**3GPP TSG-SA5 Meeting #162 *S5-253232r1***

Stor-Göteborg, Sweden, 25th August 2025 - 29th August 2025

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **28.622** | **CR** | **0572** | **rev** | **-** | **Current version:** | **19.4.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **x** | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | Rel-19 CR TS 28.622 Continuous MDT |
|  |  |
| ***Source to WG:*** | Ericsson, Deutsche Telekom |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | TraceQoE\_OAM |  | ***Date:*** | 2025-08-15 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-19 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)**Rel-19 (Release 19)* *Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | In consideration of the incoming LS R3‑253958 and SA5 discussion in DP (S5‑250205), this change request proposes the specification of Continuous Management-Based MDT based on the following principles:* Reuse of the existing Management-Based MDT framework, with minimal impact on the current architecture and procedures.
* Introduction of an OAM-triggered activation mechanism toward participating NG-RAN nodes, enabling identification of a continuous MDT job through specific Trace Reference(s).
* No impact to 5GC functionality.
* No impact to the UE, ensuring that UE behavior remains unchanged.
* Use of Trace Reference (TR) and Trace Recording Session Reference (TRSR) to support correlation of MDT measurements collected across nodes, including UE transitions between RRC states and UE mobility.

This CR proposes the stage 2 specification text for the Continuous Management-Based MDT procedure. |
|  |  |
| ***Summary of change:*** | Defining the stage 2 NRM for supporting Continuous MDT procedure |
|  |  |
| ***Consequences if not approved:*** | Unable to support Continuous MDT procedure as requested by RAN3 |
|  |  |
| ***Clauses affected:*** |  3.1, 3.2, 4.3.30.1, 4.3.58, 4.4.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** | **X** |  |  O&M Specifications | TS28.623 CR0552 |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\* START OF NEXT CHANGE \*\*\*

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply. For terms and definitions not found here, please refer to 3GPP TS 32.101 [1], 3GPP TS 32.102 [2], 3GPP TS 32.150 [4] and 3GPP TS 32.600 [14].

**Association**: In general, it is used to model relationships between Managed Objects. Associations can be implemented in several ways, such as:

1) name bindings,

2) reference attributes, and

3) association objects.

This IRP stipulates that name containment associations shall be expressed through name bindings, but it does not stipulate the implementation for other types of associations as a general rule. These are specified as separate entities in the object models (UML diagrams). Currently however, all (non-containment) associations are modelled by means of reference attributes of the participating MOs.

**Continuous management-based MDT:** This term is defined in TS 32.422 [30].

**Data node**: This term is defined in TS 32.156 [10].

**Information Object Class (IOC):** An IOC represents the management aspect of a network resource. It describes the information that can be passed/used in management interfaces. Their representations are technology agnostic software objects. IOC has attributes that represents the various properties of the class of objects. See the term "attribute" defined in TS 32.156 [10]. Furthermore, IOC can support operations providing network management services invocable on demand for that class of objects. An IOC may support notifications that report event occurrences relevant for that class of objects. It is modelled using the stereotype "Class" in the UML meta-model. See TS 32.156 [10] for additional information on IOC.

**Key Performance Indicator (KPI):** This term is defined in TS 32.401 [66].

**Managed Object (MO)**: A MO is an instance of a Managed Object Class (MOC) representing the management aspects of a network resource. Its representation is a technology specific software object. It is sometimes called MO instance (MOI). The MOC is a class of such technology specific software objects. An MOC is the same as an IOC except that the former is defined in technology specific terms and the latter is defined in technology agnostic terms. MOCs are used/defined in SS level specifications. IOCs are used/defined in IS level specifications.

**Management Information Base (MIB)**: A MIB is an instance of an NRM and has some values on the defined attributes and associations specific for that instance. In the context of the present document, an MIB consists of:

1) a Name space (describing the MO containment hierarchy in the MIB through Distinguished Names),

2) a number of Managed Objects with their attributes and

3) a number of Associations between these MOs. Also note that TMN (ITU-T Recommendation X.710 [7]) defines a concept of a Management Information Tree (also known as a Naming Tree) that corresponds to the name space (containment hierarchy) portion of this MIB definition. Figure 3.1 depicts the relationships between a Name space and a number of participating MOs (the shown association is of a non-containment type)



Figure 3.1: Relationships between a Name space and a number of participating MOs

**Name space**: A name space is a collection of names. The IRP name convention (see 3GPP TS 32.300 [13]) restricts the name space to a hierarchical containment structure, including its simplest form - the one-level, flat name space.
All Managed Objects in a MIB are included in the corresponding name space and the MIB/name space shall only support a strict hierarchical containment structure (with one root object). A Managed Object that contains another is said to be the superior (parent); the contained Managed Object is referred to as the subordinate (child). The parent of all MOs in a single name space is called a Local Root. The ultimate parent of all MOs of all managed systems is called the Global Root.

**Network resource:**  discrete entity represented by an Information Object Class (IOC) for the purpose of network and service management.

NOTE: A network resource may represent intelligence, information, hardware and software of a telecommunication network.

**Network Resource Model (NRM)**: A collection of IOCs, inclusive of their associations, attributes and operations, representing a set of network resources under management.

**Performance metric:** This term is defined in TS 32.401 [66].

**Trace metrics:** This term is defined in TS 32.422 [30].

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [26] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [26].

CAG Closed Access Group

C-MDT Continuous management-based MDT

DN Distinguished Name (see 3GPP TS 32.300 [13])

IOC Information Object Class

KPI Key Performance Indicator

MHI Mobility History Information

MO Managed Object

MOC Managed Object Class

MOI Managed Object Instance

MN Master Node

MnS Management Service (see 3GPP TS 28.533 [32])

NID Network ID

NFVI Network Functions Virtualisation Infrastructure (NFVI): Defined in ETSI GS NFV 003 [15].

NPN Non-Public Network

PNI-NPN Public Network Integrated Non-Public Network

RCEF RRC Connection Establishment Failure

RDN Relative Distinguished Name (see 3GPP TS 32.300 [13])

RLF Radio Link Failure

SHR Successful Handover Report

SN Secondary Node

SNPN Standalone Non-Public Network

SPR Successful PSCell Addition/Change Report

SS Solution Set

TRSR Trace Recording Session Reference

VNF Virtualised Network Function

\*\*\* START OF NEXT CHANGE \*\*\*

#### 4.3.30.1 Definition

A TraceJob instance represents the Trace Control and Configuration parameters of a particular Trace Job (see TS 32.421 [29] and TS 32.422 [30] for details). It can be name-contained by SubNetwork, ManagedElement, ManagedFunction. In case of signalling based trace activation, it shall be name-contained by the UDMFunction, see TS 28.541 [48].

To activate Trace Jobs, a MnS consumer has to create TraceJob object instances on the MnS producer. A MnS consumer can activate a Trace Job for another MnS consumer since it is not required the value of traceCollectionEntityIPAddress or traceReportingConsumerUri to be his own.

For the details of Trace Job activation see clauses 4.1.1.1.2 and 4.1.2.1.2 of TS 32.422 [30].

When a MnS consumer wishes to deactivate a Trace Job, the MnS consumer shall delete the corresponding TraceJob instance. For details of management Trace Job deactivation see clauses 4.1.3.8 to 4.1.3.11 and 4.1.4.10 to 4.1.4.13 of TS 32.422 [30].

The attribute traceReference specifies a globally unique ID and identifies a Trace session. One Trace Session may be activated to multiple Network Elements. The traceReference is populated by the consumer that makes the request for a Trace Session, TS 32.422 [30].

The jobId attribute presents the job identifier of a TraceJob instance. The jobId can be used to associate multiple TraceJob instances. For example, it is possible to configure the same jobId value for multiple TraceJob instances required to produce the data (e.g. RSRP values of M1 and RLF reports) for a specific network analysis.

The attribute traceReportingFormat defines the method for reporting the produced measurements. The selectable options are file-based or stream-based reporting. In case of file-based reporting the attribute traceCollectionEntityIPAddress is used to specify the IP address to which the trace records shall be transferred, while in case of stream-based reporting the attribute traceReportingConsumerUri specifies the streaming target.

The mandatory attribute traceTarget determines the target object of the TraceJob. Dependent on the network element to which the Trace Session is activated different types of the target object are possible.

The attribute pLMNTarget defines 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. The MDT configuration may include area scope defined by network slice, in which case the attribute pLMNTarget is not applicable.

The attribute listOfTraceMetrics allows configuration of which metrics shall be recorded.

The attribute jobType specifies the kind of data to collect. In case of TRACE\_ONLY, the configuration parameters of attribute traceConfig shall be applied. If the attribute jobType contains IMMEDIATE\_MDT, LOGGED\_MDT and LOGGED\_MBSFN\_MDT the configuration parameters of attribute mdtConfig or a subset of these shall be applied. If the attribute jobType contains 5GC\_UE\_LEVEL\_MEASUREMENTS, the configuration parameters of attribute ueCoreMeasConfig shall be applied.

If jobType has the value RRC\_REPORT, the attribute rrcReportType shall be present. The rrcReportType allows the tracing of RRC reports.

Creation and deletion of TraceJob instances by MnS consumers is optional; when not supported, the TraceJob instances may be created and deleted by the system or be pre-installed.

\*\*\* START OF NEXT CHANGE \*\*\*

### 4.3.58 MdtConfig <<dataType>>

#### 4.3.58.1 Definition

This <<dataType>> defines the configuration parameters of IOC TraceJob which are specific for MDT or any combination of MDT.

The attribute anonymizationOfMdtData specifies the level of anonymization of MDT data.

The optional attribute areaScope defines the area scope of MDT, which is specified in clause 5.10.2 of TS 32.422 [30]..

The attribute sensorInformation allows to specify the sensor information to include.

The attribute trsrPrefixList contains a list of TRSR prefix which shall be used by the NR-RAN nodes during TRSR assignment for a C-MDT job.

Based on the value configured for attribute jobType in IOC TraceJob, the attributes immediateMdtConfig or loggedMdtConfig or both are available: If the attribute jobType contains IMMEDIATE\_MDT, the attribute immediateMdtConfig is applicable. If the attribute jobType contains LOGGED\_MDT or LOGGED\_MBSFN\_MDT the attribute loggedMdtConfig is applicable. If the attribute jobType contains IMMEDIATE\_MDT\_AND\_LOGGED\_MDT, both the attribute immediateMdtConfig and the attribute loggedMdtConfig are applicable.

The optional attribute plmnList allows to specify the PLMNs where measurements collection, status indication and log reporting is allowed.

#### 4.3.58.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| anonymizationOfMdtData | M | T | T | F | T |
| areaScope | M | T | T | F | T |
| sensorInformation | CO | T | T | F | T |
| immediateMdtConfig | CM | T | T | F | T |
| loggedMdtConfig | CM | T | T | F | T |
| mNOnly | CO | T | T | F | T |
| plmnList | CO | T | T | F | T |
| trsrPrefixList | CM | T | T | F | T |

#### 4.3.58.3 Attribute constraints

|  |  |
| --- | --- |
| Name | Definition |
| sensorInformation  | This attribute is attribute may be present only if NR is supported. |
| immediateMdtConfig  | This attribute shall be present only if Immediate MDT is supported.  |
| loggedMdtConfig  | This attribute shall be present only if Logged MDT is supported. |
| mNOnly | This attribute may be present if signalling based MDT for NR is supported and MN only for MDT is supported. |
| plmnList | This attribute may be present only if multiple PLMNs are supported. |
| trsrPrefixList | This attribute shall be present only if C-MDT is supported in NR-RAN. |

#### 4.3.58.4 Notifications

The common notifications defined in clause 4.5 are valid for this IOC, without exceptions.

\*\*\* START OF 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 |
| --- | --- | --- |
| numberOfFiles | Number of files in a file collection.allowedValues: NA | Type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| fileLocation | Location of the file incl. the file transfer protocol, and the file name for the case the file content cannot be retrieved by reading the fileContent attribute.The allowed file transfer protocols are:- sftp- ftpes- httpsExamples:"sftp://companyA.com/datastore/fileName.xml","https://companyA.com/ManagedElement=1/Files=1/File=1”allowedValues: NA | Type: Urimultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| fileCompression | Name of the algorithm used for compressing the file. An empty or absent fileCompression parameter indicates the file is not compressed. The MnS producer selects the compression algorithm. It is encouraged to use popular algorithms such as GZIP.allowedValues: N/A | Type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| fileSize | Size of the file.Unit is byte.allowedValues: non-negative integers | Type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| fileDataType | Type of the management data stored in the file.AllowedValues:- "PERFORMANCE"- "TRACE"- "ANALYTICS"- "PROPRIETARY"The value "PERFORMANCE" refers to measurements and KPIs. | Type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| fileFormat | Identifier of the XML or ASN.1 schema (incl. its version) used to produce the file content.allowedValues: N/A | Type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| fileReadyTime | Date and time, when the file was closed (the last time) and made available on the MnS producer. The file content will not be changed anymore.allowedValues: N/A | Type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| fileExpirationTime | Date and time after which the file may be deleted.allowedValues: N/A | Type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| fileContent | File content.allowedValues: N/A | Type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| jobMonitor | Provides monitoring for the file download job. The data type of this attribute is the ProcessMonitor as defined in clause 4.3.43 with the specialisations defined in clause 4.3.46.1.allowedValues: N/A | Type: ProcessMonitormultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| cancelJob | Setting this attribute to "TRUE" cancels the file download job. As specified in the definition of ProcessMonitor, cancellation is possible in the "NOT\_STARTED" and "RUNNING" state. Setting the attribute to "FALSE" has no observable result.allowedValues: TRUE, FALSE | Type: Booleanmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: FALSEisNullable: False |
| FileDownloadJob.jobMonitor.resultStateInfo | Provides the following specialisation for the resultStateInfo attribute of the ProcessMonitor data type for the FileDownloadJob.In the event the file download fails, and the status is equal to "FAILED", it provides the reason for the failure.allowedValues for status = "FAILED": - NULL - UNKNOWN - NO\_STORAGE - LOW\_MEMORY - NO\_CONNECTION\_TO\_REMOTE\_SERVER - FILE\_NOT\_AVAILABLE - DNS\_CANNOT\_BE\_RESOLVED - TIMER\_EXPIRED - OTHERThe allowed values for "FINISHED" or "CANCELLED" are vendor specific. | Type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| 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: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: 0isNullable: 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: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FALSE isNullable: False |
| notificationRecipientAddress | Address of the notification recipient.allowedValues: N/A | type: String multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| notificationTypes | List of notification types.Below is a list of notificationType values that are defined in 3GPP specifications. Other notificationTypes defined by SDOs or enterprises may also be supported.allowedValues:- notifyMOICreation- notifyMOIDeletion- notifyMOIAttributeValueChanges- notifyMOIChanges- notifyEvent- notifyNewAlarm- notifyChangedAlarm- notifyAckStateChanged- notifyComments- notifyCorrelatedNotificationChanged- notifyChangedAlarmGeneral- notifyClearedAlarm- notifyAlarmListRebuilt- notifyPotentialFaultyAlarmList- notifyFileReady- notifyFilePreparationError- notifyThresholdCrossing "notifyPotentialFaultyDataNodeTree""notifyDataNodeTreeSyncRecommended" | type: ENUMmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: 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..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| notificationProtocols | List of protocols supported for notifications. TS 28.532 [27] defines options Restful HTTP and Restful HTTP aligned with VES Other values defined by SDOs or enterprises may also be supported.allowedValues: - HTTP- HTTP\_VES\_ENCAPS | type: ENUMmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| scope | Scopes (selects) data nodes in an object tree.allowedValues: N/A | type: Scopemultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: 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: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| scopeLevel | See definition of scopeType attribute.allowedValues: N/A | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| dataNodeSelector | The dataNodeSelector attribute allows to select one or more managed object instances, attributes, attribute fields or attribute elements. Its value contains a solution set specific expression for selecting the nodes.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| availabilityStatus | The availability status provides additional information about the operational stateallowedValues:- DEGRADED- DEPENDENCY | Type: AvailabilityStatusmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| lastSequenceNo | The sequence number of the last notification that was sent by a "NtfSubscriptionControl" instance.allowedValues: non-negative integers | Type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: 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.allowedValues: N/A | type: DNmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: 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: Stringmultiplicity: 0..\*isOrdered: FalseisUnique: TruedefaultValue: None isNullable: False |
| locationName | The physical location of this entity (e.g. an address). allowedValues: N/A | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| monitorGranularityPeriod | Granularity period used to monitor performance metrics for threshold crossings. The period is defined in seconds.See Note 5allowedValues: a multiple of a supported GP of the associated performance metrics | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| reportingPeriods | Reporting periods supported for the associated performance metrics. The period is defined in seconds.allowedValues: Integer with a minimum value of 1 | type: Integermultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| thresholdInfoList | List of threshold infos. | type: ThresholdInfomultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: 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: Float or Integermultiplicity: 1isOrdered: NAisUnique: NAdefaultValue: NoneisNullable: 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 byhighThresholdValue- = thresholdValue + hysteresislowThresholdValue = thresholdValue - hysteresisWhen 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: Float or Integermultiplicity: 0..1isOrdered: NAisUnique: NAdefaultValue: NoneisNullable: 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: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| objectClass | Class of a managed object instance.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| objectInstance | Managed object instance identified by its DN.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| objectInstances | List of managed object instances. Each object instance is identified by its DN.allowedValues: N/A | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| peeParametersList | This attribute contains the parameter list for the control and monitoring of power, energy and environmental parameters of ManagedFunction instance(s).  | type: PeeParametersmultiplicity: 0..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| PeeParameter.siteIdentification | The identification of the site where the ManagedFunction resides.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| PeeParameter.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 for BTSFunction, RNCFunction , GNBDUFunction and NRSectorCarrier instance(s).allowedValues: -90.0000 to +90.0000 | type: Floatmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| PeeParameter.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 for BTSFunction, RNCFunction, GNBDUFunction and NRSectorCarrier instance(s).allowedValues: -180.0000 to +180.0000 | type: Floatmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| PeeParameter.siteAltitude | The altitude of the site where the ManagedFunction instance resides, in unit of meter. This attribute is optional for BTSFunction, RNCFunction, GNBDUFunction and NRSectorCarrier instance(s). | type: Floatmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| PeeParameter.siteDescription | An operator defined description of the site where the ManagedFunction instance resides.allowedValues: N/A  | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| PeeParameter.equipmentType | equipmentType: The type of equipment where the ManagedFunction instance resides. allowedValues: see clause 4.4.1 of ETSI ES 202 336-12 [18]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| PeeParameter.environmentType | environmentType: The type of environment where the ManagedFunction instance resides. allowedValues: see clause 4.4.1 of ETSI ES 202 336-12 [18]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| PeeParameter.powerInterface | powerInterface: The type of power.allowedValues: see clause 4.4.1 of ETSI ES 202 336-12 [18]. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| 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: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: 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: Stringmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: 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: Integermultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: 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: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| systemDN | Distinguished Name (DN) of a MnSAgent.allowedValues: N/A | type: DNmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| userDefinedState | An operator defined state for operator specific usage.allowedValues: N/A | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| userLabel | A user-friendly (and user assignable) name of this object.allowedValues: N/A | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| vendorName | The name of the vendor.allowedValues: N/A | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| vnfParametersList | This attribute contains the parameter set of the VNF instance(s) corresponding to an NE. The presence of this attribute indicates that the ManagedFunction represented by the MOI is a virtualized function. See Note 3.allowedValues: N/A | type: VnfParametersmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| VnfParameter.vnfInstanceId | vnfInstanceId: VNF instance identifier (vnfInstanceId, see section 9.4.2 of ETSI GS NFV-IFA 008 [16]).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).See Note 1.allowedValues: N/A | type: stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| VnfParameter.vnfdId | 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]. | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| VnfParameter.flavourId | flavourId: Identifier of the VNF Deployment Flavour applied to this VNF instance, see section 9.4.3 of ETSI GS NFV-IFA 008 [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]. | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| VnfParameter. autoScalable | autoScalable: Indicator of whether the auto-scaling of this VNF instance is enabled or disabled. The type is Boolean. This attribute is optional.See Note2. | type: Booleanmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: FALSEisNullable: False |
| 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: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: 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: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: 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: SupportedPerfMetricGroupmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| performanceMetrics | List of performance metrics identified by nameallowedValues:Performance metrics include measurements defined in TS 28.552 [20] and KPIs defined in TS 28.554 [28].For measurements defined in TS 28.552 [20] the name is constructed as bullet e) of the measurement definition with allowed measurement type.For KPIs defined in TS 28.554 [28] the name is defined in the KPI definitions template, see chapter 5 in TS 28.554 [28], as the component designated with a).For non-3GPP specified measurements the name is defined elsewhere. | type: Stringmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| supportedTraceMetrics | List of trace metrics. When this attribute is contained in a managed object it defines the trace metrics supported for this object and all descendant objects.Trace metrics include trace messages, MDT measurements (Immediate MDT, Logged MDT, Logged MBSFN MDT), RLF, RCEF and RRC reports, see TS 32.422 [30]. Trace metrics are identified with their metric identifier. The metric identifier is constructed as defined in clause 10 of TS 32.422 [30].For non-3GPP specified trace metrics the name is defined elsewhere.allowedValues: N/A | type: Stringmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| listOfTraceMetrics | List of trace metrics identified by name.Includes trace messages, MDT measurements (Immediate MDT, Logged MDT, Logged MBSFN MDT), RLF, RCEF and RRC reports, see TS 32.422 [30]. Trace messages are identified with their message identifier. Trace metric identifier is constructed as defined in clause 10 of TS 32.422 [30].For non-3GPP specified trace metrics the name is defined elsewhere.allowedValues: N/A | type: Stringmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: 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: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| reportingMethods | List of reporting methods for performance metricsallowedValues:  - "FILE\_BASED\_LOC\_SET\_BY\_PRODUCER", - "FILE\_BASED\_LOC\_SET\_BY\_CONSUMER", - "STREAM\_BASED" | type: ENUMmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| jobRef | Object instance of the PerfMetricJob or TraceJob that produced the file.allowedValues: NA | Type: Dnmultiplicity: 0..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| jobId | Identifier of a PerfMetricJob, a TraceJob or a QMCJob. | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| granularityPeriod | Granularity period used to produce performance metrics. The period is defined in seconds.See Note 4.allowedValues: Integer with a minimum value of 1 | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| granularityPeriods | Granularity periods supported for the production of associated performance metrics. The period is defined in seconds.allowedValues: Integer with a minimum value of 1 | type: Integermultiplicity: \*isOrdered: False isUnique: TruedefaultValue: NoneisNullable: False |
| reportingCtrl | Selecting the reporting method and defining associated control parameters. | type: ReportingCtrlmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: 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: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| \_linkToFiles | Link to a Files object.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| streamTarget | The stream target for the stream-based reporting method.allowedValues: N/A | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| 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: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: LOCKEDisNullable: 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: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: DISABLEDisNullable: False |
| jobType | It specifies whether the TraceJob represents only MDT, Trace, RLF, RCEF, RRC or 5GC UE level measurements job, or a combined job. It also defines the MDT mode.See the clause 5.9a of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: TRACE\_ONLYisNullable: False |
|  rrcReportType | Specifies the RRC reports requested, see 3GPP TS 38.331 [38]. allowed values: RLF\_REPORT, RCEF\_REPORT, SHR, SPR, MHI, or RA\_REPORT. | type: ENUMmultiplicity: 0..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| traceConfig | The set of parameters specific for trace configuration. | type: TraceConfigmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mdtConfig | The set of parameters specific for MDT configuration. | type: MdtConfigmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| immediateMdtConfig | The set of parameters specific for Immediate MDT configuration. | type: ImmediateMdtConfigmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| loggedMdtConfig | The set of parameters specific for Logged MDT and Logged MBSFN MDT configuration. | type: LoggedMdtConfigmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| listOfInterfaces | It specifies the interfaces that need to be traced. The attribute is applicable only for Trace. See the clause 5.5 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| listOfNeTypes | It specifies the network element types where the trace should be activated. The attribute is applicable only for Trace with Signalling Based Trace activation. See the clause 5.4 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| pLMNTarget | It specifies which PLMN that the subscriber of the session to be recorded uses as selected PLMN.  | type: PlmnIdmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| traceReportingConsumerUri | It specifies the Uniform Resource Identifier (URI) of the Streaming Trace data reporting MnS consumer (a.k.a. streaming target).See the clause 5.9 c of TS 32.422 [30] for additional details on the allowed values. | type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| traceCollectionEntityIPAddress | It specifies the address of the Trace Collection Entity when the attribute traceReportingFormat is configured for the file-based reporting. The attribute is applicable for both Trace and MDT.See the clause 5.9 of TS 32.422 [30] for additional details on the allowed values. | type: IpAddressmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| traceDepth | It specifies the trace depth. The attribute is applicable only for Trace. See the clause 5.3 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: MAXIMUM isNullable: False |
| traceReference | 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: TraceReferencemultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| traceReportingFormat | It specifies the trace reporting format - streaming trace reporting or file-based trace reporting.AllowedValues: FILE-BASED, STREAMING | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FILE-BASED isNullable: False |
| traceTarget | It specifies the target object of the Trace and MDT. The attribute is applicable for both Trace and MDT. This attribute consists the traceTargetType and traceTargetValueListIn case of management based Immediate MDT, RLF reporting, RCEF reporting or RRC reporting, the traceTarget attribute shall be null value. | type: TraceTargetmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| traceTargetType | It specifies the target object type of the Trace, MDT and 5GC UE level measurements collection. The attribute is applicable for Trace, MDT, and 5GC UE level measurements collection. The traceTargetType shall be "PUBLIC\_ID" in case of a Management Based Activation is done to an SCSCFFunction (Serving Call Session Control Function) or PCSCFFunction (Proxy Call Session Control Function) (TS 28.705[44]). The traceTargetType shall be "UTRAN\_CELL" only in case of the UTRAN cell traffic trace function. The traceTargetType shall be "E-UTRAN\_CELL" only in case of E-UTRAN cell traffic trace function.The traceTargetType shall be "NG-RAN\_CELL" only in case of NR cell traffic trace function.The traceTargetType shall be either "IMSI", "IMEI" or "IMEISV" if the Trace Session is activated to any of the following ManagedEntity(ies):- HSSFunction (Home Subscriber Server) (TS 28.705 [44])- MscServerFunction (Mobile Switching Centre Server) (TS 28.702 [45])- SgsnFunction (Serving GPRS Support Node) (TS 28.702[45])- GgsnFunction (Gateway GPRS Support Node) (TS 28.702[45])- BmscFunction (Broadcast Multicast Service Centre) (TS 28.702[45])- RncFunction (Radio Network Controller) (TS 28.652[46])- MmeFunction (Mobility Management Entity) (TS 28.708[47])- ServingGWFunction (Serving Gateway) (TS 28.708[47])- PGWFunction (PDN Gateway) (TS 28.708[47]).The traceTargetType shall be either “SUPI” or “IMEISV” if the Trace Session is activated to any of the following ManagedEntity(ies) (TS 28.541[48]):- AFFunction- AMFFunction- AUSFunction- NEFFunction- NRFFunction- NSSFFunction- PCFFunction- SMFFunction- UPFFunction- UDMFunctionIn case of signalling based MDT, the traceTargetType attribute shall be able to carry "PUBLIC\_ID", "IMSI", "IMEI", "IMEISV)" or "SUPI".In case of management based Logged MDT, the traceTarget attribute shall carry an "eNB" or a "gNB" or an "RNC". The Logged MDT should be initiated on the specified eNB/gNB/RNC in traceTarget. In case of signalling based 5GC UE level measurements collection, the traceTargetType attribute shall be able to carry "IMEISV" or "SUPI". In case of management based 5GC UE level measurements collection, the traceTargetType attribute shall be able to carry the corresponding Measured UE Identifier as defined by the bullet g) of the 5GC UE level measurements (see TS 28.558 [57]) when the TraceJob is created at the subject ManagedEntity.allowedValues: PUBLIC\_ID, IMSI, IMEI, IMEISV, SUPI, ENB, GNB, RNC, UTRAN\_CELL, EUTRAN\_CELL, NGRAN\_CELL, N4\_SESSION\_ID. | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| traceTargetValueList | It specifies the ID value(s) of the target object type defined by traceTargetType | type: Stringmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: N/A isNullable: False |
| triggeringEvents | It specifies the triggering event parameter of the trace session. The attribute is applicable only for Trace. See the clause 5.1 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| anonymizationOfMdtData | It specifies the level of anonymization of MDT data. This attribute is only applicable for management based activation.See the clause 5.10.12 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NO\_IDENTITY isNullable: False |
| areaConfigurationForNeighCell | 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: AreaConfigmultiplicity:\*isOrdered: FalseisUnique: TruedefaultValue: None isNullable: False |
| areaScope | It specifies the area where data shall be collected. | type: AreaScopemultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| collectionPeriodRRMLTE | It specifies the collection period for collecting RRM configured measurement samples for M3 in LTE. The attribute is applicable only for Immediate MDT. See the clause 5.10.20 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| collectionPeriodRRMUMTS | 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. See the clause 5.10.21 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eventListForEventTriggeredMeasurement | 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: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| eventThreshold | It specifies the threshold which should trigger the reporting in case A2 event reporting in LTE and NR or 1F/1l event in UMTS. The attribute is applicable only for Immediate MDT and when reportingTrigger is configured for A2 event in LTE and NR or 1F event or 1l event in UMTS. See the clauses 5.10.7 and 5.10.7a of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| listOfMeasurements | It specifies the UE measurements that shall be collected in an Immediate MDT job. The attribute is applicable only for Immediate MDT. See the clause 5.10.3 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| loggingDuration | 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. See the clause 5.10.9 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| loggingInterval | It specifies the periodicity for Logged MDT. The attribute is applicable only for Logged MDT and Logged MBSFN MDT. See the clause 5.10.8 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| eventThresholdL1 | It specifies the threshold which should trigger the reporting in case of event based reporting of logged NR MDT. The attribute is applicable only for Logged MDT and when reportType is configured for event triggered reporting and when eventListEventForTriggeredMeasurement is configured for L1 event. See the clause 5.10.36 of TS 32.422 [30] for additional details on the allowed values. | type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| hysteresisL1 | It specifies the hysteresis used within the entry and leave condition of the L1 event based reporting of logged NR MDT. The attribute is applicable only for Logged MDT, when reportType is configured for event triggered reporting and when eventListForEventTriggeredMeasurement is configured for L1 event. See the clause 5.10.37 of TS 32.422 [30] for additional details on the allowed values. | type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| timeToTriggerL1 | It specifies the threshold which should trigger the reporting in case of event based reporting of logged NR MDT. The attribute is applicable only for Logged MDT, when reportType is configured for event triggered reporting and when eventListForEventTriggeredMeasurement is configured for L1 event. See the clauses 5.10.38 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mbsfnAreaList | 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 TS 32.422 [30] for additional details on the allowed values. | type: MbsfnAreamultiplicity: 0..8isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| measurementPeriodLTE | It specifies the collection period for the Data Volume (M4) and Scheduled IP throughput measurements (M5) for LTE MDT taken by the eNB. The attribute is applicable only for Immediate MDT. See the clause 5.10.23 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| measurementPeriodM6LTE  | It specifies the collection period for the Packet Delay measurement (M6) for MDT taken by the eNB. The attribute is applicable only for Immediate MDT. See the clause 5.10.32 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| collectionPeriodM7LTE | It specifies the collection period for the Packet Loss Rate measurement (M7) for LTE MDT taken by the eNB. The attribute is applicable only for Immediate MDT. See the clause 5.10.33 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| measurementPeriodUMTS | It specifies the collection period for the Data Volume (M6) and Throughput measurements (M7) for UMTS MDT taken by RNC. The attribute is applicable only for Immediate MDT. See the clause 5.10.22 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| collectionPeriodRRMNR | It specifies the collection period for collecting RRM configured measurement samples for M4, M5 in NR. The attribute is applicable only for Immediate MDT. See the clause 5.10.30 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| collectionPeriodM6NR | It specifies the collection period for the Packet Delay measurement (M6) for NR MDT taken by the gNB. The attribute is applicable only for Immediate MDT. See the clause 5.10.34 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| collectionPeriodM7NR | It specifies the collection period for the Packet Loss Rate measurement (M7) for NR MDT taken by the gNB. The attribute is applicable only for Immediate MDT. See the clause 5.10.35 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: True |
| beamLevelMeasurement | This indicates whether the NR M1 beam level measurements shall be included or not. See the clause 5.10.40 of TS 32.422 [30] for additional details.The default value is "FALSE".allowedValues: TRUE, FALSE | type: Booleanmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: FALSE isNullable: False |
| eventThresholdUphUMTS | It specifies the threshold which should trigger the reporting in case of event-triggered periodic reporting for M4 (UE power headroom measurement) in UMTS. See the clause 5.10.39 of TS 32.422 [30] for additional details on the allowed values. | type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| measurementQuantity | 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 TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| plmnList  | It indicates the PLMNs where measurement collection, status indication and log reporting are allowed.See the clause 5.10.24 of TS 32.422 [30] for additional details on the allowed values. | type: PlmnIdmultiplicity: 0..16isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| positioningMethod | It specifies what positioning method should be used in the MDT job.See the clause 5.10.19 of TS 32.422 [30] for additional details on the allowed values. | type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmount | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and when reportingTrigger is configured for periodical measurements. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM1LTE | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for LTE. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM4LTE | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for LTE. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM5LTE | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for LTE. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM6LTE | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for LTE. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM7LTE | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for LTE. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM1NR | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for NR. In case this attribute is not used, it carries a null semantic.See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM4NR | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for NR. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM5NR | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for NR. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM6NR | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for NR. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportAmountM7NR | It specifies the number of measurement reports that shall be taken for periodic reporting while the UE is in connected mode. The attribute is applicable only for Immediate MDT and combined Trace and Immediate MDT and when reportingTrigger is configured for periodical measurements and applicable only for NR. See the clause 5.10.6 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportingTrigger | It specifies whether periodic or event based measurements should be collected. The attribute is applicable only for Immediate MDT and when the listOfMeasurements is configured for M1 (for UMTS, LTE and NR) or M2 (only for UMTS). See the clause 5.10.4 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportInterval | 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 reportingTrigger is configured for periodical measurements. See the clause 5.10.5 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| reportType | It specifies report type for logged NR MDT as:- periodical.- event triggered.See the clause 5.10.27 of TS 32.422 [30] for additional details on the allowed values. | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| sensorInformation | 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: ENUMmultiplicity:\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| traceCollectionEntityId | 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: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mcc | Mobile Country CodeallowedValues: As defined by the data type | type: Mccmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mnc | Mobile NetworkallowedValues: As defined by the data type | type: Mncmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| traceId | An identifier, which identifies the Trace (together with MCC and MNC). This is a 3 byte Octet String.See the clause 5.6 of 3GPP TS 32.422 [30] for additional details on the allowed values. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| freqInfo | It specifies the carrier frequency and bands used in a cell. | type: FreqInfomultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| arfcn | RF Reference Frequency as defined in TS 38.104 [35], clause 5.4.2.1. The frequency provided identifies the absolute frequency position of the reference resource block (Common RB 0) of the carrier. Its lowest subcarrier is also known as Point A.allowedValues: 0, 1, …,3279165 | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| freqBands | List of NR frequency operating bands. Primary NR Operating Band as defined in TS 38.104 [35], clause 5.4.2.3.The value 1 corresponds to n1, value 2 corresponds to NR operating band n2, etc.allowedValues: 1, 2, …,1024 | type: Integermultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| pciList | List of neighbour cells subject for MDT scope.allowedValues: 0, 1, …,1007 | type: Integermultiplicity: 1..32isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| tac | Tracking Area CodeallowedValues: As defined by the data type | type: Tacmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| utraCellIdList | List of UTRAN cells identified by UTRAN CGIallowedValues: As defined by the data type | type: UtraCellIdmultiplicity: 1..32isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| eutraCellIdList | List of E-UTRAN cells identified by E-UTRAN-CGIallowedValues: As defined by the data type | type: EutraCellIdmultiplicity: 1..32isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| nrCellIdList | List of NR cells identified by NG-RAN CGIallowedValues: As defined by the data type | type: NrCellIdmultiplicity: 1..32isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| tacList | Tracking Area Code listallowedValues: As defined by the data type | type: Tacmultiplicity: 1..8isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| taiList | Tracking Area Identity listallowedValues: As defined by the data type | type: Taimultiplicity: 1..8isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| mbsfnAreaId | MBSFN Area IdentifierAllowedValues: 1, 2, … | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| earfcn | Carrier Frequency AllowedValues: 1, 2, … | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mnsLabel | Human-readable name of management service. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mnsType | Type of management service.allowedValues: ProvMnS, FaultSupervisionMnS, StreamingDataReportingMnS, FileDataReportingMnS | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mnsVersion | Version of management service. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mnsAddress | Addressing information for Management Service operations. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| ProcessMonitor.id | Id of the process. It is unique within a single multivalue attribute of type ProcessMonitor. | Type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| ProcessMonitor.status | This attribute represents the status of the associated process, whether it fails, succeeds etc. It does not represent the returned values of a successfully finished process.allowedValues:- NOT\_STARTED- RUNNING- CANCELLING- FINISHED- FAILED- PARTIALLY\_FAILED- CANCELLED | Type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| ProcessMonitor.progressPercentage | Progress of the process as percentage.Allowed values: integer between 0 and 100 | Type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| ProcessMonitor.progressStateInfo | Additional textual qualification of the states "NOT\_STARTED", "CANCELLING" and "RUNNING".For specific processes, specific well-defined strings (e.g. string patterns or enums) may be defined as a specialisation.allowedValues: N/A | Type: Stringmultiplicity: 0..\*isOrdered: TrueisUnique: FalsedefaultValue: NoneisNullable: False |
| ProcessMonitor.resultStateInfo | Additional textual qualification of the states "FINISHED", "FAILED", "PARTIALLY\_FAILED and "CANCELLED". For example, in the "FAILED" or "PARTIALLY\_FAILED" state this attribute may be used to provide error reasons.This attribute shall not be used to make the outcome of the process available for retrieval, if any. For this purpose, dedicated attributes shall be specified when specifying the representation of a specific process.For specific processes, specific well-defined strings (e.g. string patterns or enums) may be defined as a specialisation.allowedValues: N/A | Type: Stringmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| ProcessMonitor.startTime | Start time of the associated process, i.e. the time when the status changed from "NOT\_STARTED" to "RUNNING".allowedValues: N/A | Type: DateTimemultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| ProcessMonitor.endTime | Date and time when status changed to SUCCESS, CANCELLED, FAILED or PARTIALLY\_FAILED. If the time is in the future, it is the estimated time the process will end.allowedValues: N/A | Type: DateTimemultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| ProcessMonitor.timer | Time until the associated process is automatically cancelled. If set, the system decreases the timer with time. When it reaches zero the cancellation of the associated process is initiated by the MnS\_Producer. If not set, there is no time limit for the process.Once the timer is set, the consumer cannot change it anymore. If the consumer has not set the timer the MnS Producer may set it.Unit is minutes.allowedValues: Positive integers | Type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mnsScope | This attribute defines the information about the management scope of the Management Service. The management scope is used to represent the set of managed object instances that can be accessed using the Management Service.  | type: MnsScopemultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| MnsScope. objectInstanceList | This attribute describes list of DNs for the managed object instances that can be accessed using the Management Service. If a complete SubNetwork can be accessed using the Management Service, this attribute may contain the DN of the SubNetwork instead of the DNs of the individual managed entities within the SubNetwork.If a complete ManagedElement can be accessed using the Management Service, this attribute may contain the DN of the ManagedElement instead of the DNs of the individual managed entities within the ManagedElement. | Type: DNmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| MnsScope.geoAreaList | This attribute describes geographical areas for the managed object instances that can be accessed using the Management Service. | Type: GeoAreamultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| MnsScope.taiList | This attribute describes the list of Tracking Area Identities (TAI) for the managed object instances that can be accessed using the Management Service. | Type: Taimultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| mnsCapability | It describes the types of management capabilities of the MnS instance provided by the MnS producer.allowedValues: - NR\_PROVISIONING- 5GC\_PROVISIONING- NETWORK\_SLICING\_PROVISIONING- EDGE\_COMPUTING\_PROVISIONING- PERFORMANCE\_METRIC\_COLLECTION\_CONTROL- PERFORMANCE\_METRIC\_DATA\_REPORT- PERFORMANCE\_METRIC\_THRESHOLD\_MONITOR\_CONTROL- PERFORMANCE\_METRIC\_THRESHOLD\_NOTIFICATION- FAULT\_CONTROL- FAULT\_NOTIFICATION- TRACE\_MDT\_DATA\_COLLECTION\_CONTROL- TRACE\_MDT\_DATA\_REPORT- QOE\_DATA\_COLLECTION\_CONTROL- QOE\_DATA\_REPORT- FILE\_RETRIEVAL- FILE\_DOWNLOAD- SUBSCRIPTION\_CONTROL- HEARTBEAT\_CONTROL- HEARTBEAT\_NOTIFICATION- ML\_MODEL\_MANAGEMENT- MANAGEMENT DATA ANALYTIC- RANSC\_MANAGEMENT- SON\_POLICY- COMMUNICATION\_SERVICE\_ASSURANCE\_CONTROL- INTENT\_DRIVEN\_MANAGEMENT- ML\_MODEL\_MANAGEMENT- MNS\_REGISTRY\_AND\_DISCOVERY- MNS\_ACCESS\_CONTROL\_MANAGEMENT- DSO\_RAPID\_RECOVERY\_AND\_THRESHOLD MONITORINGThe detailed description for above enum values see Annex F in TS 28.533 [32].Note: vendor extension values are allowed for the attribute “mnsCapability”.  | Type: Enummultiplicity: 0..\*isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| managementData | This attribute defines the list of management data that are requested.  | Type: ManagementDatamultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mgtDataCategory | This attributes defines the type of management data that are requested. Allowed values for data category are COVERAGE, CAPACITY, ENERGY\_EFFICIENCY, MOBILITY, ACCESSIBILITY. The data categories will map to certain measurement families defined in TS 28.552 [20], see below. In addition to the below mappings, MnS producer may map the provided categories to any additional proprietary management data, as appropriate. The COVERAGE category will map to measurement families of MR (measurements related to Measurement Report) and L1M (measurements related to Layer 1 Measurement). The CAPACITY category will map to measurement family RRU (measurements related to Radio Resource Utilization). The ENERGY\_EFFICIENCY category will map to measurement family PEE (measurements related to Power, Energy and Environment). The MOBILITY category will map to measurement family MM (measurements related to Mobility Management). The ACCESSIBILITY category will map to measurement family CE (measurements related to Connection Establishment).Allowed values: COVERAGE, CAPACITY, SERVICE EXPERIENCE, TRACE, ENERGY EFFICIENCY, MOBILITY, ACCESSIBILITY See NOTE 7. | type: ENUMmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| mgtDataName | A list of management data identified by name.allowedValues:The list may include metrics or set of metrics defined in TS 28.552 [20], TS 28.554 [28] and TS 32.422 [30]. For performance measurements defined in TS 28.552 [20] the name is constructed as the bullet e) of measurement definition with allowed measurement type.For trace metrics (including trace messages, MDT measurements (Immediate MDT, Logged MDT, Logged MBSFN MDT), RRC, RLF and RCEF reports) defined in TS 32.422 [30], the name (metric identifier) is defined in clause 10 of TS 32.422 [30].For non-3GPP specified managment data the name is defined elsewhere. | type: Stringmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| consolidateOutput | Indicates whether the management data collection output will be consolidated into a single file per reporting period. | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| targetNodeFilter | Set of information to target the Object Instance to collect the management data from. | type: NodeFiltermultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoisNullable: False |
| areaOfInterest | It specifies a location(s) from where the management data shall be collected.  | type: AreaOfInterestmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoisNullable: False |
| geoAreaToCellMapping | It specifies the geographical area from where the management data shall be collected and the mapping to cells. allowedValues: N/A | type: GeoAreaToCellMappingmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: None isNullable: False |
| geoPolygon | It specifies the geographical area with a polygon. The polygon is specified by its corners.allowedValues: N/A | type: GeoCoordinatemultiplicity: 1..\*isOrdered: TrueisUnique: TruedefaultValue: None isNullable: True |
| geoArea | It specifies the geographical area using the coordinates of the corners of a polygon.allowedValues: N/A | type: GeoAreamultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| latitude | Latitude based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to the northern hemisphere.AllowedValues: -90.0000, …+90.0000 | type: floatmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| longitude | Longitude based on World Geodetic System (1984 version) global reference frame (WGS 84). Positive values correspond to degrees east of 0 degrees longitude.AllowedValues: -180.0000, … +180.0000 | type: floatmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| altitude | It is the vertical distance between the point of interest from the mean sea level measured in metres. | type: Floatmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| associationThreshold | It specifies the threshold of coverage area in percentage whether a cell belongs to the geographical area or not.If this attribute is absent, the location of the base station antenna determines whether a cell belongs to the geographical area or not.Allowed values: 1,…,100 | type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| 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: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: N/AisNullable: False |
| 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: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: N/AisNullable: False |
| sst | It specifies the slice service type (SST) of which the slice subnet should be targeted. Please refer to TS 23.501 [22]. | type: Integermultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: N/AisNullable: False |
| collectionTimeWindow | Collection time window for which the management data should be reported. | type: TimeWindowmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: N/AisNullable: False |
| startTime | It indicates the time (in "date-time" format) when the management activity shall be started.AllowedValues: N/A. | type: DateTimemultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| endTime | It indicates the time (in "date-time" format) when the management activityshall be stopped.AllowedValues: N/A. | type: DateTimemultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| timeWindow | Time window for which the configured management activity shall be active. | type: TimeWindowmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| timeIntervals | List of intervals within one day for which the service shall be active. | type: TimeIntervalmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| intervalStart | It indicates the time (in "full-time" format) when the service shall be started.Data type "FullTime" defines the time as specified by "full-time" in RFC3339 [54].AllowedValues: N/A. | type: FullTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| intervalEnd | It indicates the time (in "full-time" format) when the service shall be stopped."FullTime" defines the time as specified by "full-time" in RFC3339 [54].AllowedValues: N/A. | type: FullTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| daysOfWeek | It indicates the days on which the service shall be scheduled in case of weekly repetition. The intervals per day are configured by attribute timeIntervals.AllowedValues:  - MONDAY- TUESDAY- WEDNESDAY- THURSDAY- FRIDAY- SATURDAY- SUNDAY | type: ENUMmultiplicity: 1..7isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| daysOfMonth | It indicates the days in a month on which the service shall be scheduled in case of monthly repetition. Value 0 presents the last day of the month. The intervals per day are configured by attribute timeIntervals.AllowedValues: 0, 1, …31 | type: Integermultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| schedulingTimes | It defines the active scheduling times. | type: SchedulingTimemultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: None isNullable: False |
| schedulerStatus | Switches between TRUE and FALSE depending upon whether the configured time constraints are fulfilled or not. | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| conditionStatus | Switches between TRUE and FALSE depending upon whether the configured constraints are fulfilled or not. | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| schedulerRef | Pointer to a Scheduler object. | type: Dnmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| conditionMonitorRef | Pointer to a ConditionMonitor object. | type: Dnmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| condition | Logical expression of one or several condition(s). The actual syntax and capabilities of condition is SS specific. However, each SS should support condition consisting of one or several assertions that may be grouped using the logical operators AND, OR and NOT. Only if the whole expression of condition evaluates TRUE, the attribute conditionStatus will be TRUE.Each assertion is a pointer to a Boolean parameter or a logical expression of attribute existence or attribute value comparison ("equal to X, less than Y" etc.).An empty string is not allowed.allowedValues: N/A | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| dataScope | It specifies whether the required data is reported per S-NSSAI or per 5QI or per PLMN.Allowed Value: SNSSAI, 5QI, PLMN | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| serviceType | Specifies an end user service type for QoE measurements.allowedValues: DASH, MTSI, VR | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| qoECollectionEntityAddress | Specifies the address to which the QMC records shall be transferred. Ipv4 or Ipv6 address(es) may be used. | type: IpAddressmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| qoETarget | Specifies the target object of the QMC in case of signalling based QMC. The qoETarget attribute shall be able to carry "IMSI” or "SUPI". | type: Stringmultiplicity: 0..1isOrdered:N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| qoEReference | Identifies the QoE measurement collection job in the Managed Elements and in the measurement collection entity.The QoE reference shall be globally unique therefore it is composed as follows:MCC+MNC+QMC ID, where the MCC and MNC are coming with the QMC activation request from the management system to identify one PLMN containing the management system, and QMC ID is a 3 byte Octet String.The QMC ID is generated by the management system or the operator. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| sliceScope | Contains a list of S-NSSAIs (Single Network Slice Selection Assistance Information). A Network Slice is identified by S-NSSAI.  | type: S-NSSAImultiplicity: \*isOrdered: False isUnique: True defaultValue: NoneisNullable: False |
| sliceIdList | Contains a list of network slices identified by PLMN-Id and S-NSSAI. | type: PLMNInfomultiplicity: 0..16384isOrdered: False isUnique: True defaultValue: NoneisNullable: False |
| pLMNId | Identifies a single PLMN. | type: PLMNIdmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| sNSSAI | Identifies a single network slice by S-NSSAI (Single Network Slice Selection Assistance Information). | type: S-NSSAImultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| qMCConfigFile | Provides a reference to a file including the parameters for configuration of application layer measurements, known as Container for Application Layer Measurement Configuration | Type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| excessPacketDelayThresholds | Excess packet delay thresholds info for M6 UL measurement. | type: ExcessPacketDelayThresholdsmultiplicity: 0..255isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| fiveQIValue | It indicates 5QI value.allowedValues: 0 - 255 | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| excessPacketDelayThresholdValue | Value of excess packet delay threshold for M6 UL measurement.allowedValues: 0.25ms, 0.5ms, 1ms, 2ms, 4ms, 5ms, 10ms, 20ms, 30ms, 40ms, 50ms, 60ms, 70ms, 80ms, 90ms, 100ms, 150ms, 300ms, 500ms, … | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mDTAlignmentInformation | This parameter indicates the MDT measurements with which alignment of QoE measurement is required. This parameter is optional and is valid for NR only. | Type: TraceReferencemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| availableRANqoEMetrics | This parameter indicates available RAN visible QoE metrics to the gNB. This parameter is optional and is valid for NR only.allowedValues: APP\_LAYER\_BUFFER\_LEVEL\_LIST, PLAYOUT\_DELAY\_FOR\_MEDIA\_STARTUP | Type: ENUMmultiplicity: 0..2isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| dnPrefix | It carries the DN Prefix information or no information. See Annex C of TS 32.300 [13] for one usage of this attribute.allowedValues: N/A | type: DNmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| nPNIdentityList | It defines which NPNs that can be served by the NR cell, and which CAG IDs or NIDs can be supported by the NR cell for corresponding PNI-NPN or SNPN in case of the cell is NPN-only cell.(NPN-Identity referring to TS 38.331 [38])allowedValues: N/A | type: NpnIdmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| cAGIdList | It identifies a CAG list containing up to 256 CAG-identifiers per UE or up to 12 CAG-identifiers per cell, see TS 38.331 [38].CAG ID is used to combine with PLMN ID to identify a PNI-NPN.CAG ID is a hexadecimal range with size 32 bit.allowedValues: N/A | type: Stringmultiplicity: 0..256isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| nIDList | It identifies a list of NIDs containing up to 16 NIDs, see TS 38.331 [38].NID is used to combine with PLMN ID to identify an SNPN. NID is a hexadecimal range with size 44 bit. | type: Stringmultiplicity: 0..16isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| nPNTarget | It defines which NPN that the subscriber of the session to be recorded uses as selected NPN.There is maximum one CAG ID present in cAGIdList in case of PNI-NPN or maximum one NID present in nIDList in case of SNPN | type: NpnIdmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| ueCoreMeasConfig | The set of parameters specific for 5GC UE level measurements configuration. | type: UECoreMeasConfigmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| ueCoreMeasurements | List of 5GC UE level measurements identified by name.allowedValues:The list may include 5GC UE level measurements defined in TS 28.558 [57], or vendor specific measurements.For 5GC UE level measurements defined in TS 28.558 [57], the name is constructed as the bullet e) of measurement definition with allowed measurement type.For non-3GPP specified 5GC UE level measurements the name is defined elsewhere. | type: Stringmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| ueCoreMeasGranularityPeriod | Granularity period used to produce 5GC UE level measurements. The period is defined in milliseconds (ms).See Note 8.allowedValues: Integer with a minimum value of 10 | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| nfTypeToMeasure | It indicates the type of NE to produce the 5GC UE level measurements.allowedValues: The NF types represented by the measured object classes as defined by f) of the 5GC UE level measurements specified in TS 28.558 [57].  | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| processMonitor | This IE indicates the process of the ManagementDataCollection MOI. | Type: ProcessMonitormultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mBSCommunicationServiceType | This IE indicates for which type of MBS communication service the QoE measurement configuration pertains to.See the clause 4.5.1 of TS 28.405 [50] for additional details.allowedValue: BROADCAST, MULTICAST | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FalseisNullable: False |
| month | It indicates the month in a year.allowedValues: 1, …, 12 | type: DateMonthmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| monthDay | It indicates the day in a month.allowedValues: 1, …, 31 | type: DateMonthDaymultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mNOnly | This indicates whether the MDT configuration is for MN only or not. The value "FALSE" means the MDT configuration is for both MN and SN.The value “TRUE” means the MDT configuration is for MN only. | type: Booleanmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: FALSE isNullable: False |
| externalDataType | Type of external management data as defined by the implementation.Examples: “Electronic Map”, “Camara Data”, “UE path”, “Camera Photo”, “Event Schedule” | Type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| mediaLocation | URI of the media which includes the transfer protocol. Examples:"sftp://companyA.com/datastore/fileName.xml","https://companyA.com/ManagedElement=1/Files=1/File=1”allowedValues: NA | Type: Urimultiplicity: 0..\*isOrdered: falseisUnique: truedefaultValue: NoneisNullable: False |
| externalDataTypeSchema | URI of the schema to parse a type of external management data.The detailed schema definition for the different types of external management data is out of scope of this specification.allowedValues: NA | Type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| externalDataScope | It describes the concrete scope which the external management data is applicable.  | type: ExternalDataScope multiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: None isNullable: False |
| geoAreas | It describes the concrete geographical area(s)  | type: GeoAreamultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: None isNullable: False |
| objectInstancesIncluded | List of managed object instances to which the described data are related. Each object instance is identified by its DN.allowedValues: N/A | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| objectInstancesExcluded | List of managed object instances which are not considered in relation to the described data. Each object instance is identified by its DN.allowedValues: N/A | type: DNmultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| supportedManagementData | This attribute defines the list of management data that can be supported.The management data is a choice between:- a list of data categories (attribute mgtDataCategory)- a list of management data identified with their name (attribute "mgtDataName"). | Type: ManagementDatamultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| supportedGranularityPeriods | Granularity periods supported for the production of associated management data. The period is defined in seconds. | Type: Integermultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| supportedReportingPeriods | Reporting periods supported for the associated management data. The period is defined in seconds. | Type: Integermultiplicity: \*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| historicalDataPeriod | This attribute describes the maximum period of the requested historical data. The period is defined in seconds.When the value of this attribute is NULL, which means the capability of querying historical data is not supported. | Type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: TRUE |
| supportedReportingMethod | List of supported reporting methods for the associated management data.AllowedValues: - FILE- STREAM | type: ENUMmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| supportedDataScope | List of supported sub counter capabilities for the associated management dataAllowed Values:- SNSSAI- 5QI- PLMN | type: ENUMmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| supportedDataRequestMnSRef | List of DN of MnSInfo for the MnS instance(s) which can be used to request the associated management data | type: DNmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| supportedDataReportingMnSRef | List of DN of MnSInfo for the MnS instance(s) which can be used to report the associated management data | type: DNmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| MgmtDataInfoRef | List of DN of MgmtDataInfo instance(s) which are associated the MnSInfo which represent a management service instance | type: DNmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| trsrPrefixList | A list of a one byte Octet String, each representing the first octet of an assigned TRSR. See the subclause 5.10.x of 3GPP TS 32.422 [30] for additional details. | type: Stringmultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| 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 attribute isAutoscaleEnabled 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.NOTE 7: The above values can be further extended by the implementations, as appropriate.NOTE 8: The ueCoreMeasGranularityPeriod 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 Granularity periods reflects the agreement between producer and the consumer involved. |

\*\*\* END OF CHANGE \*\*\*