**3GPP TSG-SA5 Meeting #145-e *S5-225352***

**Online, , 15th Aug 2022 - 24th Aug 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.623** | **CR** | **draftCR** | **rev** | **-** | **Current version:** | **17.2.2** |  |
|  | | | | | | | | |
| *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:*** | Rel-18 draftCR TS 28.623 Report Amount for M4, M5, M6 and M7 measurements in LTE | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Telecomunication Corp., Huawei, Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | DUMMY | | | | |  | ***Date:*** | | | 2022-08-05 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **C** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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 can be 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | To support report amount for MDT, this contribution proposes to add report amount for M4, M5, M6 and M7 measurements in LTE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add Report Amount for M4, M5, M6 and M7 measurements in LTE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Cannot support report amount for Immediate MDT or combined Immediate MDT and Trace. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.2.2.13, 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 32.422 draftCR  TS 28.622 draftCR | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | Forge Link: <https://forge.3gpp.org/rep/sa5/MnS/-/edit/TS28.623_Rel-18_draftCR_Report_amount_for_M4_M5_M6_and_M7_measurement_in_LTE_yaml/>; [https://forge.3gpp.org/rep/sa5/MnS/-/edit/TS28.623\_Rel-18\_draftCR\_Report\_amount\_for\_M4\_M5\_M6\_and\_M7\_measurement\_in\_LTE\_yang/](https://forge.3gpp.org/rep/sa5/MnS/-/edit/TS28.623_Rel-18_draftCR_Report_amount_for_M4_M5_M6_and_M7_measurement_in_LTE_yaml/) | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

|  |
| --- |
| **Start of changes** |

### A.2.2.13 IOC TraceJob

Mapping from NRM IOC TraceJob attributes to SS equivalent MOC TraceJob attributes

| IS Attributes | SS Attributes | SS Type |
| --- | --- | --- |
| tjJobType | tjJobType | tjJobType-Type |
| tjListOfInterfaces | tjListOfInterfaces | tjListOfInterfaces-Type |
| tjListOfNeTypes | tjListOfNeTypes | tjListOfNeTypes-Type |
| tjPLMNTarget | tjPLMNTarget | tjPLMNTarget-Type |
| tjStreamingTraceConsumerURI | tjTraceConsumer | StreamingTraceConsumerURI-Type |
| tjTraceCollectionEntityAddress | tjTraceConsumer | TraceCollectionEntityAddress-Type |
| tjTraceDepth | tjTraceDepth | tjTraceDepth-Type |
| tjTraceReference | tjTraceReference | tjTraceReference-Type |
| tjTraceReportingFormat | tjTraceReportingFormat | tjTraceReportingFormat-Type |
| tjTraceTarget | tjTraceTarget | tjTraceTarget-Type |
| tjTriggeringEvent | tjTriggeringEvent | tjTriggeringEvent-Type |
| tjMDTAnonymizationOfData | tjMDTAnonymizationOfData | tjMDTAnonymizationOfData-Type |
| tjMDTAreaConfigurationForNeighCell | tjMDTAreaConfigurationForNeighCell | tjMDTAreaConfigurationForNeighCell-Type |
| tjMDTAreaScope | tjMDTAreaScope | tjMDTAreaScope-Type |
| tjMDTCollectionPeriodRrmLte | tjMDTCollectionPeriodRrmLte | tjMDTCollectionPeriodRrmLte-Type |
| tjMDTCollectionPeriodRrmUmts | tjMDTCollectionPeriodRrmUmts | tjMDTCollectionPeriodRrmUmts-Type |
| tjMDTCollectionPeriodRrmNR | tjMDTCollectionPeriodRrmNR | tjMDTCollectionPeriodRrmNR-Type |
| tjMDTEventListForTriggeredMeasurement | tjMDTEventListForTriggeredMeasurement | tjMDTEventListForTriggeredMeasurement-Type |
| tjMDTEventThreshold | tjMDTEventThreshold | tjMDTEventThreshold-Type |
| tjMDTListOfMeasurements | tjMDTListOfMeasurements | tjMDTListOfMeasurements-Type |
| tjMDTLoggingDuration | tjMDTLoggingDuration | tjMDTLoggingDuration-Type |
| tjMDTLoggingInterval | tjMDTLoggingInterval | tjMDTLoggingInterval-Type |
| tjMDTMBSFNAreaList | tjMDTMBSFNAreaList | tjMDTMBSFNAreaList-Type |
| tjMDTMeasurementPeriodLTE | tjMDTMeasurementPeriodLTE | tjMDTMeasurementPeriodLTE-Type |
| tjMDTMeasurementPeriodUMTS | tjMDTMeasurementPeriodUMTS | tjMDTMeasurementPeriodUMTS-Type |
| tjMDTMeasurementQuantity | tjMDTMeasurementQuantity | tjMDTMeasurementQuantity-Type |
| tjMDTPLMList | tjMDTPLMList | tjMDTPLMList-Type |
| tjMDTPositioningMethod | tjMDTPositioningMethod | tjMDTPositioningMethod-Type |
| tjMDTReportAmount | tjMDTReportAmount | tjMDTReportAmount-Type |
| tjMDTreportAmountM1LTE | tjMDTreportAmountM1LTE | tjMDTreportAmountM1LTE-Type |
| tjMDTreportAmountM4LTE | tjMDTreportAmountM4LTE | tjMDTreportAmountM1LTE-Type |
| tjMDTreportAmountM5LTE | tjMDTreportAmountM5LTE | tjMDTreportAmountM1LTE-Type |
| tjMDTreportAmountM6LTE | tjMDTreportAmountM6LTE | tjMDTreportAmountM1LTE-Type |
| tjMDTreportAmountM7LTE | tjMDTreportAmountM7LTE | tjMDTreportAmountM1LTE-Type |
| tjMDTReportingTrigger | tjMDTReportingTrigger | tjMDTReportingTrigger-Type |
| tjMDTReportInterval | tjMDTReportInterval | tjMDTReportInterval-Type |
| tjMDTReportType | tjMDTReportType | tjMDTReportType-Type |
| tjMDTSensorInformation | tjMDTSensorInformation | tjMDTSensorInformation-Type |
| tjMDTTraceCollectionEntityID | tjMDTTraceCollectionEntityID | tjMDTTraceCollectionEntityID-Type |

|  |
| --- |
| **next change** |

## C.4.3 OpenAPI document "TS28623\_GenericNrm.yaml"

openapi: 3.0.1

info:

title: Generic NRM

version: 17.2.0

description: >-

OAS 3.0.1 definition of the Generic NRM

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externalDocs:

description: 3GPP TS 28.623; Generic NRM

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

paths: {}

components:

schemas:

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

RegistrationState:

type: string

enum:

- REGISTERED

- DEREGISTERED

VnfParameter:

type: object

properties:

vnfInstanceId:

type: string

vnfdId:

type: string

flavourId:

type: string

autoScalable:

type: boolean

PeeParameter:

type: object

properties:

siteIdentification:

type: string

siteDescription:

type: string

siteLatitude:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Latitude'

siteLongitude:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Longitude'

siteAltitude:

type: number

format: float

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: 'TS28623\_ComDefs.yaml#/components/schemas/Float'

hysteresis:

oneOf:

- type: integer

minimum: 0

- type: number

format: float

minimum: 0

Operation:

type: object

properties:

name:

type: string

allowedNFTypes:

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

operationSemantics:

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

NFType:

type: string

description: ' NF name defined in TS 23.501'

enum:

- NRF

- UDM

- AMF

- SMF

- AUSF

- NEF

- PCF

- SMSF

- NSSF

- UDR

- LMF

- GMLC

- 5G\_EIR

- SEPP

- UPF

- N3IWF

- AF

- UDSF

- DN

OperationSemantics:

type: string

enum:

- REQUEST\_RESPONSE

- SUBSCRIBE\_NOTIFY

SAP:

type: object

properties:

host:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/HostAddr'

port:

type: integer

NFServiceType:

type: string

enum:

- Namf\_Communication

- Namf\_EventExposure

- Namf\_MT

- Namf\_Location

- Nsmf\_PDUSession

- Nsmf\_EventExposure

- Others

TransportProtocol:

anyOf:

- type: string

enum:

- TCP

- type: string

SupportedPerfMetricGroup:

type: object

properties:

performanceMetrics:

type: array

items:

type: string

granularityPeriods:

type: array

items:

type: integer

minimum: 1

reportingMethods:

type: array

items:

type: string

enum:

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

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

- STREAM\_BASED

monitorGranularityPeriods:

type: array

items:

type: integer

minimum: 1

ReportingCtrl:

oneOf:

- type: object

properties:

fileReportingPeriod:

type: integer

- type: object

properties:

fileReportingPeriod:

type: integer

fileLocation:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Uri'

- type: object

properties:

streamTarget:

$ref: 'TS28623\_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

ProcessMonitor:

description: >-

This data type is the "ProcessMonitor" data type without specialisations.

type: object

properties:

jobId:

type: string

status:

type: string

enum:

- NOT\_STARTED

- RUNNING

- FINSHED

- FAILED

- PARTIALLY\_FAILED

- CANCELLING

- CANCELLED

progressPercentage:

type: integer

minimum: 0

maximum: 100

progressStateInfo:

type: string

resultStateInfo:

type: string

startTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

endTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

timer:

type: integer

FileDownloadJobProcessMonitor:

description: >-

This data type is the "ProcessMonitor" data type with specialisations

for usage in the "FileDownloadJob".

type: object

properties:

jobId:

type: string

status:

type: string

enum:

- NOT\_STARTED

- RUNNING

- FINSHED

- FAILED

- CANCELLING

- CANCELLED

progressPercentage:

type: integer

minimum: 0

maximum: 100

progressStateInfo:

type: string

resultStateInfo:

oneOf:

- type: string

enum:

- NULL

- UNKNOWN

- NO\_STORAGE

- LOW\_MEMROY

- NO\_CONNECTION\_TO\_REMOTE\_SERVER

- FILE\_NOT\_AVAILABLE

- DNS\_CANNOT\_BE\_RESOLVED

- TIMER\_EXPIRED

- OTHER

- type: string

startTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

endTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

timer:

type: integer

AreaScope:

oneOf:

- type: array

items:

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

- type: array

items:

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

- type: array

items:

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

- type: array

items:

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

Tai:

type: object

properties:

mcc:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Mnc'

tac:

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

AreaConfig:

type: object

properties:

freqInfo:

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

pciList:

type: array

items:

type: integer

FreqInfo:

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

type: object

properties:

arfcn:

type: integer

freqBands:

type: array

items:

type: integer

MbsfnArea:

type: object

properties:

mbsfnAreaId:

type: integer

minimum: 1

earfcn:

type: integer

minimum: 1

Tac:

type: string

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

EutraCellId:

type: string

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

NrCellId:

type: string

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

IpAddr:

oneOf:

- $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Ipv4Addr'

- $ref: 'TS28623\_ComDefs.yaml#/components/schemas/Ipv6Addr'

ManagementData:

oneOf:

- type: array

items:

type: string

enum:

- COVERAGE

- CAPACITY

- ENERGY\_EFFICIENCY

- MOBILITY

- ACCESSIBILITY

- type: array

items:

type: string

NodeFilter:

type: object

properties:

areaOfInterest:

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

networkDomain:

type: string

enum:

- CN

- RAN

cpUpType:

type: string

enum:

- CP

- UP

sst:

type: integer

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

jobType-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

listOfInterfaces-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

- N70

- N71

- NU1

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

- NU1

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

listOfNeTypes-Type:

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

type: array

items:

type: string

enum:

- MSC\_SERVER

- SGSN

- MGW

- GGSN

- RNC

- BM\_SC

- MME

- SGW

- PGW

- ENB

- EN\_GNB

- GNB\_CU\_CP

- GNB\_CU\_UP

- GNB\_DU

- AMF

- PCF

- SMF

- UPF

- AUSF

- SMSF

- HSS

- UDM

plmnTarget-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: 'TS28623\_ComDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Mnc'

required:

- mcc

- mnc

traceDepth-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

traceReference-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: 'TS28623\_ComDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Mnc'

traceId:

type: string

required:

- mcc

- mnc

- traceId

traceReportingFormat-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

traceTarget-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

triggeringEvents-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:

MSC\_SERVER:

type: array

items:

type: string

enum:

- MO\_MT\_CALLS

- MO\_MT\_SMS

- LU\_IMSIattach\_IMSIdetach

- HANDOVER

- SS

SGSN:

type: array

items:

type: string

enum:

- PDPcontext

- MO\_MT\_SMS

- RAU\_GPRSattach\_GPRSdetach

- MBMScontext

MGW:

type: array

items:

type: string

enum:

- CONTEXT

GGSN:

type: array

items:

type: string

enum:

- PDPcontext

- MBMScontext

IMS:

type: array

items:

type: string

enum:

- SIPsession\_StandaloneTransaction

BM\_SC:

type: array

items:

type: string

enum:

- MBMSactivation

MME:

type: array

items:

type: string

enum:

- UEinitiatedPDNconnectivityRequest

- ServiceRequest

- InitialAttach\_TAU\_Detach

- UEinitiatedPDNdisconnection

- BearerActivationModificationDeletion

- Handover

SGW:

type: array

items:

type: string

enum:

- PDNconnectionCreation

- PDNconnectionTermination

- BearerActivationModificationDeletion

PGW:

type: array

items:

type: string

enum:

- PDNconnectionCreation

- PDNconnectionTermination

- BearerActivationModificationDeletion

AMF:

type: array

items:

type: string

enum:

- Registration

- ServiceRequest

- Handover

- UEderegistration

- NetworkDeregistration

- UEMobilityFromEPC

- UEMobilityToEPC

SMF:

type: array

items:

type: string

enum:

- PDUsessionEstablishment

- PDUsessionModification

- PDUsessionRelease

- PDUsessionUPactivationDeactivation

- MobilityBtw3gppAndN3gppTo5GC

- MobilityFromEpc

PCF:

type: array

items:

type: string

enum:

- AMpolicy

- SMpolicy

- Authorization

- BDTpolicy

UPF:

type: array

items:

type: string

enum:

- N4Session

AUSF:

type: array

items:

type: string

enum:

- UEauthentication

NEF:

type: array

items:

type: string

enum:

- EventExposure

- PFDmanagement

- ParameterProvision

- Trigger

NRF:

type: array

items:

type: string

enum:

- NFmanagement

- NFdiscovery

NSSF:

type: array

items:

type: string

enum:

- NSSelection

- NSSAI

SMSF:

type: array

items:

type: string

enum:

- SMservice

UDM:

type: array

items:

type: string

enum:

- UEcontext

- SubscriberData

- UEauthentication

- EventExposure

anonymizationOfMdtData-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

beamLevelMeasurement-Type:

description: Determines whether beam level measurements shall be included in case of immediate MDT M1 measurement in NR. For additional details see 3GPP TS 32.422 clause 5.10.40.

type: boolean

collectionPeriodRrmLte-Type:

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

type: string

enum:

- 100ms

- 1000ms

- 1024ms

- 1280ms

- 2048ms

- 2560ms

- 5120ms

- 10000ms

- 10240ms

- 60000ms

collectionPeriodM6Lte-Type:

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

type: string

enum:

- 1024ms

- 2048ms

- 5120ms

- 10240ms

collectionPeriodM7Lte-Type:

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

type: integer

minimum: 1

maximum: 60

collectionPeriodRrmUmts-Type:

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

type: string

enum:

- 100ms

- 250ms

- 500ms

- 1000ms

- 2000ms

- 3000ms

- 4000ms

- 6000ms

collectionPeriodRrmNr-Type:

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

type: string

enum:

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 60000ms

collectionPeriodM6Nr-Type:

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

type: string

enum:

- 120ms

- 240ms

- 480ms

- 640ms

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 20480ms

- 40960ms

- 1min

- 6min

- 12min

- 30min

collectionPeriodM7Nr-Type:

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

type: integer

minimum: 1

maximum: 60

eventListForEventTriggeredMeasurement-Type:

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

type: string

enum:

- OUT\_OF\_COVERAGE

- A2\_EVENT

eventThreshold-Type:

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

type: object

properties:

EventThresholdRSRP:

oneOf:

- type: integer

minimum: 0

maximum: 97

- type: integer

minimum: 0

maximum: 127

EventThresholdRSRQ:

oneOf:

- type: integer

minimum: 0

maximum: 34

- type: integer

minimum: 0

maximum: 127

EventThreshold1F:

type: object

properties:

CPICH\_RSCP:

type: integer

minimum: -120

maximum: 25

CPICH\_EcNo:

type: integer

minimum: -24

maximum: 0

PathLoss:

type: integer

minimum: 30

maximum: 165

EventThreshold1I:

type: integer

minimum: -120

maximum: 25

listOfMeasurements-Type:

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

type: object

properties:

UMTS:

type: array

items:

type: string

enum:

- M1

- M2

- M3

- M4

- M5

- M6\_DL

- M6\_UL

- M7\_DL

- M7\_UL

LTE:

type: array

items:

type: string

enum:

- M1

- M2

- M3

- M4

- M5

- M1\_EVENT\_TRIGGERED

- M6

- M7

- M8

- M9

NR:

type: array

items:

type: string

enum:

- M1

- M2

- M3

- M4

- M5

- M6

- M7

- M1\_EVENT\_TRIGGERED

- M8

- M9

loggingDuration-Type:

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

type: string

enum:

- 600s

- 1200s

- 2400s

- 3600s

- 5400s

- 7200s

loggingInterval-Type:

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

type: object

properties:

UMTS:

type: array

items:

type: string

enum:

- 1.28s

- 2.56s

- 5.12s

- 10.24s

- 20.48s

- 30.72s

- 40.96s

- 61.44s

LTE:

type: array

items:

type: string

enum:

- 1.28s

- 2.56s

- 5.12s

- 10.24s

- 20.48s

- 30.72s

- 40.96s

- 61.44s

NR:

type: array

items:

type: string

enum:

- 0.32s

- 0.64s

- 1.28s

- 2.56s

- 5.12s

- 10.24s

- 20.48s

- 30.72s

- 40.96s

- 61.44s

- INFINITY

eventThresholdL1-Type:

description: See details in 3GPP TS 32.422 clause 5.10.X.

type: object

properties:

RSRP:

type: integer

minimum: 0

maximum: 127

RSRQ:

type: integer

minimum: 0

maximum: 127

hysteresisL1-Type:

description: See details in 3GPP TS 32.422 clause 5.10.Y.

type: integer

minimum: 0

maximum: 30

timeToTriggerL1-Type:

description: See details in 3GPP TS 32.422 clause 5.10.Z.

type: string

enum:

- 0ms

- 40ms

- 64ms

- 80ms

- 100ms

- 128ms

- 160ms

- 256ms

- 320ms

- 480ms

- 512ms

- 640ms

- 1024ms

- 1280ms

- 2560ms

- 5120ms

measurementPeriodLte-Type:

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

type: string

enum:

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 1min

measurementPeriodUmts-Type:

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

type: string

enum:

- 1000ms

- 2000ms

- 3000ms

- 4000ms

- 6000ms

- 8000ms

- 12000ms

- 16000ms

- 20000ms

- 24000ms

- 28000ms

- 32000ms

- 64000ms

measurementQuantity-Type:

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

type: string

enum:

- CPICH\_EcNo

- CPICH\_RSCP

- PathLoss

eventThresholdUphUmts-Type:

description: See details in 3GPP TS 32.422 clause 5.10.A.

type: integer

minimum: 0

maximum: 31

plmnList-Type:

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

type: array

items:

type: object

properties:

mcc:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Mcc'

mnc:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Mnc'

required:

- mcc

- mnc

maxItems: 16

positioningMethod-Type:

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

type: string

enum:

- GNSS

- E-CELL\_ID

reportAmount-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM1LTE-Type:

description: See details in 3GPP TS 32.422 clause 5.10.x.

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM4LTE-Type:

description: See details in 3GPP TS 32.422 clause 5.10.y.

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM5LTE-Type:

description: See details in 3GPP TS 32.422 clause 5.10.z.

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM6LTE-Type:

description: See details in 3GPP TS 32.422 clause 5.10.a.

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM7LTE-Type:

description: See details in 3GPP TS 32.422 clause 5.10.b.

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportingTrigger-Type:

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

type: array

items:

type: string

enum:

- PERIODICAL

- A2\_FOR\_LTE\_NR

- 1F\_FOR\_UMTS

- 1I\_FOR\_UMTS\_MCPS\_TDD

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

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

- ALL\_CONFIGURED\_RRM\_FOR\_UMTS

reportInterval-Type:

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

type: object

properties:

UMTS:

type: array

items:

type: string

enum:

- 250ms

- 500ms

- 1000ms

- 2000ms

- 3000ms

- 4000ms

- 6000ms

- 8000ms

- 12000ms

- 16000ms

- 20000ms

- 24000ms

- 28000ms

- 32000ms

- 64000ms

LTE:

type: array

items:

type: string

enum:

- 120ms

- 240ms

- 480ms

- 640ms

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 60000ms

- 360000ms

- 720000ms

- 1800000ms

- 3600000ms

NR:

type: array

items:

type: string

enum:

- 120ms

- 240ms

- 480ms

- 640ms

- 1024ms

- 2048ms

- 5120ms

- 10240ms

- 20480ms

- 40960ms

- 60000ms

- 360000ms

- 720000ms

- 1800000ms

reportType-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

sensorInformation-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

traceCollectionEntityId-Type:

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

type: integer

#-------- 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

nullable: true

objectClass:

type: string

objectInstance:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

VsDataContainer:

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

required:

- id

Top:

type: object

properties:

id:

type: string

nullable: true

objectClass:

type: string

objectInstance:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

VsDataContainer:

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

required:

- id

#-------- 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: 'TS28623\_ComDefs.yaml#/components/schemas/Mcc'

priorityLabel:

type: integer

supportedPerfMetricGroups:

type: array

items:

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

supportedTraceMetrics:

type: array

items:

type: string

ManagedElement-Attr:

type: object

properties:

dnPrefix:

type: string

managedElementTypeList:

type: array

items:

type: string

userLabel:

type: string

locationName:

type: string

managedBy:

$ref: 'TS28623\_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'

supportedTraceMetrics:

type: array

items:

type: string

SubNetwork-ncO:

type: object

properties:

ManagementNode:

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

MnsAgent:

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

MeContext:

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

PerfMetricJob:

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

ThresholdMonitor:

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

TraceJob:

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

ManagementDataCollection:

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

NtfSubscriptionControl:

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

AlarmList:

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

Files:

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

FileDownloadJob:

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

MnsRegistry:

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

ManagedElement-ncO:

type: object

properties:

MnsAgent:

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

PerfMetricJob:

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

ThresholdMonitor:

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

TraceJob:

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

NtfSubscriptionControl:

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

AlarmList:

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

FileDownloadJob:

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

Files:

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

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

ManagedFunction-Attr:

type: object

properties:

userLabel:

type: string

vnfParametersList:

type: array

items:

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

peeParametersList:

type: array

items:

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

priorityLabel:

type: integer

supportedPerfMetricGroups:

type: array

items:

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

supportedTraceMetrics:

type: array

items:

type: string

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:

jobType:

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

listOfInterfaces:

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

listOfNeTypes:

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

plmnTarget:

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

traceReportingConsumerUri:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Uri'

traceCollectionEntityIpAddress:

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

traceDepth:

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

traceReference:

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

traceRecordingSessionReference:

type: string

jobId:

type: string

traceReportingFormat:

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

traceTarget:

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

triggeringEvents:

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

anonymizationOfMdtData:

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

areaConfigurationForNeighCell:

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

areaScope:

type: array

items:

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

beamLevelMeasurement:

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

collectionPeriodRrmLte:

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

collectionPeriodM6Lte:

$ref: '#/components/schemas/collectionPeriodM6Lte-Type'

collectionPeriodM7Lte:

$ref: '#/components/schemas/collectionPeriodM7Lte-Type'

collectionPeriodRrmUmts:

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

collectionPeriodRrmNr:

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

collectionPeriodM6Nr:

$ref: '#/components/schemas/collectionPeriodM6Nr-Type'

collectionPeriodM7Nr:

$ref: '#/components/schemas/collectionPeriodM7Nr-Type'

eventListForEventTriggeredMeasurement:

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

eventThreshold:

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

listOfMeasurements:

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

loggingDuration:

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

loggingInterval:

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

eventThresholdL1:

$ref: '#/components/schemas/eventThresholdL1-Type'

hysteresisL1:

$ref: '#/components/schemas/hysteresisL1-Type'

timeToTriggerL1:

$ref: '#/components/schemas/timeToTriggerL1-Type'

mbsfnAreaList:

type: array

items:

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

measurementPeriodLte:

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

measurementPeriodUmts:

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

measurementQuantity:

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

eventThresholdUphUmts:

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

plmnList:

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

positioningMethod:

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

reportAmount:

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

reportAmountM1LTE:

$ref: '#/components/schemas/reportAmountM1LTE-Type'

reportAmountM4LTE:

$ref: '#/components/schemas/reportAmountM4LTE-Type'

reportAmountM5LTE:

$ref: '#/components/schemas/reportAmountM5LTE-Type'

reportAmountM6LTE:

$ref: '#/components/schemas/reportAmountM6LTE-Type'

reportAmountM7LTE:

$ref: '#/components/schemas/reportAmountM7LTE-Type'

reportingTrigger:

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

reportInterval:

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

reportType:

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

sensorInformation:

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

traceCollectionEntityId:

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

ManagedFunction-ncO:

type: object

properties:

PerfMetricJob:

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

ThresholdMonitor:

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

ManagedNFService:

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

TraceJob:

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

MnsRegistry-Single:

type: object

properties:

MnsInfo:

$ref: '#/components/schemas/MnsInfo-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: 'TS28623\_ComDefs.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/OperationalState'

usageState:

$ref: 'TS28623\_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: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

vendorName:

type: string

userDefinedState:

type: string

locationName:

type: string

swVersion:

type: string

MnsAgent:

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

MnsAgent-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

systemDN:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

MeContext-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

dnPrefix:

type: string

PerfMetricJob-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

administrativeState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/OperationalState'

jobId:

type: string

performanceMetrics:

type: array

items:

type: string

granularityPeriod:

type: integer

minimum: 1

objectInstances:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

rootObjectInstances:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

reportingCtrl:

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

Files:

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

ThresholdMonitor-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

administrativeState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'TS28623\_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: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

rootObjectInstances:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DnList'

NtfSubscriptionControl-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

notificationRecipientAddress:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Uri'

notificationTypes:

type: array

items:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/NotificationType'

scope:

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

notificationFilter:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Filter'

HeartbeatControl:

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

HeartbeatControl-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

heartbeatNtfPeriod:

type: integer

minimum: 0

triggerHeartbeatNtf:

type: boolean

TraceJob-Single:

allOf:

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

- type: object

properties:

attributes:

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

Files:

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

ManagementDataCollection-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

managementData:

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

targetNodeFilter:

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

collectionTimeWindow:

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

reportingCtrl:

type: string

dataScope:

type: string

enum:

- SNSSAI

- 5QI

AlarmList-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

administrativeState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/AdministrativeState'

operationalState:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/OperationalState'

numOfAlarmRecords:

type: integer

lastModification:

$ref: 'TS28623\_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: 'TS28532\_FaultMnS.yaml#/components/schemas/AlarmRecord'

FileDownloadJob-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

fileLocation:

type: string

notificationRecipientAddress:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Uri'

cancelJob:

type: string

enum:

- TRUE

- FALSE

jobMonitor:

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

Files-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

numberOfFiles:

type: integer

jobRef:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

jobId:

type: string

File:

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

File-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

fileLocation:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Uri'

fileCompression:

type: string

fileSize:

type: integer

fileDataType:

type: string

enum:

- PERFORMANCE

- TRACE

- ANALYTICS

- PROPRIETARY

fileFormat:

type: string

fileReadyTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

fileExpirationTime:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/DateTime'

fileContent:

type: string

jobRef:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

jobId:

type: string

MnsInfo-Single:

type: object

properties:

mnsLabel:

type: string

mnsType:

type: string

enum:

- ProvMnS

- FaultSupervisionMnS

- StreamingDataReportingMnS

- FileDataReportingMnS

mnsVersion:

type: string

mnsAddress:

description: Resource URI as defined in the relevant Technical Specification

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Uri'

mnsScope:

description: >-

List of the managed object instances that can be accessed using the MnS.

If a complete SubNetwork can be accessed using the MnS, this attribute may contain the

DN of the SubNetwork instead of the DNs of the individual managed entities within the

SubNetwork.

type: array

items:

$ref: 'TS28623\_ComDefs.yaml#/components/schemas/Dn'

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

VsDataContainer-Multiple:

type: array

items:

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

ManagedNFService-Multiple:

type: array

items:

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

ManagementNode-Multiple:

type: array

items:

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

MnsAgent-Multiple:

type: array

items:

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

MeContext-Multiple:

type: array

items:

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

PerfMetricJob-Multiple:

type: array

items:

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

ThresholdMonitor-Multiple:

type: array

items:

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

TraceJob-Multiple:

type: array

items:

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

ManagementDataCollection-Multiple:

type: array

items:

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

NtfSubscriptionControl-Multiple:

type: array

items:

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

FileDownloadJob-Multiple:

type: array

items:

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

Files-Multiple:

type: array

items:

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

File-Multiple:

type: array

items:

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

MnsInfo-Multiple:

type: array

items:

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

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

resources-genericNrm:

oneOf:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

|  |
| --- |
| **3rd modified section** |

## D.2.10 module \_3gpp-common-trace.yang

<CODE BEGINS>

module \_3gpp-common-trace {

yang-version 1.1;

namespace "urn:3gpp:sa5:\_3gpp-common-trace";

prefix "trace3gpp";

import \_3gpp-common-top { prefix top3gpp; }

import \_3gpp-common-yang-types {prefix types3gpp; }

import ietf-inet-types { prefix inet; }

organization "3GPP SA5";

contact "https://www.3gpp.org/DynaReport/TSG-WG--S5--officials.htm?Itemid=464";

description "Trace handling";

reference "3GPP TS 28.623

Generic Network Resource Model (NRM)

Integration Reference Point (IRP);

Solution Set (SS) definitions

3GPP TS 28.622

Generic Network Resource Model (NRM)

Integration Reference Point (IRP);

Information Service (IS)";

revision 2022-04-27 { reference "CR-0159"; }

revision 2021-10-18 { reference "CR-0139"; }

revision 2021-07-22 { reference "CR-0137"; }

revision 2021-01-25 { reference "CR-0122"; }

revision 2020-11-16 { reference "CR-0117"; }

revision 2020-08-06 { reference "CR-0102"; }

grouping TraceJobGrp {

leaf tjJobType {

type enumeration {

enum IMMEDIATE\_MDT\_ONLY;

enum LOGGED\_MDT\_ONLY;

enum TRACE\_ONLY;

enum IMMEDIATE\_MDT\_AND\_TRACE;

enum RLF\_REPORT\_ONLY;

enum RCEF\_REPORT\_ONLY;

enum LOGGED\_MBSFN\_MDT;

}

default TRACE\_ONLY;

description "Specifies the MDT mode and it specifies also whether the

TraceJob represents only MDT, Logged MBSFN MDT, Trace or a combined

Trace and MDT job. The attribute is applicable for Trace, MDT, RCEF and

RLF reporting.";

reference "Clause 5.9a of 3GPP TS 32.422 for additional details on the

allowed values.";

}

list tjListOfInterfaces {

key idx;

must 'count(MSCServerInterfaces)+count(MGWInterfaces)+count(RNCInterfaces)'

+'+count(SGSNInterfaces)+count(GGSNInterfaces)+count(S-CSCFInterfaces)'

+'+count(P-CSCFInterfaces)+count(I-CSCFInterfaces)+count(MRFCInterfaces)'

+'+count(MGCFInterfaces)+count(IBCFInterfaces)+count(E-CSCFInterfaces)'

+'+count(BGCFInterfaces)+count(ASInterfaces)+count(HSSInterfaces)'

+'+count(EIRInterfaces)+count(BM-SCInterfaces)+count(MMEInterfaces)'

+'+count(SGWInterfaces)+count(PDN\_GWInterfaces)+count(eNBInterfaces)'

+'+count(en-gNBInterfaces)+count(AMFInterfaces)+count(AUSFInterfaces)'

+'+count(NEFInterfaces)+count(NRFInterfaces)+count(NSSFInterfaces)'

+'+count(PCFInterfaces)+count(SMFInterfaces)+count(SMSFInterfaces)'

+'+count(UDMInterfaces)+count(UPFInterfaces)+count(ng-eNBInterfaces)'

+'+count(gNB-CU-CPInterfaces)+count(gNB-CU-UPInterfaces)'

+'+count(gNB-DUInterfaces)';

description "Specifies the interfaces that need to be traced in the given

ManagedEntityFunction.The attribute is applicable only for Trace. In

case this attribute is not used, it carries a null semantic.";

reference "Clause 5.5 of 3GPP TS 32.422 for additional details on the

allowed values.";

leaf idx { type uint32 ; }

leaf-list MSCServerInterfaces {

type enumeration {

enum A ;

enum Iu-CS ;

enum Mc ;

enum MAP-G ;

enum MAP-B ;

enum MAP-E ;

enum MAP-F ;

enum MAP-D ;

enum MAP-C ;

enum CAP ;

}

}

leaf-list MGWInterfaces {

type enumeration {

enum Mc ;

enum Nb-UP ;

enum Iu-UP ;

}

}

leaf-list RNCInterfaces {

type enumeration {

enum Iu-CS ;

enum Iu-PS ;

enum Iur ;

enum Iub ;

enum Uu ;

}

}

leaf-list SGSNInterfaces {

type enumeration {

enum Gb ;

enum Iu-PS ;

enum Gn ;

enum MAP-Gr ;

enum MAP-Gd ;

enum MAP-Gf ;

enum Ge ;

enum Gs ;

enum S6d ;

enum S4 ;

enum S3 ;

enum S13 ;

}

}

leaf-list GGSNInterfaces {

type enumeration {

enum Gn ;

enum Gi ;

enum Gmb ;

}

}

leaf-list S-CSCFInterfaces {

type enumeration {

enum Mw ;

enum Mg ;

enum Mr ;

enum Mi ;

}

}

leaf-list P-CSCFInterfaces {

type enumeration {

enum Gm ;

enum Mw ;

}

}

leaf-list I-CSCFInterfaces {

type enumeration {

enum Cx ;

enum Dx ;

enum Mg ;

enum Mw ;

}

}

leaf-list MRFCInterfaces {

type enumeration {

enum Mp ;

enum Mr ;

}

}

leaf-list MGCFInterfaces {

type enumeration {

enum Mg ;

enum Mj ;

enum Mn ;

}

}

leaf-list IBCFInterfaces {

type enumeration {

enum Ix ;

enum Mx ;

}

}

leaf-list E-CSCFInterfaces {

type enumeration {

enum Mw ;

enum Ml ;

enum Mm ;

enum Mi-Mg ;

}

}

leaf-list BGCFInterfaces {

type enumeration {

enum Mi ;

enum Mj ;

enum Mk ;

}

}

leaf-list ASInterfaces {

type enumeration {

enum Dh ;

enum Sh ;

enum ISC ;

enum Ut ;

}

}

leaf-list HSSInterfaces {

type enumeration {

enum MAP-C ;

enum MAP-D ;

enum Gc ;

enum Gr ;

enum Cx ;

enum S6d ;

enum S6a ;

enum Sh ;

}

}

leaf-list EIRInterfaces {

type enumeration {

enum MAP-F ;

enum S13 ;

enum MAP-Gf ;

}

}

leaf-list BM-SCInterfaces {

type enumeration {

enum Gmb ;

}

}

leaf-list MMEInterfaces {

type enumeration {

enum S1-MME ;

enum S3 ;

enum S6a ;

enum S10 ;

enum S11 ;

enum S13 ;

}

}

leaf-list SGWInterfaces {

type enumeration {

enum S4 ;

enum S5 ;

enum S8 ;

enum S11 ;

enum Gxc ;

}

}

leaf-list PDN\_GWInterfaces {

type enumeration {

enum S2a ;

enum S2b ;

enum S2c ;

enum S5 ;

enum S6b ;

enum Gx ;

enum S8 ;

enum SGi ;

}

}

leaf-list eNBInterfaces {

type enumeration {

enum S1-MME ;

enum X2 ;

}

}

leaf-list en-gNBInterfaces {

type enumeration {

enum S1-MME ;

enum X2 ;

enum Uu ;

enum F1-C ;

enum E1 ;

}

}

leaf-list AMFInterfaces {

type enumeration {

enum N1 ;

enum N2 ;

enum N8 ;

enum N11 ;

enum N12 ;

enum N14 ;

enum N15 ;

enum N20 ;

enum N22 ;

enum N26 ;

}

}

leaf-list AUSFInterfaces {

type enumeration {

enum N12 ;

enum N13 ;

}

}

leaf-list NEFInterfaces {

type enumeration {

enum N29 ;

enum N30 ;

enum N33 ;

}

}

leaf-list NRFInterfaces {

type enumeration {

enum N27 ;

}

}

leaf-list NSSFInterfaces {

type enumeration {

enum N22 ;

enum N31 ;

}

}

leaf-list PCFInterfaces {

type enumeration {

enum N5 ;

enum N7 ;

enum N15 ;

}

}

leaf-list SMFInterfaces {

type enumeration {

enum N4 ;

enum N7 ;

enum N10 ;

enum N11 ;

enum S5-C ;

}

}

leaf-list SMSFInterfaces {

type enumeration {

enum N20 ;

enum N21 ;

}

}

leaf-list UDMInterfaces {

type enumeration {

enum N8 ;

enum N10 ;

enum N13 ;

enum N21 ;

}

}

leaf-list UPFInterfaces {

type enumeration {

enum N4 ;

}

}

leaf-list ng-eNBInterfaces {

type enumeration {

enum NG-C ;

enum Xn-C ;

enum Uu ;

}

}

leaf-list gNB-CU-CPInterfaces {

type enumeration {

enum NG-C ;

enum Xn-C ;

enum Uu ;

enum F1-C ;

enum E1 ;

enum X2-C ;

}

}

leaf-list gNB-CU-UPInterfaces {

type enumeration {

enum E1 ;

}

}

leaf-list gNB-DUInterfaces {

type enumeration {

enum F1-C ;

}

}

}

leaf-list tjListOfNeTypes {

type enumeration {

enum MSC\_SERVER;

enum SGSN;

enum MGW;

enum GGSN;

enum RNC;

enum BM\_SC;

enum MME;

enum SGW;

enum PGW;

enum ENB;

enum EN\_GNB;

enum GNB\_CU\_CP;

enum GNB\_CU\_UP;

enum GNB\_DU;

}

description "Specifies in which type of ManagedFunction the trace should

be activated. The attribute is applicable only for Trace with

Signalling Based Trace activation. In case this attribute is not used,

it carries a null semantic";

reference "Clause 5.4 of 3GPP TS 32.422 for additional details on the

allowed values";

}

leaf tjPLMNTarget {

type string;

mandatory true;

description "Specifies which PLMN that the subscriber of the session to

be recorded uses as selected PLMN. PLMN Target might differ from the

PLMN specified in the Trace Reference";

reference "Clause 5.9b of 3GPP TS 32.422";

}

leaf tjStreamingTraceConsumerURI {

when '../tjTraceReportingFormat = "STREAMING"';

type inet:uri;

mandatory true;

description "URI of the Streaming Trace data reporting MnS consumer

(a.k.a. streaming target).

This attribute shall be present if file based trace data reporting is

supported and tjTraceReportingFormat set to 'file based' or when

tjJobType is set to Logged MDT or Logged MBSFN MDT.";

reference "Clause 5.9 of 3GPP TS 32.422";

}

leaf tjTraceCollectionEntityAddress {

when '../tjTraceReportingFormat = "FILE\_BASED" or '

+'../tjJobType = "LOGGED\_MDT\_ONLY" or ../tjJobType = "LOGGED\_MBSFN\_MDT"';

type union {

type inet:uri;

type inet:ip-address;

}

mandatory true;

description "Specifies the address of the Trace Collection Entity when

the attribute tjTraceReportingFormat is configured for the file-based

reporting. The attribute is applicable for both Trace and MDT.";

reference "Clause 5.9 of 3GPP TS 32.422";

}

leaf tjTraceDepth {

when '../tjJobType = "TRACE\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type enumeration {

enum MINIMUM;

enum MEDIUM;

enum MAXIMUM;

enum VENDORMINIMUM;

enum VENDORMEDIUM;

enum VENDORMAXIMUM;

}

default MAXIMUM;

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.

The attribute is applicable only for Trace, otherwise it carries a null

semantic.";

reference "Clause 5.3 of 3GPP TS 32.422";

}

leaf tjTraceReference {

type uint64;

mandatory true;

description "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.";

}

leaf tjTraceRecordSessionReference {

type string;

mandatory true;

description "An identifier, which identifies the Trace Recording Session.

The attribute is applicable for both Trace and MDT.

See the clause 5.7 of 3GPP TS 32.422 for additional details on the

allowed values.";

}

leaf tjTraceReportingFormat {

type enumeration {

enum FILE\_BASED;

enum STREAMING;

}

default FILE\_BASED;

description "Specifies the trace reporting format - streaming trace

reporting or file-based trace reporting";

reference "3GPP TS 32.422 clause 5.11";

}

list tjTraceTarget {

key "targetIdType targetIdValue";

max-elements 1;

leaf targetIdType {

type enumeration {

enum IMSI;

enum IMEI;

enum IMEISV;

enum PUBLIC\_ID;

enum UTRAN\_CELL;

enum E\_UTRAN\_CELL;

enum NG\_RAN\_CELL;

enum ENB;

enum RNC;

enum GNB;

enum SUPI;

}

}

leaf targetIdValue {

type string;

}

description "Specifies the target object of the Trace and MDT. The

attribute is applicable for both Trace and MDT. This attribute

includes the ID type of the target as an enumeration and the ID value.

The tjTraceTarget shall be public ID in case of a Management Based

Activation is done to an ScscfFunction. The tjTraceTarget shall be

cell only in case of the UTRAN cell traffic trace function.

The tjTraceTarget shall be E-UtranCell only in case of E-UTRAN cell

traffic trace function.The tjTraceTarget shall be either IMSI or

IMEI(SV) if the Trace Session is activated to any of the following

ManagedEntity(ies):

- HssFunction

- MscServerFunction

- SgsnFunction

- GgsnFunction

- BmscFunction

- RncFunction

- MmeFunction

The tjTraceTarget shall be IMSI if the Trace Session is activated to a

ManagedEntity playing a role of ServinGWFunction.

In case of signaling based Trace/MDT, the tjTraceTarget attribute shall

be able to carry (IMSI or IMEI(SV)or SUPI), the tjMDTAreaScope attribute

shall be able to carry a list of (cell or E-UtranCell or NRCellDU or

TA/LA/RA).

In case of management based Immediate MDT, the tjTraceTarget attribute

shall be null value, the tjMDTAreaScope attribute shall carry a list of

(Utrancell or E-UtranCell or NRCellDU).

In case of management based Logged MDT, the tjTraceTarget attribute

shall carry an eBs or a RNC or gNBs. The Logged MDT should be initiated

on the specified eNB or RNC or gNB in tjTraceTarget. The tjMDTAreaScope

attribute shall carry a list of (Utrancell or E-UtranCell or NRCellDU or

TA/LA/RA).

In case of RLF reporting, or RCEF reporting, the tjTraceTarget

attribute shall be null value, the tjMDTAreaScope attribute shall carry

one or list of eNBs/gNBs";

reference "3GPP TS 32.422";

}

leaf tjTriggeringEvent {

when '../tjJobType = "TRACE\_ONLY" or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type string ;

mandatory true;

description "Specifies the triggering event parameter of the trace session.

The attribute is applicable only for Trace. In case this attribute is

not used, it carries a null semantic.";

reference "Clause 5.1 of 3GPP TS 32.422";

}

leaf tjMDTAnonymizationOfData {

when ../tjMDTAreaScope ;

type enumeration {

enum NO\_IDENTITY;

enum TAC\_OF\_IMEI;

}

default NO\_IDENTITY;

description "Specifies level of MDT anonymization.";

reference "3GPP TS 32.422 clause 5.10.12.";

}

list tjMDTAreaConfigurationForNeighCell {

when '../tjJobType = "LOGGED\_MDT\_ONLY"';

key "idx";

min-elements 1;

leaf idx { type uint32 ; }

description "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.";

reference "3GPP TS 32.422 clause 5.10.26.";

leaf frequency {

type string;

}

leaf cell {

type string;

}

}

leaf-list tjMDTAreaScope {

type string;

description "specifies MDT area scope when activates an MDT job.

For RLF and RCEF reporting it specifies the eNB or list of eNBs where the

RLF or RCEF reports should be collected.

List of cells/TA/LA/RA for signaling based MDT or management based Logged

MDT.

List of cells for management based Immediate MDT.

Cell, TA, LA, RA are mutually exclusive.

One or list of eNBs for RLF and RCEFreporting";

reference "Clause 5.10.2 of 3GPP TS 32.422";

}

leaf tjMDTCollectionPeriodRrmLte {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint32 {

range "250|500|1000|2000|3000|4000|6000|8000|12000|16000|20000|"

+"24000|28000|32000|64000";

}

units milliseconds;

description "Specifies the collection period for collecting RRM configured

measurement samples for M2, M3 in LTE. The attribute is applicable only

for Immediate MDT. In case this attribute is not used, it carries a

null semantic.";

reference "Clause 5.10.20 of 3GPP TS 32.422";

}

leaf tjMDTCollectionPeriodM6Lte {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint32 {

range "1024|2048|5120|10240";

}

units milliseconds;

description "Specifies the collection period for the Packet Delay

measurement (M6) for MDT taken by the eNB. The attribute is applicable

only for Immediate MDT. In case this attribute is not used,

it carries a null semantic.";

reference "Clause 5.10.32 of TS 32.422 ";

}

leaf tjMDTCollectionPeriodM7Lte {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint16 {

range 1..60 ;

}

description "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. In case this attribute

is not used, it carries a null semantic.";

reference "Clause 5.10.22 of TS 32.422 .";

}

leaf tjMDTCollectionPeriodRrmUmts {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint32 {

range "1024|1280|2048|2560|5120|"

+"10240|60000";

}

units milliseconds;

description "Specifies the collection period for collecting RRM configured

measurement samples for M3, M4, M5 in UMTS. The attribute is applicable

only for Immediate MDT. In case this attribute is not used, it carries

a null semantic";

reference "Clause 5.10.21 of 3GPP TS 32.422";

}

leaf tjMDTCollectionPeriodRrmNR {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint32 {

range "1024|2048|5120|10240|60000";

}

units milliseconds;

description "Specifies the collection period for collecting RRM

configured measurement samples for M4, M5 in NR. The attribute is

applicable only for Immediate MDT. In case this attribute is not

used, it carries a null semantic.";

reference "Clause 5.10.30 of 3GPP TS 32.422";

}

leaf tjMDTCollectionPeriodM6NR {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type enumeration {

enum 120ms;

enum 240ms;

enum 480ms;

enum 640ms;

enum 1024ms;

enum 2048ms;

enum 5120ms;

enum 10240ms;

enum 20480ms;

enum 40960ms;

enum 1min;

enum 6min;

enum 12min;

enum 30min;

}

description "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. In case this attribute is not used,

it carries a null semantic.";

reference "clause 5.10.34 of TS 32.422";

}

leaf tjMDTCollectionPeriodM7NR {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint32 {

range "1..60";

}

description "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. In case this attribute is not used,

it carries a null semantic.";

reference "clause 5.10.35 of TS 32.422";

}

leaf tjMDTEventListForTriggeredMeasurement {

when '../tjJobType = "LOGGED\_MDT\_ONLY"';

type enumeration {

enum OUT\_OF\_COVERAGE ;

enum A2\_EVENT ;

}

mandatory true;

description "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.";

reference "Clause 5.10.28 of 3GPP TS 32.422";

}

leaf tjMDTEventThreshold {

type int64;

description "Specifies the threshold which should trigger the reporting

in case A2 event reporting in LTE or 1F/1l event in UMTS. The attribute

is applicable only for Immediate MDT and when reportingTrigger is

configured for A2 event in LTE or 1F event or 1l event in UMTS. In

case this attribute is not used, it carries a null semantic.";

reference "Clauses 5.10.7 and 5.10.7a of 3GPP TS 32.422";

}

leaf tjMDTListOfMeasurements {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"';

type int64;

mandatory true;

description "It specifies the UE measurements that shall be collected in

an Immediate MDT job. The attribute is applicable only for Immediate MDT.

In case this attribute is not used, it carries a null semantic.";

reference "3GPP TS 32.422 clause 5.10.3";

}

leaf tjMDTLoggingDuration {

when '../tjJobType = "LOGGED\_MDT\_ONLY" or ../tjJobType = "LOGGED\_MBSFN\_MDT"';

type uint32 {

range "600|1200|2400|3600|5400|7200";

}

units seconds;

mandatory true;

description "Specifies how long the MDT configuration is valid at the

UE in case of Logged MDT. The attribute is applicable only for

Logged MDT and Logged MBSFN MDT. In case this attribute is not used, it

carries a null semantic.";

reference "5.10.9 of 3GPP TS 32.422";

}

leaf tjMDTLoggingInterval {

when '../tjJobType = "LOGGED\_MDT\_ONLY" or ../tjJobType = "LOGGED\_MBSFN\_MDT"';

type uint32 {

range "1280|2560|5120|10240|20480|"

+"30720|40960|61440";

}

units milliseconds;

mandatory true;

description "Specifies the periodicty for Logged MDT. The attribute is

applicable only for Logged MDT and Logged MBSFN MDT. In case this

attribute is not used, it carries a null semantic";

reference "5.10.8 of 3GPP TS 32.422";

}

leaf tjMDTLoggingEventThreshold {

when '../tjJobType = "LOGGED\_MDT\_ONLY" or ../tjJobType = "LOGGED\_MBSFN\_MDT"';

type uint32 {

range "0..127";

}

description "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 tjMDTReportType

is configured for event triggered reporting and when

tjMDTEventListForTriggeredMeasurement is configured for L1 event.

In case this attribute is not used, it carries a null semantic.";

reference "clause 5.10.36 of TS 32.422";

}

leaf tjMDTLoggedHysteresis {

when '../tjJobType = "LOGGED\_MDT\_ONLY" or ../tjJobType = "LOGGED\_MBSFN\_MDT"';

type uint32 {

range "0..30";

}

description "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 tjMDTReportType

is configured for event triggered reporting and when

tjMDTEventListForTriggeredMeasurement is configured for L1 event.

In case this attribute is not used, it carries a null semantic.";

reference "clause 5.10.37 of TS 32.422";

}

leaf tjMDTLoggedTimeToTrigger {

when '../tjJobType = "LOGGED\_MDT\_ONLY" or ../tjJobType = "LOGGED\_MBSFN\_MDT"';

type int32 ;

description "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 tjMDTReportType

is configured for event triggered reporting and when

tjMDTEventListForTriggeredMeasurement is configured for L1 event.

In case this attribute is not used, it carries a null semantic.";

reference "clauses 5.10.38 of TS 32.422";

}

leaf-list tjMDTMBSFNAreaList {

when '../tjJobType = "LOGGED\_MBSFN\_MDT"';

type string;

min-elements 1;

max-elements 8;

description "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.";

reference "5.10.25 of 3GPP TS 32.422";

}

leaf tjMDTMeasurementPeriodLTE {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint32 {

range "1024|1280|2048|2560|5120|"

+"10240|60000";

}

units milliseconds;

mandatory true;

description "It specifies the measurement period for the Data Volume and

Scheduled IP throughput measurements for MDT taken by the eNB.

The attribute is applicable only for Immediate MDT. In case this

attribute is not used, it carries a null semantic.";

reference "Clause 5.10.23 of 3GPP TS 32.422";

}

leaf tjMDTMeasurementPeriodUMTS {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ 'or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint32 {

range "250|500|1000|2000|3000|4000|6000|8000|12000|16000|20000|"

+"24000|28000|32000|64000";

}

units milliseconds;

mandatory true;

description "It specifies the measurement period for the Data Volume and

Throughput measurements for MDT taken by RNC.

The attribute is applicable only for Immediate MDT. In case this

attribute is not used, it carries a null semantic.";

reference "Clause 5.10.22 of 3GPP TS 32.422";

}

leaf tjMDTMeasurementQuantity {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint64 ;

mandatory true;

description "It specifies the measurements that are collected in an MDT

job for a UMTS MDT configured for event triggered reporting.";

reference "Clause 5.10.15 of 3GPP TS 32.422";

}

leaf tjMDTM4ThresholdUmts {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type uint16 {

range 0..31 ;

}

description "It specifies the threshold which should trigger

the reporting in case of event-triggered periodic reporting for M4

(UE power headroom measurement) in UMTS. In case this attribute is

not used, it carries a null semantic.";

reference "3GPP TS 32.422 clause 5.10.A";

}

list tjMDTPLMList {

when '../tjJobType = "LOGGED\_MDT\_ONLY"';

key "mcc mnc";

uses types3gpp:PLMNId;

min-elements 1;

max-elements 16;

description "It indicates the PLMNs where measurement collection, status

indication and log reporting is allowed.";

reference "Clause 5.10.24 of 3GPP TS 32.422";

}

leaf tjMDTPositioningMethod {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' or ../tjJobType = "IMMEDIATE\_MDT\_AND\_TRACE"';

type enumeration {

enum GNSS;

enum E\_CELL\_ID;

}

mandatory true;

description "It specifies what positioning method should be used in the

MDT job.";

reference "Clause 5.10.19 of 3GPP TS 32.422";

}

leaf tjMDTReportAmount {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' and ./tjMDTReportingTrigger = "PERIODICAL"';

type union {

type uint32 {

range "1|4|8|16|32|64" ;

}

type enumeration {

enum INFINITY;

}

}

mandatory true;

description "It specifies the number of measurement reports in NR and UMTS that shall be

taken for periodic reporting while the UE is in connected.

The attribute is applicable only for Immediate MDT and when

tjMDTReportingTrigger is configured for periodical measurements. In

case this attribute is not used, it carries a null semantic.";

reference "Clause 5.10.6 of 3GPP TS 32.422";

}

leaf tjMDTreportAmountM1LTE {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' and ./tjMDTReportingTrigger = "PERIODICAL"';

type union {

type uint32 {

range "1|4|8|16|32|64" ;

}

type enumeration {

enum INFINITY;

}

}

mandatory true;

description "It specifies the number of measurement reports for M1 in LTE that shall be

taken for periodic reporting while the UE is in connected.

The attribute is applicable only for Immediate MDT and when

tjMDTReportingTrigger is configured for periodical measurements. In

case this attribute is not used, it carries a null semantic.";

reference "Clause 5.10.x of 3GPP TS 32.422";

}

leaf tjMDTreportAmountM4LTE {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' and ./tjMDTReportingTrigger = "PERIODICAL"';

type union {

type uint32 {

range "1|4|8|16|32|64" ;

}

type enumeration {

enum INFINITY;

}

}

mandatory true;

description "It specifies the number of measurement reports for M4 in LTE that shall be

taken for periodic reporting while the UE is in connected.

The attribute is applicable only for Immediate MDT and when

tjMDTReportingTrigger is configured for periodical measurements. In

case this attribute is not used, it carries a null semantic.";

reference "Clause 5.10.y of 3GPP TS 32.422";

}

leaf tjMDTreportAmountM5LTE {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' and ./tjMDTReportingTrigger = "PERIODICAL"';

type union {

type uint32 {

range "1|4|8|16|32|64" ;

}

type enumeration {

enum INFINITY;

}

}

mandatory true;

description "It specifies the number of measurement reports for M5 in LTE that shall be

taken for periodic reporting while the UE is in connected.

The attribute is applicable only for Immediate MDT and when

tjMDTReportingTrigger is configured for periodical measurements. In

case this attribute is not used, it carries a null semantic.";

reference "Clause 5.10.z of 3GPP TS 32.422";

}

leaf tjMDTreportAmountM6LTE {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' and ./tjMDTReportingTrigger = "PERIODICAL"';

type union {

type uint32 {

range "1|4|8|16|32|64" ;

}

type enumeration {

enum INFINITY;

}

}

mandatory true;

description "It specifies the number of measurement reports for M6 in LTE that shall be

taken for periodic reporting while the UE is in connected.

The attribute is applicable only for Immediate MDT and when

tjMDTReportingTrigger is configured for periodical measurements. In

case this attribute is not used, it carries a null semantic.";

reference "Clause 5.10.a of 3GPP TS 32.422";

}

leaf tjMDTreportAmountM7LTE {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' and ./tjMDTReportingTrigger = "PERIODICAL"';

type union {

type uint32 {

range "1|4|8|16|32|64" ;

}

type enumeration {

enum INFINITY;

}

}

mandatory true;

description "It specifies the number of measurement reports for M7 in LTE that shall be

taken for periodic reporting while the UE is in connected.

The attribute is applicable only for Immediate MDT and when

tjMDTReportingTrigger is configured for periodical measurements. In

case this attribute is not used, it carries a null semantic.";

reference "Clause 5.10.b of 3GPP TS 32.422";

}

leaf tjMDTReportingTrigger {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"';

type enumeration {

enum PERIODICAL;

enum A2\_FOR\_LTE;

enum 1F\_FOR\_UMTS;

enum 1I\_FOR\_UMTS\_MCPS\_TDD;

enum A2\_TRIGGERED\_PERIODIC\_FOR\_LTE;

enum ALL\_CONFIGURED\_RRM\_FOR\_LTE;

enum ALL\_CONFIGURED\_RRM\_FOR\_UMTS;

}

description "It specifies whether periodic or event based measurements

should be collected.

The attribute is applicable only for Immediate MDT and when the

tjMDTListOfMeasurements is configured for M1 (for both UMTS and LTE)

or M2 (only for UMTS). In case this attribute is not used, it carries

a null semantic.";

reference "Clause 5.10.4 of 3GPP TS 32.422";

}

leaf tjMDTReportInterval {

when '../tjJobType = "IMMEDIATE\_MDT\_ONLY"'

+ ' and ../tjMDTReportingTrigger = "PERIODICAL"';

type uint32 {

range "120|240|250|480|500|640|1000|1024|2000|2048|3000|4000|"

+"5120|6000|8000|10240|12000|16000|20000|"

+"24000|28000|32000|60000|64000|"

+"360000|720000|1800000|3600000";

}

units milliseconds;

mandatory true;

description "It specifies the interval between the periodical measurements

that shall be taken when the UE is in connected mode.

The attribute is applicable only for Immediate MDT and when

tjMDTReportingTrigger is configured for periodical measurements. In case

this attribute is not used, it carries a null semantic.";

reference "5.10.5 of 3GPP TS 32.422";

}

leaf tjMDTReportType {

when '../tjJobType = "LOGGED\_MDT\_ONLY"';

type enumeration {

enum PERIODICAL;

enum EVENT\_TRIGGERED;

}

mandatory true;

description "It specifies report type for logged NR MDT";

reference "Clause 5.10.27 of 3GPP TS 32.422";

}

leaf tjMDTSensorInformation {

type bits {

bit BAROMETRIC\_PRESSURE;

bit UE\_SPEED;

bit UE\_ORIENTATION;

}

default "";

description "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.";

reference "Clause 5.10.29 of 3GPP TS 32.422";

}

leaf tjMDTTraceCollectionEntityID {

when '../tjJobType = "LOGGED\_MDT\_ONLY" or ../tjJobType = "LOGGED\_MBSFN\_MDT"';

type uint8;

mandatory true;

description "It specifies the TCE Id which is sent to the UE in

Logged MDT.";

reference "Clause 5.10.11 of 3GPP TS 32.422";

}

}

grouping TraceSubtree {

description "Contains classes that manage Tracing.

Should be used in all classes (or classes inheriting from)

- SubNnetwork

- ManagedElement

- ManagedFunction

If a YANG module wants to augment these classes/list/groupings they must

augment all user classes!";

list TraceJob {

description "Represents the Trace Control and Configuration parameters of a

particular Trace Job (see TS 32.421 and TS 32.422 for details).

It can be name-contained by SubNetwork, ManagedElement, ManagedFunction

or NetworkSliceSubnet.

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

tjTraceCollectionEntityAddress or tjStreamingTraceConsumerUri to be his

own.

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 activation/deactivation see clause

4.1.1.1.2 of TS 32.422.

The attribute tjJobType specifies the kind of data to collect. Dependent

on the selected type various parameters shall be available. The

attributes tjJobType, tjTraceReference, tjTraceRecordSessionReference,

tjTraceCollectionEntityAddress and tjTraceReportingFormat are mandatory

for all job types. If streaming reporting is selected for

tjTraceReportingFormat, tjStreamingTraceConsumerURI shall be present

additionally. The attribute tjPLMNTarget shall be present if trace

activation method is management based.

For the different job types the attributes are differentiated as follows:

- In case of TRACE\_ONLY additionally the following attributes shall be

available: tjListOfNeTypes, tjTraceDepth, tjTraceTarget and

tjTriggeringEvent.

For this case the optional attribute tjListOfInterfaces allows to

specify the interfaces to be recorded.

- In case of IMMEDIATE\_MDT\_ONLY additionally the following attributes

shall be available:

- tjTraceTarget

- tjMDTAnonymizationOfData,

- tjMDTListOfMeasurements,

- tjMDTCollectionPeriodRrmUmts (conditional for M3, M4 and M5 in UMTS),

- tjMDTMeasurementPeriodUMTS (conditional for M6 and M7 in UMTS),

- tjMDTCollectionPeriodRrmLte (conditional for M2 and M3 in LTE),

- tjMDTMeasurementPeriodLTE (conditional for M4 and M5 in LTE),

- tjMDTCollectionPeriodM6Lte (conditional for M6 in LTE),

- tjMDTCollectionPeriodM7Lte (conditional for M7 in LTE),

- tjMDTCollectionPeriodRrmNR (conditional for M4 and M5 in NR),

- tjMDTCollectionPeriodM6NR (conditional for M6 in NR),

- tjMDTCollectionPeriodM7NR (conditional for M7 in NR),

- tjMDTReportInterval (conditional for M1 in LTE or NR and M1/M2 in

UMTS),

- tjMDTReportAmount (conditional for M1 in NR and M1/M2 in

UMTS),

- tjMDTreportAmountM1LTE (conditional for M1 in LTE),

- tjMDTreportAmountM4LTE (conditional for M4 in LTE),

- tjMDTreportAmountM5LTE (conditional for M5 in LTE),

- tjMDTreportAmountM6LTE (conditional for M6 in LTE),

- tjMDTreportAmountM7LTE (conditional for M7 in LTE),

- tjMDTReportingTrigger (conditional for M1 in LTE or NR and M1/M2 in

UMTS),

- tjMDTEventThreshold (conditional for A2 event reporting or A2 event

triggered periodic reporting),

- tjMDTMeasurementQuantity (conditional for 1F event reporting).

For this case the optional attribute tjMDTAreaScope allows to specify

the area in terms of cells or Tracking Area/Routing Area/Location area

where the MDT data collection shall take place and the optional

attributes tjMDTPositioningMethod, tjMDTSensorInformation allow to

specify the positioning methods to use or the sensor information to

include.

- In case of IMMEDIATE\_MDT\_AND\_TRACE both additional attributes of

TRACE\_ONLY and IMMEDIATE\_MDT\_ONLY shall apply.

- In case of LOGGED\_MDT\_ONLY additionally the following attributes

shall be available: tjTraceTarget, tjMDTAnonymizationOfData,

tjMDTTraceCollectionEntityID, tjMDTLoggingInterval,

tjMDTLoggingDuration, tjMDTReportType,

tjMDTEventListForTriggeredMeasurements.

For this case the optional attribute tjMDTAreaScope allows to specify

the area in terms of cells or Tracking Area/Routing Area/Location area

where the MDT data collection shall take place, the optional attribute

tjMDTPLMNList allows to specify the PLMNs where measurement collection,

status indication and log reporting is allowed, the optional attribute

tjMDTAreaConfigurationForNeighCell allows to specify the area for

which UE is requested to perform measurements logging for neighbour

cells which have list of frequencies and the optional attribute

tjMDTSensorInformation allows to specify the sensor information to

include.

- In case of RLF\_REPORT\_ONLY and RCEF\_REPORT\_ONLY additionally the

attribute tjTraceTarget shall be available, the optional attribute

tjMDTAreaScope allows to specify the eNB or list of eNBs or gNB or

list of gNBs where the reports should be collected.

- In case of LOGGED\_MBSFN\_MDT additionally the following attributes

shall be available: tjMDTAnonymizationOfData, tjMDTLoggingInterval,

tjMDTLoggingDuration, tjMDTMBSFNAreaList.

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.";

key id;

uses top3gpp:Top\_Grp ;

container attributes {

uses TraceJobGrp ;

}

}

}

}<CODE ENDS>

|  |
| --- |
| **end of changes** |