**3GPP TSG-SA5 Meeting #156 *S5-244921***

**Maastricht, Netherlands, 19 – 23 August 2024**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.623** | **CR** | **0404** | **rev** | **1** | **Current version:** | **19.0.1** |  |
|  | | | | | | | | |
| *For* [***HELP***](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 |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Rel-19 CR TS 28.623 Add missing interface and Trigger events for core functions | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GMDT\_Ph2 | | | | |  | ***Date:*** | | | 2024-08-08 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories 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:*** | | TS 23.501 defines the reference point N28, N40, N41 and N42. The stage 3 support for the interfaces and the trigger events for tracing are missing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Adding N28, N40, N41 and N42 interfaces and the missing trigger events for tracing. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | N28, N40, N41 and N42 interfaces cannot be traced by 3GPP trace functionality. Misalignment with TS 23.501. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | NA (Stage 3 code is in forge) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 32.421 CR 0142  TS 32.423 CR 0191 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | Forge MR link: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1254> | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

Forge MR link: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1254> at commit 76f60d83de03cfd3e1c4cdcee74226f1f3c2ff39

\*\*\* START OF CHANGE 1 \*\*\*

\*\*\* OpenAPI/TS28623\_TraceControlNrm.yaml \*\*\*

<CODE BEGINS>

openapi: 3.0.1

info:

title: Trace Control NRM

version: 19.0.0

description: >-

OAS 3.0.1 definition of the Trace Control NRM fragment

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externalDocs:

description: 3GPP TS 28.623; Generic NRM,Trace Control NRM

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

paths: {}

components:

schemas:

#-------- Definition of types for name-containments ------

SubNetwork-ncO-TraceControlNrm:

type: object

properties:

TraceJob:

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

ManagedElement-ncO-TraceControlNrm:

type: object

properties:

TraceJob:

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

#-------Definition of generic IOCs ----------#

#-------- 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

- 5GC\_UE\_LEVEL\_MEASUREMENTS\_ONLY

- TRACE\_AND\_5GC\_UE\_LEVEL\_MEASUREMENTS

- IMMEDIATE\_MDT\_AND\_5GC\_UE\_LEVEL\_MEASUREMENTS

- TRACE\_AND\_IMMEDIATE\_MDT\_AND\_5GC\_UE\_LEVEL\_MEASUREMENTS

default: TRACE\_ONLY

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

- N41

- N42

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

- N28

SMFInterfaces:

type: array

items:

type: string

enum:

- N4

- N7

- N10

- N11

- S5-C

- N16

- N16a

- N38

- N40

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

listOfTraceMetrics:

description: The trace metrics to be reported. See 3GPP TS 32.422 clause 10 for additional details.

type: array

items:

type: string

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

default: MAXIMUM

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

default: FILE-BASED

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:

- UE\_INITIATEDPDN\_CONNECTIVITY\_REQUEST

- SERVICE\_REQUEST

- INITIALATTACH\_TAU\_DETACH

- UE\_INITIATEDPDN\_DISCONNECTION

- BEAR\_ACTIVIATION\_MODIFICATION\_DELETION

- HANDOVER

SGW:

type: array

items:

type: string

enum:

- PDN\_CONNECTION\_CREATION

- PDN\_CONNECTION\_TERMINATION

- BEAR\_ACTIVATION\_MODIFICATION\_DELETION

PGW:

type: array

items:

type: string

enum:

- PDN\_CONNECTION\_CREATION

- PDN\_CONNECTION\_TERMINATION

- BEAR\_ACTIVATION\_MODIFICATION\_DELETION

AMF:

type: array

items:

type: string

enum:

- REGISTRATION

- SERVICE\_REQUEST

- HANDOVER

- UE\_DEREGISTRATION

- NETWORK\_DEREGISTRATION

- UE\_MOBILITY\_FROM\_EPC

- UE\_MOBILITY\_TO\_EPC

- CONVERGED\_CHARGING\_SERVICE

SMF:

type: array

items:

type: string

enum:

- PDU\_SESSION\_ESTABLISHMENT

- PDU\_SESSION\_MODIFICATION

- PDU\_SESSIOON\_RELEASE

- PDU\_SESSION\_UP\_ACTIVATION\_DEACTIVATION

- MOBILITY\_BTW\_3GPP\_AND\_N3GPP\_TO\_5GC

- MOBILITY\_FROM\_EPC

- MOBILITY\_BTW\_ISMF\_OR\_VSMF

- CONVERGED\_CHARGING\_SERVICE

- OFFLINE\_ONLY\_CHARGING

PCF:

type: array

items:

type: string

enum:

- AM\_POLICY

- SM\_POLICY

- AUTHORIZATION

- BDT\_POLICY

- SPENDING\_LIMIT\_CONTROL

UPF:

type: array

items:

type: string

enum:

- N4SESSION

AUSF:

type: array

items:

type: string

enum:

- UE\_AUTHENTICATION

NEF:

type: array

items:

type: string

enum:

- EVENT\_EXPOSURE

- PFD\_MANAGEMENT

- PARAMETER\_PROVISION

- TRIGGER

NRF:

type: array

items:

type: string

enum:

- NF\_MANAGEMEENT

- NF\_DISCOVERY

NSSF:

type: array

items:

type: string

enum:

- NS\_SELECTION

- NSSAI

SMSF:

type: array

items:

type: string

enum:

- SMSERVICE

UDM:

type: array

items:

type: string

enum:

- UE\_CONTEXT

- SUBSCRIBER\_DATA

- UE\_AUTHENTICATION

- EVENT\_EXPOSURE

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

default: NO\_IDENTITY

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 5.10.6.

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM4LTE-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM5LTE-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM6LTE-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM7LTE-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM1NR-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM4NR-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM5NR-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM6NR-Type:

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

type: string

enum:

- 1

- 2

- 4

- 8

- 16

- 32

- 64

- INFINITY

reportAmountM7NR-Type:

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

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

excessPacketDelayThreshold-Type:

description: Excess Packet Delay Threshold for NR MDT. See details in 3GPP TS 32.422 clause 4.1.1 and 4.1.2.

type: object

properties:

fiveQIValue:

type: integer

excessPacketDelayThresholdValue:

type: string

enum:

- 0.25MS

- 0.5MS

- 1MS

- 2MS

- 4MS

- 5MS

- 10MS

- 20MS

- 30MS

- 40MS

- 50MS

- 60MS

- 70MS

- 80MS

- 90MS

- 100MS

- 150MS

- 300MS

- 500MS

excessPacketDelayThresholds-Type:

description: Array of type excessPacketDelayThreshold-Type.

type: array

items:

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

minItems: 0

maxItems: 255

traceConfig-Type:

description: Trace configuration parameters for NR. See details in 3GPP TS 28.622 clause 4.3.30.

type: object

properties:

listOfInterfaces:

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

listOfNeTypes:

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

traceDepth:

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

triggeringEvents:

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

immediateMDTConfig-Type:

description: Immediate MDT configuration parameters. See details in 3GPP TS 28.622 clause 4.3.30.

type: object

properties:

listOfMeasurements:

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

reportingTrigger:

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

reportAmountM1NR:

$ref: '#/components/schemas/reportAmountM1NR-Type'

reportAmountM4NR:

$ref: '#/components/schemas/reportAmountM4NR-Type'

reportAmountM5NR:

$ref: '#/components/schemas/reportAmountM5NR-Type'

reportAmountM6NR:

$ref: '#/components/schemas/reportAmountM6NR-Type'

reportAmountM7NR:

$ref: '#/components/schemas/reportAmountM7NR-Type'

reportInterval:

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

eventThreshold:

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

eventThresholdUphUmts:

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

measurementPeriodUmts:

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

measurementPeriodLte:

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

measurementQuantity:

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

beamLevelMeasurement:

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

positioningMethod:

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

excessPacketDelayThresholds:

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

loggedMDTConfig-Type:

description: Logged MDT configuration parameters. See details in 3GPP TS 28.622 clause 4.3.30.

type: object

properties:

traceCollectionEntityId:

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

reportType:

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

plmnList:

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

eventListForEventTriggeredMeasurement:

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

areaConfigurationForNeighCell:

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

nPNIdentityList:

type: array

items:

$ref: 'TS28623\_GenericNrm.yaml#/components/schemas/NpnId-Type'

mdtConfig-Type:

description: MDT config parameters. See details in 3GPP TS 28.622 clause 4.3.30.

type: object

properties:

anonymizationOfMdtData:

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

areaScope:

type: array

items:

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

sensorInformation:

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

immediateMDTConfig:

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

loggedMDTConfig:

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

UECoreMeasConfig-Type:

description: UE level measurements configuration parameters for 5G system. See details in 3GPP TS 28.622 clause 4.3.x.

type: object

properties:

ueCoreMeasurements:

type: string

ueCoreMeasGranularityPeriod:

type: integer

nfTypeToMeasure:

type: string

objectInstances:

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

rootObjectInstances:

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

AreaScope:

oneOf:

- type: array

items:

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

- type: array

items:

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

- type: array

items:

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

- type: array

items:

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

- type: array

items:

$ref: 'TS28623\_GenericNrm.yaml#/components/schemas/NpnId-Type'

Tai:

type: object

properties:

mcc:

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

mnc:

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

tac:

$ref: 'TS28623\_ComDefs.yaml#/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

TraceJob-Attr:

type: object

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

properties:

jobType:

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

plmnTarget:

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

nPNTarget:

$ref: 'TS28623\_GenericNrm.yaml#/components/schemas/NpnId-Type'

listOfTraceMetrics:

type: array

traceReportingConsumerUri:

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

traceCollectionEntityIpAddress:

$ref: 'TS28623\_GenericNrm.yaml#/components/schemas/IpAddr'

traceReference:

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

jobId:

type: string

traceReportingFormat:

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

traceTarget:

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

traceConfig:

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

mdtConfig:

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

ueCoreMeasConfig:

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

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

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

TraceJob-Single:

allOf:

- $ref: 'TS28623\_GenericNrm.yaml#/components/schemas/Top'

- type: object

properties:

attributes:

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

Files:

$ref: 'TS28623\_FileManagementNrm.yaml#/components/schemas/Files-Multiple'

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

TraceJob-Multiple:

type: array

items:

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

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

resources-traceControlNrm:

oneOf:

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

<CODE ENDS>

\*\*\* END OF CHANGE 1 \*\*\*