**3GPP TSG-SA5 Meeting #131-e *S5-203242rev1***

**Online, , 25th May 2020 - 3rd Jun 2020**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.623** | **CR** | **0046** | **rev** | **1** | **Current version:** | **16.3.2** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Rel-16 CR 28.623 Add OpenAPI definitions for the FM control fragment | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | SA5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNRM | | | | |  | ***Date:*** | | | 2020-05-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The FM control fragment has been added to the IS (S5-201548) but not yet to the OpenAPI definition. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The OpenAPI definitions for the FM control fragment are added | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The FM control fragment is not supported in the OpenAPI definition | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | C.4.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | S5-202182 | | | | | | | | |

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

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

openapi: 3.0.1

info:

title: Generic NRM

version: 16.4.0

description: >-

OAS 3.0.1 specification of the Generic NRM

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externalDocs:

description: 3GPP TS 28.623 V16.4.0; Generic NRM

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

paths: {}

components:

schemas:

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

DateTime:

type: string

format: date-time

Dn:

type: string

maxLength: 400

DnList:

type: array

items:

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

Mcc:

type: string

pattern: '^[0-9]{3}$'

AdministrativeState:

type: string

enum:

- LOCKED

- UNLOCKED

OperationalState:

type: string

enum:

- ENABLED

- DISABLED

UsageState:

type: string

enum:

- IDEL

- ACTIVE

- BUSY

RegistrationState:

type: string

enum:

- REGISTERED

- DEREGISTERED

SetOfMcc:

type: array

items:

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

ManagedElementType:

type: string

ManagedElementTypeList:

type: array

items:

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

VnfParameter:

type: object

properties:

vnfInstanceId:

type: string

vnfdId:

type: string

flavourId:

type: string

autoScalable:

type: boolean

VnfParametersList:

type: array

items:

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

SiteLatitude:

type: number

format: float

minimum: -90

maximum: 90

SiteLongitude:

type: number

format: float

minimum: -180

maximum: 180

PeeParameter:

type: object

properties:

siteIdentification:

type: string

siteDescription:

type: string

siteLatitude:

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

siteLongitude:

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

equipmentType:

type: string

environmentType:

type: string

powerInterface:

type: string

PeeParametersList:

type: array

items:

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

MonitoringGPList:

type: array

items:

type: integer

ThresholdInfoList:

type: array

items:

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

ThresholdInfo:

type: object

properties:

measurementType:

type: string

direction:

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

thresholdPack:

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

Direction:

enum:

- Increasing

- Decreasing

ThresholdPack:

type: array

items:

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

ThresholdPackElement:

type: object

properties:

thresholdLevel:

type: integer

thresholdValue:

type: number

hysteresis:

type: number

Operation:

type: object

properties:

name:

type: string

allowedNFTypes:

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

operationSemantics:

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

OperationList:

type: array

items:

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

NFType:

type: string

description: ' NF name defined in TS 23.501'

enum:

- NRF

- UDM

- AMF

- SMF

- AUSF

- NEF

- PCF

- SMSF

- NSSF

- UDR

- LMF

- GMLC

- 5G\_EIR

- SEPP

- UPF

- N3IWF

- AF

- UDSF

- DN

Fqdn:

type: string

OperationSemantics:

type: string

enum:

- REQUEST\_RESPONSE

- SUBSCRIBE\_NOTIFY

SAP:

type: object

properties:

host:

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

port:

type: integer

NFServiceType:

type: string

enum:

- Namf\_Communication

- Namf\_EventExposure

- Namf\_MT

- Namf\_Location

- Nsmf\_PDUSession

- Nsmf\_EventExposure

- Others

HostAddr:

oneOf:

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

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

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

Ipv4Addr:

type: string

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

example: '198.51.100.1'

Ipv4AddrRm:

type: string

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

example: '198.51.100.1'

nullable: true

Ipv6Addr:

type: string

allOf:

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

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

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

Ipv6AddrRm:

type: string

allOf:

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

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

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

nullable: true

Ipv6Prefix:

type: string

allOf:

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

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

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

Uri:

type: string

TransportProtocol:

anyOf:

- type: string

enum:

- TCP

- type: string

Measurements:

type: object

properties:

measurementTypes:

type: array

items:

type: string

gPs:

type: array

items:

type: integer

MeasurementsList:

type: array

items:

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

nullable: true

KPIs:

type: object

properties:

kPINames:

type: array

items:

type: string

gPs:

type: array

items:

type: integer

KPIsList:

type: array

items:

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

nullable: true

Scope:

type: object

properties:

scopeType:

type: string

enum:

- BASE\_ONLY

- BASE\_ALL

- BASE\_NTH\_LEVEL

- BASE\_SUBTREE

scopeLevel:

type: integer

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

Top-Attr:

type: object

properties:

id:

type: string

#-------- 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:

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

priorityLabel:

type: integer

measurementsList:

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

kPIsList:

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

ManagedElement-Attr:

type: object

properties:

dnPrefix:

type: string

managedElementTypeList:

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

userLabel:

type: string

locationName:

type: string

managedBy:

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

vendorName:

type: string

userDefinedState:

type: string

swVersion:

type: string

priorityLabel:

type: integer

measurementsList:

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

SubNetwork-ncO:

type: object

properties:

ManagementNode:

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

MeContext:

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

MeasurementControl:

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

ThresholdMonitor:

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

ThresholdMonitoringCapability:

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

NtfSubscriptionControl:

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

AlarmList:

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

ManagedElement-ncO:

type: object

properties:

MeasurementControl:

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

ThresholdMonitor:

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

ThresholdMonitoringCapability:

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

NtfSubscriptionControl:

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

AlarmList:

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

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

ManagedFunction-Attr:

type: object

properties:

userLabel:

type: string

vnfParametersList:

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

peeParametersList:

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

priorityLabel:

type: integer

measurementsList:

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

EP\_RP-Attr:

type: object

properties:

userLabel:

type: string

farEndEntity:

type: string

measurementsList:

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

ManagedFunction-ncO:

type: object

properties:

MeasurementControl:

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

ThresholdMonitor:

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

ThresholdMonitoringCapability:

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

ManagedNFService:

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

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

ManagedNFService-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

userLabel:

type: string

nFServiceType:

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

sAP:

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

operations:

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

administrativeState:

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

operationalState:

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

usageState:

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

registrationState:

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

ManagementNode-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

userLabel:

type: string

managedElements:

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

vendorName:

type: string

userDefinedState:

type: string

locationName:

type: string

swVersion:

type: string

MeContext-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

dnPrefix:

type: string

MeasurementControl-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

pMAdministrativeState:

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

pMOperationalState:

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

defaultFileBasedGp:

type: integer

defaultFileReportPeriod:

type: integer

defaultStreamBasedGp:

type: integer

defaultFileLocation:

type: string

defaultStreamTarget:

type: string

MeasurementReader:

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

MeasurementReader-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

measurementTypes:

type: string

fileBasedGp:

type: integer

fileReportingPeriod:

type: integer

streamBasedGp:

type: integer

fileLocation:

type: string

streamTarget:

type: string

managementObjectDNsBasic:

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

managementObjectDNs:

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

ThresholdMonitoringCapability-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

supportedMonitoringGPs:

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

ThresholdMonitor-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

thresholdInfoList:

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

monitoringGP:

type: integer

monitoringNotifTarget:

type: string

monitoredIOCName:

type: string

monitoredObjectDNs:

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

NtfSubscriptionControl-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

notificationRecipientAddress:

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

notificationTypes:

type: string

scope:

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

notificationFilter:

type: string

HeartbeatControl:

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

HeartbeatControl-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

heartbeatNtfPeriod:

type: integer

triggerHeartbeatNtf:

type: boolean

AlarmList-Single:

allOf:

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

- type: object

properties:

attributes:

type: object

properties:

administrativeState:

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

operationalState:

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

numOfAlarmRecords:

type: integer

lastModification:

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

alarmRecords:

description: >-

This resource represents a map of alarm records.

The alarmIds are used as keys in the map.

type: object

additionalProperties:

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

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

ManagedNFService-Multiple:

type: array

items:

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

ManagementNode-Multiple:

type: array

items:

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

MeContext-Multiple:

type: array

items:

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

MeasurementControl-Multiple:

type: array

items:

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

MeasurementReader-Multiple:

type: array

items:

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

ThresholdMonitor-Multiple:

type: array

items:

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

NtfSubscriptionControl-Multiple:

type: array

items:

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

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

resources-genericNrm:

oneOf:

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

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

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

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

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

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

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

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

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

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

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