3GPP TSG SA WG5 Meeting 137-e TDoc S5-213126

electronic meeting, online, 10 - 19 May 2021

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **28.623** | **CR** | **0126** | **rev** |  | **Current version:** | **16.7.0** |  |
|  |
| *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 | **x** |

|  |
| --- |
|  |
| ***Title:***  | Add IOC for discovery of management services |
|  |  |
| ***Source to WG:*** | S5 |
| ***Source to TSG:*** | Huawei |
|  |  |
| ***Work item code:*** | 5GDMS |  | ***Date:*** | 2021-05-10 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-17 |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | As described in 28.533 clause 4.7, MnS data should be stored in the Network Resource Model to allow discovery of management services. |
|  |  |
| ***Summary of change:*** | New IOC and related DataType are added. |
|  |  |
| ***Consequences if not approved:*** | NRM does not support discovery of management services. |
|  |  |
| ***Clauses affected:*** | C.4.3 |
|  |  |
|  | **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 | TS/TR ... CR ... |
|  |  |
| ***Other comments:*** | Forge link https://forge.3gpp.org/rep/sa5/MnS/commits/S5-213126\_Rel-17\_CR\_28.623\_Add\_IOC\_for\_discovery\_of\_management\_services |
|  |  |
| ***This CR's revision history:*** |  |

|  |
| --- |
| **1st change** |

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

openapi: 3.0.1

info:

 title: Generic NRM

 version: 16.7.0

 description: >-

 OAS 3.0.1 definition of the Generic NRM

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externalDocs:

 description: 3GPP TS 28.623 V16.7.0; Generic NRM

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

paths: {}

components:

 schemas:

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

 RegistrationState:

 type: string

 enum:

 - REGISTERED

 - DEREGISTERED

 VnfParameter:

 type: object

 properties:

 vnfInstanceId:

 type: string

 vnfdId:

 type: string

 flavourId:

 type: string

 autoScalable:

 type: boolean

 SiteLatitude:

 type: number

 format: float

 minimum: -90

 maximum: 90

 SiteLongitude:

 type: number

 format: float

 minimum: -180

 maximum: 180

 PeeParameter:

 type: object

 properties:

 siteIdentification:

 type: string

 siteDescription:

 type: string

 siteLatitude:

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

 siteLongitude:

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

 equipmentType:

 type: string

 environmentType:

 type: string

 powerInterface:

 type: string

 ThresholdInfo:

 type: object

 properties:

 thresholdDirection:

 type: string

 enum:

 - UP

 - DOWN

 - UP\_AND\_DOWN

 thresholdValue:

 oneOf:

 - type: integer

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

 hysteresis:

 oneOf:

 - type: integer

 minimum: 0

 - type: number

 format: float

 minimum: 0

 Operation:

 type: object

 properties:

 name:

 type: string

 allowedNFTypes:

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

 operationSemantics:

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

 NFType:

 type: string

 description: ' NF name defined in TS 23.501'

 enum:

 - NRF

 - UDM

 - AMF

 - SMF

 - AUSF

 - NEF

 - PCF

 - SMSF

 - NSSF

 - UDR

 - LMF

 - GMLC

 - 5G\_EIR

 - SEPP

 - UPF

 - N3IWF

 - AF

 - UDSF

 - DN

 Fqdn:

 type: string

 OperationSemantics:

 type: string

 enum:

 - REQUEST\_RESPONSE

 - SUBSCRIBE\_NOTIFY

 SAP:

 type: object

 properties:

 host:

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

 port:

 type: integer

 NFServiceType:

 type: string

 enum:

 - Namf\_Communication

 - Namf\_EventExposure

 - Namf\_MT

 - Namf\_Location

 - Nsmf\_PDUSession

 - Nsmf\_EventExposure

 - Others

 HostAddr:

 oneOf:

 - $ref: '#/components/schemas/Ipv4Addr'

 - $ref: '#/components/schemas/Ipv6Addr'

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

 Ipv4Addr:

 type: string

 pattern: '^(([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])\.){3}([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])$'

 example: '198.51.100.1'

 Ipv6Addr:

 type: string

 allOf:

 - pattern: '^((:|(0?|([1-9a-f][0-9a-f]{0,3}))):)((0?|([1-9a-f][0-9a-f]{0,3})):){0,6}(:|(0?|([1-9a-f][0-9a-f]{0,3})))$'

 - pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))$'

 example: '2001:db8:85a3::8a2e:370:7334'

 Ipv6Prefix:

 type: string

 allOf:

 - pattern: '^((:|(0?|([1-9a-f][0-9a-f]{0,3}))):)((0?|([1-9a-f][0-9a-f]{0,3})):){0,6}(:|(0?|([1-9a-f][0-9a-f]{0,3})))(\/(([0-9])|([0-9]{2})|(1[0-1][0-9])|(12[0-8])))$'

 - pattern: '^((([^:]+:){7}([^:]+))|((([^:]+:)\*[^:]+)?::(([^:]+:)\*[^:]+)?))(\/.+)$'

 example: '2001:db8:abcd:12::0/64'

 TransportProtocol:

 anyOf:

 - type: string

 enum:

 - TCP

 - type: string

 SupportedPerfMetricGroup:

 type: object

 properties:

 performanceMetrics:

 type: array

 items:

 type: string

 granularityPeriods:

 type: array

 items:

 type: integer

 minimum: 1

 reportingMethods:

 type: array

 items:

 type: string

 enum:

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

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

 - STREAM\_BASED

 monitorGranularityPeriods:

 type: array

 items:

 type: integer

 minimum: 1

 ReportingCtrl:

 oneOf:

 - type: object

 properties:

 fileReportingPeriod:

 type: integer

 - type: object

 properties:

 fileReportingPeriod:

 type: integer

 fileLocation:

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

 - type: object

 properties:

 streamTarget:

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

 Scope:

 type: object

 properties:

 scopeType:

 type: string

 enum:

 - BASE\_ONLY

 - BASE\_ALL

 - BASE\_NTH\_LEVEL

 - BASE\_SUBTREE

 scopeLevel:

 type: integer

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

 tjJobType-Type:

 type: string

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

 enum:

 - IMMEDIATE\_MDT\_ONLY

 - LOGGED\_MDT\_ONLY

 - TRACE\_ONLY

 - IMMEDIATE\_MDT AND TRACE

 - RLF\_REPORT\_ONLY

 - RCEF\_REPORT\_ONLY

 - LOGGED\_MBSFN\_MDT

 tjListOfInterfaces-Type:

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

 type: object

 properties:

 MSCServerInterfaces:

 type: array

 items:

 type: string

 enum:

 - A

 - Iu-CS

 - Mc

 - MAP-G

 - MAP-B

 - MAP-E

 - MAP-F

 - MAP-D

 - MAP-C

 - CAP

 MGWInterfaces:

 type: array

 items:

 type: string

 enum:

 - Mc

 - Nb-UP

 - Iu-UP

 RNCInterfaces:

 type: array

 items:

 type: string

 enum:

 - Iu-CS

 - Iu-PS

 - Iur

 - Iub

 - Uu

 SGSNInterfaces:

 type: array

 items:

 type: string

 enum:

 - Gb

 - Iu-PS

 - Gn

 - MAP-Gr

 - MAP-Gd

 - MAP-Gf

 - Ge

 - Gs

 - S6d

 - S4

 - S3

 - S13

 GGSNInterfaces:

 type: array

 items:

 type: string

 enum:

 - Gn

 - Gi

 - Gmb

 S-CSCFInterfaces:

 type: array

 items:

 type: string

 enum:

 - Mw

 - Mg

 - Mr

 - Mi

 P-CSCFInterfaces:

 type: array

 items:

 type: string

 enum:

 - Gm

 - Mw

 I-CSCFInterfaces:

 type: array

 items:

 type: string

 enum:

 - Cx

 - Dx

 - Mg

 - Mw

 MRFCInterfaces:

 type: array

 items:

 type: string

 enum:

 - Mp

 - Mr

 MGCFInterfaces:

 type: array

 items:

 type: string

 enum:

 - Mg

 - Mj

 - Mn

 IBCFInterfaces:

 type: array

 items:

 type: string

 enum:

 - Ix

 - Mx

 E-CSCFInterfaces:

 type: array

 items:

 type: string

 enum:

 - Mw

 - Ml

 - Mm

 - Mi/Mg

 BGCFInterfaces:

 type: array

 items:

 type: string

 enum:

 - Mi

 - Mj

 - Mk

 ASInterfaces:

 type: array

 items:

 type: string

 enum:

 - Dh

 - Sh

 - ISC

 - Ut

 HSSInterfaces:

 type: array

 items:

 type: string

 enum:

 - MAP-C

 - MAP-D

 - Gc

 - Gr

 - Cx

 - S6d

 - S6a

 - Sh

 EIRInterfaces:

 type: array

 items:

 type: string

 enum:

 - MAP-F

 - S13

 - MAP-Gf

 BM-SCInterfaces:

 type: array

 items:

 type: string

 enum:

 - Gmb

 MMEInterfaces:

 type: array

 items:

 type: string

 enum:

 - S1-MME

 - S3

 - S6a

 - S10

 - S11

 - S13

 SGWInterfaces:

 type: array

 items:

 type: string

 enum:

 - S4

 - S5

 - S8

 - S11

 - Gxc

 PDN\_GWInterfaces:

 type: array

 items:

 type: string

 enum:

 - S2a

 - S2b

 - S2c

 - S5

 - S6b

 - Gx

 - S8

 - SGi

 eNBInterfaces:

 type: array

 items:

 type: string

 enum:

 - S1-MME

 - X2

 en-gNBInterfaces:

 type: array

 items:

 type: string

 enum:

 - S1-MME

 - X2

 - Uu

 - F1-C

 - E1

 AMFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N1

 - N2

 - N8

 - N11

 - N12

 - N14

 - N15

 - N20

 - N22

 - N26

 AUSFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N12

 - N13

 NEFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N29

 - N30

 - N33

 NRFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N27

 NSSFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N22

 - N31

 PCFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N5

 - N7

 - N15

 SMFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N4

 - N7

 - N10

 - N11

 - S5-C

 SMSFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N20

 - N21

 UDMInterfaces:

 type: array

 items:

 type: string

 enum:

 - N8

 - N10

 - N13

 - N21

 UPFInterfaces:

 type: array

 items:

 type: string

 enum:

 - N4

 ng-eNBInterfaces:

 type: array

 items:

 type: string

 enum:

 - NG-C

 - Xn-C

 - Uu

 gNB-CU-CPInterfaces:

 type: array

 items:

 type: string

 enum:

 - NG-C

 - Xn-C

 - Uu

 - F1-C

 - E1

 - X2-C

 gNB-CU-UPInterfaces:

 type: array

 items:

 type: string

 enum:

 - E1

 gNB-DUInterfaces:

 type: array

 items:

 type: string

 enum:

 - F1-C

 tjListOfNeTypes-Type:

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

 type: array

 items:

 type: string

 enum:

 - MSC\_SERVER

 - SGSN

 - MGW

 - GGSN

 - RNC

 - BM\_SC

 - MME

 - SGW

 - PGW

 - ENB

 - EN\_GNB

 - GNB\_CU\_CP

 - GNB\_CU\_UP

 - GNB\_DU

 tjPLMNTaget-Type:

 type: object

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

 properties:

 mcc:

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

 mnc:

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

 required:

 - mcc

 - mnc

 tjStreamingTraceConsumerURI-Type:

 type: string

 description: The URI of the Trace Reporting MnS consumer (see 3GPP TS 28.532) to which the Trace records shall be sent. See 3GPP TS 32.422 clause 5.9 for additional details.

 format: uri

 tjTraceCollectionEntityAddress-Type:

 description: The IP address to which the Trace records shall be transferred. See 3GPP TS 32.422 clause 5.9 for additional details.

 oneOf:

 - $ref: '#/components/schemas/Ipv4Addr'

 - $ref: '#/components/schemas/Ipv6Addr'

 tjTraceDepth-Type:

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

 type: string

 enum:

 - MINIMUM

 - MEDIUM

 - MAXIMUM

 - VENDORMINIMUM

 - VENDORMEDIUM

 - VENDORMAXIMUM

 tjTraceReference-Type:

 type: object

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

 properties:

 mcc:

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

 mnc:

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

 traceId:

 type: integer

 required:

 - mcc

 - mnc

 - traceId

 tjTraceReportingFormat-Type:

 type: string

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

 enum:

 - FILE-BASED

 - STREAMING

 tjTraceTarget-Type:

 type: object

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

 properties:

 TargetIdType:

 type: string

 enum:

 - IMSI

 - IMEI

 - IMEISV

 - PUBLIC\_ID

 - UTRAN\_CELL

 - E-UTRAN\_CELL

 - NG-RAN\_CELL

 - eNB

 - RNC

 - gNB

 - SUPI

 TargetIdValue:

 type: string

 required:

 - TargetIdType

 - TargetIdValue

 tjTriggeringEvent-Type:

 type: object

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

 properties:

 NetworkElement:

 type: string

 enum:

 - MSC\_SERVER

 - SGSN

 - MGW

 - GGSN

 - BM\_SC

 - MME

 - SGW

 - PGW

 - AMF

 - SMF

 - PCF

 - UPF

 EventBitmap:

 type: integer

 required:

 - NetworkElement

 - EventBitmap

 tjMDTAnonymizationOfData-Type:

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

 type: string

 enum:

 - NO\_IDENTITY

 - TAC\_OF\_IMEI

 tjMDTAreaConfigurationForNeighCell-Type:

 description: Used for logged NR MDT and defines the area for which UE is requested to perform measurement logging for neighbour cells which have list of frequencies. For additional details see 3GPP TS 32.422 clause 5.10.26.

 type: array

 items:

 type: object

 properties:

 frequency:

 type: string

 cell:

 type: string

 tjMDTAreaScope-Type:

 description: defines the area in terms or Cells or Tracking Area/Routing Area/Location Area where the MDT data collection shall take place. For additional details see 3GPP TS 32.422 clause 5.10.2.

 allOf:

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

 tjMDTCollectionPeriodRrmLte-Type:

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

 type: string

 enum:

 - 250ms

 - 500ms

 - 1000ms

 - 2000ms

 - 3000ms

 - 4000ms

 - 6000ms

 - 8000ms

 - 12000ms

 - 16000ms

 - 20000ms

 - 24000ms

 - 28000ms

 - 32000ms

 - 64000ms

 tjMDTCollectionPeriodRrmUmts-Type:

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

 type: string

 enum:

 - 1024ms

 - 1280ms

 - 2048ms

 - 2560ms

 - 5120ms

 - 10240ms

 - 1min

 tjMDTCollectionPeriodRrmNR-Type:

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

 type: string

 enum:

 - 1024ms

 - 1280ms

 - 2048ms

 - 5120ms

 - 10240ms

 - 60000ms

 tjMDTEventListForTriggeredMeasurement-Type:

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

 type: string

 enum:

 - OUT\_OF\_COVERAGE

 - A2\_EVENT

 tjMDTEventThreshold-Type:

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

 type: object

 properties:

 EventThresholdRSRP:

 type: integer

 minimum: 0

 maximum: 97

 EventThresholdRSRQ:

 type: integer

 minimum: 0

 maximum: 34

 EventThreshold1F:

 type: object

 properties:

 CPICH\_RSCP:

 type: integer

 minimum: -120

 maximum: 25

 CPICH\_EcNo:

 type: integer

 minimum: -24

 maximum: 0

 PathLoss:

 type: integer

 minimum: 30

 maximum: 165

 EventThreshold1I:

 type: integer

 minimum: -120

 maximum: 25

 tjMDTListOfMeasurements-Type:

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

 type: object

 properties:

 UMTS:

 type: array

 items:

 type: string

 enum:

 - M1

 - M2

 - M3

 - M4

 - M5

 - M6\_DL

 - M6\_UL

 - M7\_DL

 - M7\_UL

 LTE:

 type: array

 items:

 type: string

 enum:

 - M1

 - M2

 - M3

 - M4

 - M5

 - M1\_EVENT\_TRIGGERED

 - M6

 - M7

 - M8

 - M9

 NR:

 type: array

 items:

 type: string

 enum:

 - M1

 - M2

 - M3

 - M4

 - M5

 - M6

 - M7

 - M8

 - M9

 tjMDTLoggingDuration-Type:

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

 type: string

 enum:

 - 600s

 - 1200s

 - 2400s

 - 3600s

 - 5400s

 - 7200s

 tjMDTLoggingInterval-Type:

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

 type: string

 enum:

 - 1.28s

 - 2.56s

 - 5.12s

 - 10.24s

 - 20.48s

 - 30.72s

 - 40.96s

 - 61.44s

 tjMDTMBSFNAreaList-Type:

 description: See details in 3GPP TS 32.422 clause 5.10.25.

 type: array

 items:

 type: object

 properties:

 mbsfnAreaId:

 type: integer

 minimum: 1

 earfcn:

 type: integer

 minimum: 1

 required:

 - mbsfnAreaId

 - earfcn

 tjMDTMeasurementPeriodLTE-Type:

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

 type: string

 enum:

 - 1024ms

 - 1280ms

 - 2048ms

 - 2560ms

 - 5120ms

 - 10240ms

 - 1min

 tjMDTMeasurementPeriodUMTS-Type:

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

 type: string

 enum:

 - 250ms

 - 500ms

 - 1000ms

 - 2000ms

 - 3000ms

 - 4000ms

 - 6000ms

 - 8000ms

 - 12000ms

 - 16000ms

 - 20000ms

 - 24000ms

 - 28000ms

 - 32000ms

 - 64000ms

 tjMDTMeasurementQuantity-Type:

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

 type: string

 enum:

 - CPICH\_EcNo

 - CPICH\_RSCP

 - PathLoss

 tjMDTPLMList-Type:

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

 type: array

 items:

 type: object

 properties:

 mcc:

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

 mnc:

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

 required:

 - mcc

 - mnc

 maxItems: 16

 tjMDTPositioningMethod-Type:

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

 type: string

 enum:

 - GNSS

 - E-CELL\_ID

 tjMDTReportAmount-Type:

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

 type: string

 enum:

 - 1

 - 2

 - 4

 - 8

 - 16

 - 32

 - 64

 - INFINITY

 tjMDTReportingTrigger-Type:

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

 type: array

 items:

 type: string

 enum:

 - PERIODICAL

 - A2\_FOR\_LTE

 - 1F\_FOR\_UMTS

 - 1I\_FOR\_UMTS\_MCPS\_TDD

 - A2\_TRIGGERED\_PERIODIC\_FOR\_LTE

 - ALL\_CONFIGURED\_RRM\_FOR\_LTE

 - ALL\_CONFIGURED\_RRM\_FOR\_UMTS

 tjMDTReportInterval-Type:

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

 type: string

 enum:

 - 250ms

 - 500ms

 - 1000ms

 - 2000ms

 - 3000ms

 - 4000ms

 - 6000ms

 - 8000ms

 - 12000ms

 - 16000ms

 - 20000ms

 - 24000ms

 - 28000ms

 - 32000ms

 - 64000ms

 - 120ms

 - 240ms

 - 480ms

 - 640ms

 - 1024ms

 - 2048ms

 - 5120ms

 - 10240ms

 - 60000ms

 - 360000ms

 - 720000ms

 - 1800000ms

 - 3600000ms

 tjMDTReportType-Type:

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

 type: string

 enum:

 - PERIODICAL

 - EVENT\_TRIGGERED

 tjMDTSensorInformation-Type:

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

 type: array

 items:

 type: string

 enum:

 - BAROMETRIC\_PRESSURE

 - UE\_SPEED

 - UE\_ORIENTATION

 tjMDTTraceCollectionEntityID-Type:

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

 type: object

 properties:

 tceID:

 type: integer

 tcePLMN:

 type: object

 properties:

 mcc:

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

 mnc:

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

 required:

 - mcc

 - mnc

 tceAddress:

 oneOf:

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

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

 required:

 - tceID

 - tcePLMN

 - tceAddress

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

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

 Top-Attr:

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

 # are replaced by Top.

 type: object

 properties:

 id:

 type: string

 VsDataContainer:

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

 Top:

 type: object

 properties:

 id:

 type: string

 VsDataContainer:

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

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

 SubNetwork-Attr:

 type: object

 properties:

 dnPrefix:

 type: string

 userLabel:

 type: string

 userDefinedNetworkType:

 type: string

 setOfMcc:

 type: array

 items:

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

 priorityLabel:

 type: integer

 supportedPerfMetricGroups:

 type: array

 items:

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

 ManagedElement-Attr:

 type: object

 properties:

 dnPrefix:

 type: string

 managedElementTypeList:

 type: array

 items:

 type: string

 userLabel:

 type: string

 locationName:

 type: string

 managedBy:

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

 vendorName:

 type: string

 userDefinedState:

 type: string

 swVersion:

 type: string

 priorityLabel:

 type: integer

 supportedPerfMetricGroups:

 type: array

 items:

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

 SubNetwork-ncO:

 type: object

 properties:

 ManagementNode:

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

 MeContext:

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

 PerfMetricJob:

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

 ThresholdMonitor:

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

 NtfSubscriptionControl:

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

 TraceJob:

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

 AlarmList:

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

 MnsRegistry:

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

 ManagedElement-ncO:

 type: object

 properties:

 PerfMetricJob:

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

 ThresholdMonitor:

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

 NtfSubscriptionControl:

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

 TraceJob:

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

 AlarmList:

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

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

 ManagedFunction-Attr:

 type: object

 properties:

 userLabel:

 type: string

 vnfParametersList:

 type: array

 items:

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

 peeParametersList:

 type: array

 items:

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

 priorityLabel:

 type: integer

 supportedPerfMetricGroups:

 type: array

 items:

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

 EP\_RP-Attr:

 type: object

 properties:

 userLabel:

 type: string

 farEndEntity:

 type: string

 supportedPerfMetricGroups:

 type: array

 items:

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

 TraceJob-Attr:

 type: object

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

 properties:

 tjJobType:

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

 tjListOfInterfaces:

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

 tjListOfNeTypes:

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

 tjPLMNTarget:

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

 tjTraceConsumer:

 oneOf:

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

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

 tjTraceDepth:

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

 tjTraceReference:

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

 tjTraceReportingFormat:

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

 tjTraceTarget:

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

 tjTriggeringEvent:

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

 tjMDTAnonymizationOfData:

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

 tjMDTAreaConfigurationForNeighCell:

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

 tjMDTAreaScope:

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

 tjMDTCollectionPeriodRrmLte:

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

 tjMDTCollectionPeriodRrmUmts:

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

 tjMDTCollectionPeriodRrmNR:

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

 tjMDTEventListForTriggeredMeasurement:

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

 tjMDTEventThreshold:

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

 tjMDTListOfMeasurements:

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

 tjMDTLoggingDuration:

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

 tjMDTLoggingInterval:

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

 tjMDTMBSFNAreaList:

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

 tjMDTMeasurementPeriodLTE:

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

 tjMDTMeasurementPeriodUMTS:

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

 tjMDTMeasurementQuantity:

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

 tjMDTPLMList:

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

 tjMDTPositioningMethod:

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

 tjMDTReportAmount:

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

 tjMDTReportingTrigger:

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

 tjMDTReportInterval:

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

 tjMDTReportType:

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

 tjMDTSensorInformation:

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

 tjMDTTraceCollectionEntityID:

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

 required:

 - tjJobType

 - tjTraceReference

 - tjTraceConsumer

 - tjTraceReportingFormat

 - tjTraceTarget

 ManagedFunction-ncO:

 type: object

 properties:

 PerfMetricJob:

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

 ThresholdMonitor:

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

 ManagedNFService:

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

 TraceJob:

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

 MnsRegistry:

 type: object

 properties:

 attributes:

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

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

 VsDataContainer-Single:

 type: object

 properties:

 id:

 type: string

 attributes:

 type: object

 properties:

 vsDataType:

 type: string

 vsDataFormatVersion:

 type: string

 vsData:

 nullable: true

 VsDataContainer:

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

 ManagedNFService-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 userLabel:

 type: string

 nFServiceType:

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

 sAP:

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

 operations:

 type: array

 items:

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

 administrativeState:

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

 operationalState:

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

 usageState:

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

 registrationState:

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

 ManagementNode-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 userLabel:

 type: string

 managedElements:

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

 vendorName:

 type: string

 userDefinedState:

 type: string

 locationName:

 type: string

 swVersion:

 type: string

 MeContext-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 dnPrefix:

 type: string

 PerfMetricJob-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 administrativeState:

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

 operationalState:

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

 jobId:

 type: string

 performanceMetrics:

 type: array

 items:

 type: string

 granularityPeriod:

 type: integer

 minimum: 1

 objectInstances:

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

 rootObjectInstances:

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

 reportingCtrl:

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

 ThresholdMonitor-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 administrativeState:

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

 operationalState:

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

 performanceMetrics:

 type: array

 items:

 type: string

 thresholdInfoList:

 type: array

 items:

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

 monitorGranularityPeriod:

 type: integer

 minimum: 1

 objectInstances:

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

 rootObjectInstances:

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

 NtfSubscriptionControl-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 notificationRecipientAddress:

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

 notificationTypes:

 type: array

 items:

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

 scope:

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

 notificationFilter:

 type: string

 HeartbeatControl:

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

 HeartbeatControl-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 heartbeatNtfPeriod:

 type: integer

 triggerHeartbeatNtf:

 type: boolean

 TraceJob-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

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

 AlarmList-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 administrativeState:

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

 operationalState:

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

 numOfAlarmRecords:

 type: integer

 lastModification:

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

 alarmRecords:

 description: >-

 This resource represents a map of alarm records.

 The alarmIds are used as keys in the map.

 type: object

 additionalProperties:

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

 MnsData-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 mnsLabel:

 type: string

 mnsType:

 type: string

 mnsVersion:

 type: string

 componentTypeAAddress:

 type: string

 componentTypeBAddress:

 type: string

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

 VsDataContainer-Multiple:

 type: array

 items:

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

 ManagedNFService-Multiple:

 type: array

 items:

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

 ManagementNode-Multiple:

 type: array

 items:

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

 MeContext-Multiple:

 type: array

 items:

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

 PerfMetricJob-Multiple:

 type: array

 items:

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

 ThresholdMonitor-Multiple:

 type: array

 items:

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

 TraceJob-Multiple:

 type: array

 items:

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

 NtfSubscriptionControl-Multiple:

 type: array

 items:

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

 MnsData-Multiple:

 type: array

 items:

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

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

 resources-genericNrm:

 oneOf:

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

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

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

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

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

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

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

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

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

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

|  |
| --- |
| **End of changes** |