**3GPP TSG-SA5 Meeting #131-e *S5-203386rev4***

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

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **28.623** | **CR** | **0087** | **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 Update PM control fragment (OpenAPI definitions) |
|  |  |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell |
| ***Source to TSG:*** | SA5 |
|  |  |
| ***Work item code:*** | eNRM |  | ***Date:*** | 2020-05-15 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | The stage 2 definitions for the PM control NRM fragment are updated. The changes need to be mirrored into stage 3. |
|  |  |
| ***Summary of change:*** | The OpenAPI definitions for the updated PM control NRM fragment are added. |
|  |  |
| ***Consequences if not approved:*** | The OpenAPI definitions for the PM control NRM fragment are not aligned with stage 2. |
|  |  |
| ***Clauses affected:*** | C.4.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** | **X** |  |  O&M Specifications | TS 28.622 CR 0084 |
|  |  |
| ***Other comments:*** | TS 28.622 CR 0084 in S5-203247 |
|  |  |
| ***This CR's revision history:*** |  |

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| **First modification** |

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

openapi: 3.0.1

info:

 title: Generic NRM

 version: 16.3.0

 description: >-

 OAS 3.0.1 specification of the Generic NRM

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externalDocs:

 description: 3GPP TS 28.623 V16.3.0; Generic NRM

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

paths: {}

components:

 schemas:

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

 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

 - SHUTTING\_DOWN

 - 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

 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

 ReportingCtrl:

 oneOf:

 - type: object

 properties:

 fileReportingPeriod:

 type: integer

 - type: object

 properties:

 fileReportingPeriod:

 type: integer

 fileLocation:

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

 - type: object

 properties:

 fileReportingPeriod:

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

 Scope:

 type: object

 properties:

 scopeType:

 type: string

 enum:

 - BASE\_ONLY

 - BASE\_ALL

 - BASE\_NTH\_LEVEL

 - BASE\_SUBTREE

 scopeLevel:

 type: integer

#-------- Definition of 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

 supportedPerfMetricGroups:

 type: array

 items:

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

 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

 supportedPerfMetricGroups:

 type: array

 items:

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

 SubNetwork-ncO:

 type: object

 properties:

 ManagementNode:

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

 MeContext:

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

 PerfMetricJob:

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

 ThresholdMonitor:

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

 ThresholdMonitoringCapability:

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

 NtfSubscriptionControl:

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

 ManagedElement-ncO:

 type: object

 properties:

 PerfMetricJob:

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

 ThresholdMonitor:

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

 ThresholdMonitoringCapability:

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

 NtfSubscriptionControl:

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

#-------- 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

 supportedPerfMetricGroups:

 type: array

 items:

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

 EP\_RP-Attr:

 type: object

 properties:

 userLabel:

 type: string

 farEndEntity:

 type: string

 supportedPerfMetricGroups:

 type: array

 items:

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

 ManagedFunction-ncO:

 type: object

 properties:

 PerfMetricJob:

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

 PerfMetricJob-Single:

 allOf:

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

 - type: object

 properties:

 attributes:

 type: object

 properties:

 administrativeState:

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

 operationalState:

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

 perfMetricJobGroupId:

 type: string

 performanceMetrics:

 type: array

 items:

 type: string

 granularityPeriod:

 type: integer

 minimum: 1

 objectInstances:

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

 rootObjectInstances:

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

 reportingCtrl:

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

 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

#-------- 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'

 PerfMetricJob-Multiple:

 type: array

 items:

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

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

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

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

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

|  |
| --- |
| **End of modifications** |