties:

host:

$ref: 'comDefs.yaml#/components/schemas/HostAddr'

port:

type: integer

NFServiceType:

type: string

enum:

- Namf\_Communication

- Namf\_EventExposure

- Namf\_MT

- Namf\_Location

- Nsmf\_PDUSession

- Nsmf\_EventExposure

- Others

TransportProtocol:

anyOf:

- type: string

enum:

- TCP

- type: string

SupportedPerfMetricGroup:

type: object

properties:

performanceMetrics:

type: array

items:

type: string

granularityPeriods:

type: array

items:

type: integer

minimum: 1

reportingMethods:

type: array

items:

type: string

enum:

- FILE\_BASED\_LOC\_SET\_BY\_PRODUCER

- FILE\_BASED\_LOC\_SET\_BY\_CONSUMER

- STREAM\_BASED

monitorGranularityPeriods:

type: array

items:

type: integer

minimum: 1

ReportingCtrl:

oneOf:

- type: object

properties:

fileReportingPeriod:

type: integer

- type: object

properties:

fileReportingPeriod:

type: integer

fileLocation:

$ref: 'comDefs.yaml#/components/schemas/Uri'

- type: object

properties:

streamTarget:

$ref: 'comDefs.yaml#/components/schemas/Uri'

Scope:

type: object

properties:

scopeType:

type: string

enum:

- BASE\_ONLY

- BASE\_ALL

- BASE\_NTH\_LEVEL

- BASE\_SUBTREE

scopeLevel:

type: integer

AreaScope:

oneOf:

- type: array

items:

$ref: '#/components/schemas/EutraCellId'

- type: array

items:

$ref: '#/components/schemas/NrCellId'

- type: array

items:

$ref: '#/components/schemas/Tac'

- type: array

items:

$ref: '#/components/schemas/Tai'

Tai:

type: object

properties:

mcc:

$ref: 'comDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'comDefs.yaml#/components/schemas/Mnc'

tac:

$ref: '#/components/schemas/Tac'

AreaConfig:

type: object

properties:

freqInfo:

$ref: '#/components/schemas/FreqInfo'

pciList:

type: array

items:

type: integer

FreqInfo:

description: specifies the carrier frequency and bands used in a cell.

type: object

properties:

arfcn:

type: integer

freqBands:

type: array

items:

type: integer

MbsfnArea:

type: object

properties:

mbsfnAreaId:

type: integer

minimum: 1

earfcn:

type: integer

minimum: 1

Tac:

type: string

pattern: '(^[A-Fa-f0-9]{4}$)|(^[A-Fa-f0-9]{6}$)'

EutraCellId:

type: string

pattern: '^[A-Fa-f0-9]{7}$'

NrCellId:

type: string

pattern: '^[A-Fa-f0-9]{9}$'

IpAddr:

oneOf:

- $ref: 'comDefs.yaml#/components/schemas/Ipv4Addr'

- $ref: 'comDefs.yaml#/components/schemas/Ipv6Addr'

#-------- Definition of types used in Trace control NRM fragment------------------

tjJobType-Type:

type: string

description: Specifies whether the TraceJob represents only MDT, Logged MBSFN MDT, Trace or a combined Trace and MDT job. Applicable for Trace, MDT, RCEF and RLF reporting. See 3GPP TS 32.422 clause 5.9a for additional details.

enum:

- IMMEDIATE\_MDT\_ONLY

- LOGGED\_MDT\_ONLY

- TRACE\_ONLY

- IMMEDIATE\_MDT AND TRACE

- RLF\_REPORT\_ONLY

- RCEF\_REPORT\_ONLY

- LOGGED\_MBSFN\_MDT

tjListOfInterfaces-Type:

description: The interfaces to be recorded in the Network Element. See 3GPP TS 32.422 clause 5.5 for additional details.

type: object

properties:

MSCServerInterfaces:

type: array

items:

type: string

enum:

- A

- Iu-CS

- Mc

- MAP-G

- MAP-B

- MAP-E

- MAP-F

- MAP-D

- MAP-C

- CAP

MGWInterfaces:

type: array

items:

type: string

enum:

- Mc

- Nb-UP

- Iu-UP

RNCInterfaces:

type: array

items:

type: string

enum:

- Iu-CS

- Iu-PS

- Iur

- Iub

- Uu

SGSNInterfaces:

type: array

items:

type: string

enum:

- Gb

- Iu-PS

- Gn

- MAP-Gr

- MAP-Gd

- MAP-Gf

- Ge

- Gs

- S6d

- S4

- S3

- S13

GGSNInterfaces:

type: array

items:

type: string

enum:

- Gn

- Gi

- Gmb

S-CSCFInterfaces:

type: array

items:

type: string

enum:

- Mw

- Mg

- Mr

- Mi

P-CSCFInterfaces:

type: array

items:

type: string

enum:

- Gm

- Mw

I-CSCFInterfaces:

type: array

items:

type: string

enum:

- Cx

- Dx

- Mg

- Mw

MRFCInterfaces:

type: array

items:

type: string

enum:

- Mp

- Mr

MGCFInterfaces:

type: array

items:

type: string

enum:

- Mg

- Mj

- Mn

IBCFInterfaces:

type: array

items:

type: string

enum:

- Ix

- Mx

E-CSCFInterfaces:

type: array

items:

type: string

enum:

- Mw

- Ml

- Mm

- Mi/Mg

BGCFInterfaces:

type: array

items:

type: string

enum:

- Mi

- Mj

- Mk

ASInterfaces:

type: array

items:

type: string

enum:

- Dh

- Sh

- ISC

- Ut

HSSInterfaces:

type: array

items:

type: string

enum:

- MAP-C

- MAP-D

- Gc

- Gr

- Cx

- S6d

- S6a

- Sh

EIRInterfaces:

type: array

items:

type: string

enum:

- MAP-F

- S13

- MAP-Gf

BM-SCInterfaces:

type: array

items:

type: string

enum:

- Gmb

MMEInterfaces:

type: array

items:

type: string

enum:

- S1-MME

- S3

- S6a

- S10

- S11

- S13

SGWInterfaces:

type: array

items:

type: string

enum:

- S4

- S5

- S8

- S11

- Gxc

PDN\_GWInterfaces:

type: array

items:

type: string

enum:

- S2a

- S2b

- S2c

- S5

- S6b

- Gx

- S8

- SGi

eNBInterfaces:

type: array

items:

type: string

enum:

- S1-MME

- X2

en-gNBInterfaces:

type: array

items:

type: string

enum:

- S1-MME

- X2

- Uu

- F1-C

- E1

AMFInterfaces:

type: array

items:

type: string

enum:

- N1

- N2

- N8

- N11

- N12

- N14

- N15

- N20

- N22

- N26

AUSFInterfaces:

type: array

items:

type: string

enum:

- N12

- N13

NEFInterfaces:

type: array

items:

type: string

enum:

- N29

- N30

- N33

NRFInterfaces:

type: array

items:

type: string

enum:

- N27

NSSFInterfaces:

type: array

items:

type: string

enum:

- N22

- N31

PCFInterfaces:

type: array

items:

type: string

enum:

- N5

- N7

- N15

SMFInterfaces:

type: array

items:

type: string

enum:

- N4

- N7

- N10

- N11

- S5-C

SMSFInterfaces:

type: array

items:

type: string

enum:

- N20

- N21

UDMInterfaces:

type: array

items:

type: string

enum:

- N8

- N10

- N13

- N21

UPFInterfaces:

type: array

items:

type: string

enum:

- N4

ng-eNBInterfaces:

type: array

items:

type: string

enum:

- NG-C

- Xn-C

- Uu

gNB-CU-CPInterfaces:

type: array

items:

type: string

enum:

- NG-C

- Xn-C

- Uu

- F1-C

- E1

- X2-C

gNB-CU-UPInterfaces:

type: array

items:

type: string

enum:

- E1

gNB-DUInterfaces:

type: array

items:

type: string

enum:

- F1-C

tjListOfNeTypes-Type:

description: The Network Element types where Trace Session activation is needed. See 3GPP TS 32.422 clause 5.4 for additional details.

type: array

items:

type: string

enum:

- MSC\_SERVER

- SGSN

- MGW

- GGSN

- RNC

- BM\_SC

- MME

- SGW

- PGW

- ENB

- EN\_GNB

- GNB\_CU\_CP

- GNB\_CU\_UP

- GNB\_DU

- AMF

- PCF

- SMF

- UPF

- AUSF

- SMSF

tjPLMNTaget-Type:

type: object

description: The PLMN for which sessions shall be selected in the Trace Session in case of management based activation when several PLMNs are supported in the RAN (this means that shared cells and not shared cells are allowed for the specified PLMN. Note that the PLMN Target might differ from the PLMN specified in the Trace Reference, as that specifies the PLMN that is containing the management system requesting the Trace Session from the NE. See 3GPP TS 32.422 clause 5.9b for additional details.

properties:

mcc:

$ref: 'comDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'comDefs.yaml#/components/schemas/Mnc'

required:

- mcc

- mnc

tjTraceDepth-Type:

description: Specifies how detailed information should be recorded in the Network Element. The Trace Depth is a paremeter for Trace Session level, i.e., the Trace Depth is the same for all of the NEs to be traced in the same Trace Session. See 3GPP TS 32.422 clause 5.3 for additional details.

type: string

enum:

- MINIMUM

- MEDIUM

- MAXIMUM

- VENDORMINIMUM

- VENDORMEDIUM

- VENDORMAXIMUM

tjTraceReference-Type:

type: object

description: The Trace Reference parameter shall be globally unique, therefore the Trace Reference shall compose as follows - MCC+MNC+Trace ID, where the MCC and MNC are coming with the Trace activation request from the management system to identify one PLMN containing the management system, and Trace ID is a 3 byte Octet String. See 3GPP TS 32.422 clause 5.6 for additional details.

properties:

mcc:

$ref: 'comDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'comDefs.yaml#/components/schemas/Mnc'

traceId:

type: string

required:

- mcc

- mnc

- traceId

tjTraceReportingFormat-Type:

type: string

description: Specifies whether file-based or streaming reporting shall be used for this Trace Session. See 3GPP TS 32.422 clause 5.11 for additional details.

enum:

- FILE-BASED

- STREAMING

tjTraceTarget-Type:

type: object

description: Trace target conveying both the type and value of the target ID. For additional details see 3GPP TS 32.422

properties:

TargetIdType:

type: string

enum:

- IMSI

- IMEI

- IMEISV

- PUBLIC\_ID

- UTRAN\_CELL

- E-UTRAN\_CELL

- NG-RAN\_CELL

- eNB

- RNC

- gNB

- SUPI

TargetIdValue:

type: string

required:

- TargetIdType

- TargetIdValue

tjTriggeringEvent-Type:

type: object

description: Specifies when to start a Trace Recording Session and which message shall be recorded first, when to stop a Trace Recording Session and which message shall be recorded last respectively. See 3GPP TS 32.422 clause 5.1 for additional detials.

properties:

NetworkElement:

type: string

enum:

- MSC\_SERVER

- SGSN

- MGW

- GGSN

- BM\_SC

- MME

- SGW

- PGW

- AMF

- SMF

- PCF

- UPF

- AUSF

- NEF

- NRF

- NSSF

- SMSF

- UDM

EventBitmap:

type: integer

required:

- NetworkElement

- EventBitmap

tjMDTAnonymizationOfData-Type:

description: Specifies level of MDT anonymization. For additional details see 3GPP TS 32.422 clause 5.10.12.

type: string

enum:

- NO\_IDENTITY

- TAC\_OF\_IMEI

tjMDTCollectionPeriodRrmLte-Type:

description: See details in 3GPP TS 32.422 clause 5.10.20.

type: string

enum:

- 100ms

- 1000ms

- 1024ms

- 1280ms

- 2048ms

- 2560ms

- 5120ms

- 10000ms

- 10240ms

- 60000ms

tjMDTCollectionPeriodM6Lte-Type:

description: See details in 3GPP TS 32.422 clause 5.10.32.

type: string

enum:

- 1024ms

- 2048ms

- 5120ms

- 10240ms

tjMDTCollectionPeriodM7Lte-Type:

description: See details in 3GPP TS 32.422 clause 5.10.33.

type: integer

minimum: 1

maximum: 60

tjMDTCollectionPeriodRrmUmts-Type:

description: See details in 3GPP TS 32.422 clause 5.10.21.

type: string

enum:

- 250ms

- 500ms

- 1000ms

- 2000ms

- 3000ms

- 4000ms

- 6000ms

- 8000ms

- 12000ms

- 16000ms

- 20000ms

- 24000ms

- 28000ms

- 32000ms

- 64000ms

tjMDTCollectionPeriodRrmNR-Type:

description: See details in 3GPP TS 32.422 clause 5.10.30.

type: string

enum:

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 60000ms

tjMDTCollectionPeriodM6NR-Type:

description: See details in 3GPP TS 32.422 clause 5.10.34.

type: string

enum:

- 120ms

- 240ms

- 480ms

- 640ms

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 20480ms

- 40960ms

- 1min

- 6min

- 12min

- 30min

tjMDTCollectionPeriodM7NR-Type:

description: See details in 3GPP TS 32.422 clause 5.10.35.

type: integer

minimum: 1

maximum: 60

tjMDTEventListForTriggeredMeasurement-Type:

description: See details in 3GPP TS 32.422 clause 5.10.28.

type: string

enum:

- OUT\_OF\_COVERAGE

- A2\_EVENT

tjMDTEventThreshold-Type:

description: See details in 3GPP TS 32.422 clause 5.10.7, 5.10.7a, 5.10.13 and 5.10.14.

type: object

properties:

EventThresholdRSRP:

oneOf:

- type: integer

minimum: 0

maximum: 97

- type: integer

minimum: 0

maximum: 127

EventThresholdRSRQ:

oneOf:

- type: integer

minimum: 0

maximum: 34

- type: integer

minimum: 0

maximum: 127

EventThreshold1F:

type: object

properties:

CPICH\_RSCP:

type: integer

minimum: -120

maximum: 25

CPICH\_EcNo:

type: integer

minimum: -24

maximum: 0

PathLoss:

type: integer

minimum: 30

maximum: 165

EventThreshold1I:

type: integer

minimum: -120

maximum: 25

tjMDTListOfMeasurements-Type:

description: See details in 3GPP TS 32.422 clause 5.10.3 for details.

type: object

properties:

UMTS:

type: array

items:

type: string

enum:

- M1

- M2

- M3

- M4

- M5

- M6\_DL

- M6\_UL

- M7\_DL

- M7\_UL

LTE:

type: array

items:

type: string

enum:

- M1

- M2

- M3

- M4

- M5

- M1\_EVENT\_TRIGGERED

- M6

- M7

- M8

- M9

NR:

type: array

items:

type: string

enum:

- M1

- M2

- M3

- M4

- M5

- M6

- M7

- M1\_EVENT\_TRIGGERED

- M8

- M9

tjMDTLoggingDuration-Type:

description: See details in 3GPP TS 32.422 clause 5.10.9.

type: string

enum:

- 600s

- 1200s

- 2400s

- 3600s

- 5400s

- 7200s

tjMDTLoggingInterval-Type:

description: See details in 3GPP TS 32.422 clause 5.10.8.

type: object

properties:

UMTS:

type: array

items:

type: string

enum:

- 1.28s

- 2.56s

- 5.12s

- 10.24s

- 20.48s

- 30.72s

- 40.96s

- 61.44s

LTE:

type: array

items:

type: string

enum:

- 1.28s

- 2.56s

- 5.12s

- 10.24s

- 20.48s

- 30.72s

- 40.96s

- 61.44s

NR:

type: array

items:

type: string

enum:

- 0.32s

- 0.64s

- 1.28s

- 2.56s

- 5.12s

- 10.24s

- 20.48s

- 30.72s

- 40.96s

- 61.44s

- INFINITY

tjMDTMeasurementPeriodLTE-Type:

description: See details in 3GPP TS 32.422 clause 5.10.23.

type: string

enum:

- 1024ms

- 1280ms

- 2048ms

- 2560ms

- 5120ms

- 10240ms

- 1min

tjMDTMeasurementPeriodUMTS-Type:

description: See details in 3GPP TS 32.422 clause 5.10.22.

type: string

enum:

- 250ms

- 500ms

- 1000ms

- 2000ms

- 3000ms

- 4000ms

- 6000ms

- 8000ms

- 12000ms

- 16000ms

- 20000ms

- 24000ms

- 28000ms

- 32000ms

- 64000ms

tjMDTMeasurementQuantity-Type:

description: See details in 3GPP TS 32.422 clause 5.10.15.

type: string

enum:

- CPICH\_EcNo

- CPICH\_RSCP

- PathLoss

tjMDTPLMList-Type:

description: See details in 3GPP TS 32.422 clause 5.10.24.

type: array

items:

type: object

properties:

mcc:

$ref: 'comDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'comDefs.yaml#/components/schemas/Mnc'

required:

- mcc

- mnc

maxItems: 16

NodeFilter:

type: array

items:

type: object

properties:

areaOfInterest:

$ref: '#/components/schemas/Tai'

networkDomain:

type: string

cPUPType:

type: string

sst:

type: integer

CollectionDuration:

type: array

items:

type: object

properties:

startTime:

type: date

endTime:

type: date

tjMDTPositioningMethod-Type:

description: See details in 3GPP TS 32.422 clause 5.10.19.

type: string

enum:

- GNSS

- E-CELL\_ID

managementDataType:

enum:

- COVERAGE

- CAPACITY

- SERVICE EXPERIENCE

- TRACE

- ENERGY EFFICIENCY

- MOBILITY

- ACCESSIBILITY

tjMDTReportAmount-Type:

description: See details in 3GPP TS 32.422 clause 5.10.6.

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

tjMDTReportingTrigger-Type:

description: See details in 3GPP TS 32.422 clause 5.10.4.

type: array

items:

type: string

enum:

- PERIODICAL

- A2\_FOR\_LTE\_NR

- 1F\_FOR\_UMTS

- 1I\_FOR\_UMTS\_MCPS\_TDD

- A2\_TRIGGERED\_PERIODIC\_FOR\_LTE\_NR

- ALL\_CONFIGURED\_RRM\_FOR\_LTE\_NR

- ALL\_CONFIGURED\_RRM\_FOR\_UMTS

tjMDTReportInterval-Type:

description: See details in 3GPP TS 32.422 clause 5.10.5.

type: object

properties:

UMTS:

type: array

items:

type: string

enum:

- 250ms

- 500ms

- 1000ms

- 2000ms

- 3000ms

- 4000ms

- 6000ms

- 8000ms

- 12000ms

- 16000ms

- 20000ms

- 24000ms

- 28000ms

- 32000ms

- 64000ms

LTE:

type: array

items:

type: string

enum:

- 120ms

- 240ms

- 480ms

- 640ms

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 60000ms

- 360000ms

- 720000ms

- 1800000ms

- 3600000ms

NR:

type: array

items:

type: string

enum:

- 120ms

- 240ms

- 480ms

- 640ms

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 60000ms

- 360000ms

- 720000ms

- 1800000ms

- 3600000ms

tjMDTReportType-Type:

description: Report type for logged NR MDT. See details in 3GPP TS 32.422 clause 5.10.27.

type: string

enum:

- PERIODICAL

- EVENT\_TRIGGERED

tjMDTSensorInformation-Type:

description: See details in 3GPP TS 32.422 clause 5.10.29.

type: array

items:

type: string

enum:

- BAROMETRIC\_PRESSURE

- UE\_SPEED

- UE\_ORIENTATION

tjMDTTraceCollectionEntityID-Type:

description: See details in 3GPP TS 32.422 clause 5.10.11. Only tceID value may be sent over the air to the UE being configured for Logged MDT.

type: object

properties:

tceID:

type: integer

tcePLMN:

type: object

properties:

mcc:

$ref: 'comDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'comDefs.yaml#/components/schemas/Mnc'

required:

- mcc

- mnc

tceAddress:

oneOf:

- $ref: '#/components/schemas/IpAddr'

- $ref: 'comDefs.yaml#/components/schemas/Uri'

required:

- tceID

- tcePLMN

- tceAddress

#-------- end of Definition of types used in Trace control NRM fragment ----------

#-------- Definition of abstract IOC Top -----------------------------------------

Top-Attr:

# This definition will be deprecated, when all occurances of Top-Attr

# are replaced by Top.

type: object

properties:

id:

type: string

VsDataContainer:

$ref: '#/components/schemas/VsDataContainer-Multiple'

Top:

type: object

properties:

id:

type: string

VsDataContainer:

$ref: '#/components/schemas/VsDataContainer-Multiple'

#-------- Definition of IOCs with new name-containments defined in other TS ------

SubNetwork-Attr:

type: object

properties:

dnPrefix:

type: string

userLabel:

type: string

userDefinedNetworkType:

type: string

setOfMcc:

type: array

items:

$ref: 'comDefs.yaml#/components/schemas/Mcc'

priorityLabel:

type: integer

supportedPerfMetricGroups:

type: array

items:

$ref: '#/components/schemas/SupportedPerfMetricGroup'

ManagedElement-Attr:

type: object

properties:

dnPrefix:

type: string

managedElementTypeList:

type: array

items:

type: string

userLabel:

type: string

locationName:

type: string

managedBy:

$ref: 'comDefs.yaml#/components/schemas/DnList'

vendorName:

type: string

userDefinedState:

type: string

swVersion:

type: string

priorityLabel:

type: integer

supportedPerfMetricGroups:

type: array

items:

$ref: '#/components/schemas/SupportedPerfMetricGroup'

SubNetwork-ncO:

type: object

properties:

ManagementNode:

$ref: '#/components/schemas/ManagementNode-Multiple'

MnsAgent:

$ref: '#/components/schemas/MnsAgent-Multiple'

MeContext:

$ref: '#/components/schemas/MeContext-Multiple'

PerfMetricJob:

$ref: '#/components/schemas/PerfMetricJob-Multiple'

ThresholdMonitor:

$ref: '#/components/schemas/ThresholdMonitor-Multiple'

NtfSubscriptionControl:

$ref: '#/components/schemas/NtfSubscriptionControl-Multiple'

ManagementDataCollectionJob:

$ref: '#/components/schemas/ ManagementDataCollectionJob -Multiple'

TraceJob:

$ref: '#/components/schemas/TraceJob-Multiple'

AlarmList:

$ref: '#/components/schemas/AlarmList-Single'

ManagementDataCollectionJob:

$ref: '#/components/schemas/ ManagementDataSubscription-Multiple'

ManagedElement-ncO:

type: object

properties:

MnsAgent:

$ref: '#/components/schemas/MnsAgent-Multiple'

PerfMetricJob:

$ref: '#/components/schemas/PerfMetricJob-Multiple'

ThresholdMonitor:

$ref: '#/components/schemas/ThresholdMonitor-Multiple'

NtfSubscriptionControl:

$ref: '#/components/schemas/NtfSubscriptionControl-Multiple'

ManagementDataCollectionJob:

$ref: '#/components/schemas/ ManagementDataCollectionJob -Multiple'

TraceJob:

$ref: '#/components/schemas/TraceJob-Multiple'

AlarmList:

$ref: '#/components/schemas/AlarmList-Single'

ManagementDataCollectionJob:

$ref: '#/components/schemas/ ManagementDataSubscription-Multiple'

#-------- Definition of abstract IOCs --------------------------------------------

ManagedFunction-Attr:

type: object

properties:

userLabel:

type: string

vnfParametersList:

type: array

items:

$ref: '#/components/schemas/VnfParameter'

peeParametersList:

type: array

items:

$ref: '#/components/schemas/PeeParameter'

priorityLabel:

type: integer

supportedPerfMetricGroups:

type: array

items:

$ref: '#/components/schemas/SupportedPerfMetricGroup'

EP\_RP-Attr:

type: object

properties:

userLabel:

type: string

farEndEntity:

type: string

supportedPerfMetricGroups:

type: array

items:

$ref: '#/components/schemas/SupportedPerfMetricGroup'

TraceJob-Attr:

type: object

description: abstract class used as a container of all TraceJob attributes

properties:

tjJobType:

$ref: '#/components/schemas/tjJobType-Type'

tjListOfInterfaces:

$ref: '#/components/schemas/tjListOfInterfaces-Type'

tjListOfNeTypes:

$ref: '#/components/schemas/tjListOfNeTypes-Type'

tjPLMNTarget:

$ref: '#/components/schemas/tjPLMNTaget-Type'

tjStreamingTraceConsumerURI:

$ref: 'comDefs.yaml#/components/schemas/Uri'

tjTraceCollectionEntityAddress:

$ref: '#/components/schemas/IpAddr'

tjTraceDepth:

$ref: '#/components/schemas/tjTraceDepth-Type'

tjTraceReference:

$ref: '#/components/schemas/tjTraceReference-Type'

tjTraceRecordSessionReference:

type: string

tjTraceReportingFormat:

$ref: '#/components/schemas/tjTraceReportingFormat-Type'

tjTraceTarget:

$ref: '#/components/schemas/tjTraceTarget-Type'

tjTriggeringEvent:

$ref: '#/components/schemas/tjTriggeringEvent-Type'

tjMDTAnonymizationOfData:

$ref: '#/components/schemas/tjMDTAnonymizationOfData-Type'

tjMDTAreaConfigurationForNeighCell:

$ref: '#/components/schemas/AreaConfig'

tjMDTAreaScope:

type: array

items:

$ref: '#/components/schemas/AreaScope'

tjMDTCollectionPeriodRrmLte:

$ref: '#/components/schemas/tjMDTCollectionPeriodRrmLte-Type'

tjMDTCollectionPeriodM6Lte:

$ref: '#/components/schemas/tjMDTCollectionPeriodM6Lte-Type'

tjMDTCollectionPeriodM7Lte:

$ref: '#/components/schemas/tjMDTCollectionPeriodM7Lte-Type'

tjMDTCollectionPeriodRrmUmts:

$ref: '#/components/schemas/tjMDTCollectionPeriodRrmUmts-Type'

tjMDTCollectionPeriodRrmNR:

$ref: '#/components/schemas/tjMDTCollectionPeriodRrmNR-Type'

tjMDTCollectionPeriodM6NR:

$ref: '#/components/schemas/tjMDTCollectionPeriodM6NR-Type'

tjMDTCollectionPeriodM7NR:

$ref: '#/components/schemas/tjMDTCollectionPeriodM7NR-Type'

tjMDTEventListForTriggeredMeasurement:

$ref: '#/components/schemas/tjMDTEventListForTriggeredMeasurement-Type'

tjMDTEventThreshold:

$ref: '#/components/schemas/tjMDTEventThreshold-Type'

tjMDTListOfMeasurements:

$ref: '#/components/schemas/tjMDTListOfMeasurements-Type'

tjMDTLoggingDuration:

$ref: '#/components/schemas/tjMDTLoggingDuration-Type'

tjMDTLoggingInterval:

$ref: '#/components/schemas/tjMDTLoggingInterval-Type'

tjMDTMBSFNAreaList:

type: array

items:

$ref: '#/components/schemas/MbsfnArea'

tjMDTMeasurementPeriodLTE:

$ref: '#/components/schemas/tjMDTMeasurementPeriodLTE-Type'

tjMDTMeasurementPeriodUMTS:

$ref: '#/components/schemas/tjMDTMeasurementPeriodUMTS-Type'

tjMDTMeasurementQuantity:

$ref: '#/components/schemas/tjMDTMeasurementQuantity-Type'

tjMDTPLMList:

$ref: '#/components/schemas/tjMDTPLMList-Type'

tjMDTPositioningMethod:

$ref: '#/components/schemas/tjMDTPositioningMethod-Type'

tjMDTReportAmount:

$ref: '#/components/schemas/tjMDTReportAmount-Type'

tjMDTReportingTrigger:

$ref: '#/components/schemas/tjMDTReportingTrigger-Type'

tjMDTReportInterval:

$ref: '#/components/schemas/tjMDTReportInterval-Type'

tjMDTReportType:

$ref: '#/components/schemas/tjMDTReportType-Type'

tjMDTSensorInformation:

$ref: '#/components/schemas/tjMDTSensorInformation-Type'

tjMDTTraceCollectionEntityID:

$ref: '#/components/schemas/tjMDTTraceCollectionEntityID-Type'

ManagedFunction-ncO:

type: object

properties:

PerfMetricJob:

$ref: '#/components/schemas/PerfMetricJob-Multiple'

ThresholdMonitor:

$ref: '#/components/schemas/ThresholdMonitor-Multiple'

ManagedNFService:

$ref: '#/components/schemas/ManagedNFService-Multiple'

TraceJob:

$ref: '#/components/schemas/TraceJob-Multiple'

#-------- Definition of concrete IOCs --------------------------------------------

VsDataContainer-Single:

type: object

properties:

id:

type: string

attributes:

type: object

properties:

vsDataType:

type: string

vsDataFormatVersion:

type: string

vsData:

nullable: true

VsDataContainer:

$ref: '#/components/schemas/VsDataContainer-Multiple'

ManagedNFService-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

userLabel:

type: string

nFServiceType:

$ref: '#/components/schemas/NFServiceType'

sAP:

$ref: '#/components/schemas/SAP'

operations:

type: array

items:

$ref: '#/components/schemas/Operation'

administrativeState:

$ref: 'comDefs.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'comDefs.yaml#/components/schemas/OperationalState'

usageState:

$ref: 'comDefs.yaml#/components/schemas/UsageState'

registrationState:

$ref: '#/components/schemas/RegistrationState'

ManagementNode-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

userLabel:

type: string

managedElements:

$ref: 'comDefs.yaml#/components/schemas/DnList'

vendorName:

type: string

userDefinedState:

type: string

locationName:

type: string

swVersion:

type: string

MnsAgent:

$ref: '#/components/schemas/MnsAgent-Multiple'

MnsAgent-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

systemDN:

$ref: 'comDefs.yaml#/components/schemas/Dn'

MeContext-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

dnPrefix:

type: string

PerfMetricJob-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

administrativeState:

$ref: 'comDefs.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'comDefs.yaml#/components/schemas/OperationalState'

jobId:

type: string

performanceMetrics:

type: array

items:

type: string

granularityPeriod:

type: integer

minimum: 1

objectInstances:

$ref: 'comDefs.yaml#/components/schemas/DnList'

rootObjectInstances:

$ref: 'comDefs.yaml#/components/schemas/DnList'

reportingCtrl:

$ref: '#/components/schemas/ReportingCtrl'

ThresholdMonitor-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

administrativeState:

$ref: 'comDefs.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'comDefs.yaml#/components/schemas/OperationalState'

performanceMetrics:

type: array

items:

type: string

thresholdInfoList:

type: array

items:

$ref: '#/components/schemas/ThresholdInfo'

monitorGranularityPeriod:

type: integer

minimum: 1

objectInstances:

$ref: 'comDefs.yaml#/components/schemas/DnList'

rootObjectInstances:

$ref: 'comDefs.yaml#/components/schemas/DnList'

NtfSubscriptionControl-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

notificationRecipientAddress:

$ref: 'comDefs.yaml#/components/schemas/Uri'

notificationTypes:

type: array

items:

$ref: 'comDefs.yaml#/components/schemas/NotificationType'

scope:

$ref: '#/components/schemas/Scope'

notificationFilter:

type: string

HeartbeatControl:

$ref: '#/components/schemas/HeartbeatControl-Single'

ManagementDataCollectionJob-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

managementDataType:

$ref: '#/components/schemas/ManagementDataType'

targetNodeFilter:

$ref: '#/components/schemas/Nodefilter'

collectionTimePeriod:

$ref: '#/components/schemas/CollectionDuration'

reportingCtrl:

type: string

dataScope:

type: string

prefMetricJobRef:

$ref: '#/components/schemas/PrefMetricJob'

traceJobRef:

$ref: '#/components/schemas/TraceJob'

HeartbeatControl-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

heartbeatNtfPeriod:

type: integer

triggerHeartbeatNtf:

type: boolean

TraceJob-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

$ref: '#/components/schemas/TraceJob-Attr'

AlarmList-Single:

allOf:

- $ref: '#/components/schemas/Top'

- type: object

properties:

attributes:

type: object

properties:

administrativeState:

$ref: 'comDefs.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'comDefs.yaml#/components/schemas/OperationalState'

numOfAlarmRecords:

type: integer

lastModification:

$ref: 'comDefs.yaml#/components/schemas/DateTime'

alarmRecords:

description: >-

This resource represents a map of alarm records.

The alarmIds are used as keys in the map.

type: object

additionalProperties:

$ref: 'faultMnS.yaml#/components/schemas/AlarmRecord'

#-------- Definition of YAML arrays for name-contained IOCs ----------------------

VsDataContainer-Multiple:

type: array

items:

$ref: '#/components/schemas/VsDataContainer-Single'

ManagedNFService-Multiple:

type: array

items:

$ref: '#/components/schemas/ManagedNFService-Single'

ManagementNode-Multiple:

type: array

items:

$ref: '#/components/schemas/ManagementNode-Single'

MnsAgent-Multiple:

type: array

items:

$ref: '#/components/schemas/MnsAgent-Single'

MeContext-Multiple:

type: array

items:

$ref: '#/components/schemas/MeContext-Single'

PerfMetricJob-Multiple:

type: array

items:

$ref: '#/components/schemas/PerfMetricJob-Single'

ThresholdMonitor-Multiple:

type: array

items:

$ref: '#/components/schemas/ThresholdMonitor-Single'

TraceJob-Multiple:

type: array

items:

$ref: '#/components/schemas/TraceJob-Single'

NtfSubscriptionControl-Multiple:

type: array

items:

$ref: '#/components/schemas/NtfSubscriptionControl-Single'

#-------- Definitions in TS 28.623 for TS 28.532 ---------------------------------

resources-genericNrm:

oneOf:

- $ref: '#/components/schemas/VsDataContainer-Single'

- $ref: '#/components/schemas/ManagementNode-Single'

- $ref: '#/components/schemas/MnsAgent-Single'

- $ref: '#/components/schemas/MeContext-Single'

- $ref: '#/components/schemas/ManagedNFService-Single'

- $ref: '#/components/schemas/PerfMetricJob-Single'

- $ref: '#/components/schemas/ThresholdMonitor-Single'

- $ref: '#/components/schemas/TraceJob-Single'

- $ref: '#/components/schemas/NtfSubscriptionControl-Single'

- $ref: '#/components/schemas/HeartbeatControl-Single'

- $ref: '#/components/schemas/AlarmList-Single'

***End of changes***