**3GPP TSG-SA5 Meeting #155S5-243348**

**Jeju, South Korea, 27 - 31 May 2024 revision of S5-242862**

|  |
| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  **0008** | **rev** | **1** | **Current version:** |  |  |
|  |
| *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 CR TS 28.111 Correct notificationIdSet attribute and add unreliableAlarmScope in stage 3 |
|  |  |
| ***Source to WG:*** | Ericsson-LG Co., LTD |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | eSBMA |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | F |  | ***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 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | Attribute notificationIdSet has different name in TS 28.623 and alignment is needed. Stage 3 in forge uses also the same name as in 28.623. Further same document unreliableAlarmScope attribute is missing in Stage 3.  |
|  |  |
| ***Summary of change:*** | Correct notificationIdSet in attribute table to align with 28.623 and stage 3 of this document. Add unreliableAlarmScope in stage 3 both for YAML and YANG.  |
|  |  |
| ***Consequences if not approved:*** | Mismatch between stage 2 and 3 and incomplete implementation.  |
|  |  |
| ***Clauses affected:*** | 7.3.4.2, 7.4.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:***  | Yang: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1175>YAML: <https://forge.3gpp.org/rep/sa5/MnS/-/merge_requests/1182> |
|  |  |
| ***This CR's revision history:*** |  |

***First change***

#### 7.3.4.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute Name** | **S** | **isReadable**  | **isWritable** | **isInvariant** | **isNotifyable** |
| sourceObjectInstance | M | T | F | F | F |
| notificationIds | M | T | F | F | F |

***Next change***

### 7.4.1 Attribute properties

The following table defines the properties of attributes specified in the present document.

| **Attribute Name** | **Documentation and Allowed Values** | **Properties** |
| --- | --- | --- |
| objectClass | Class of a managed object instance. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| objectInstance | Managed object instance identified by its DN. | type: DNmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| systemDN | Distinguished Name (DN) of an MnSAgent. | type: DNmultiplicity: 0..1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| administrativeState | Administrative state of a managed object instance. The administrative state describes the permission to use or prohibition against using the object instance. The administrative state is set by the MnS consumer. allowedValues: LOCKED, UNLOCKED.  | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: LOCKEDisNullable: False |
| operationalState | Operational state of manged object instance. The operational state describes if an object instance is operable ("ENABLED") or inoperable ("DISABLED"). This state is set by the object instance or the MnS producer and is hence READ-ONLY.allowedValues: ENABLED, DISABLED. | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: DISABLEDisNullable: False |
| alarmRecords | List of alarm records | type: AlarmRecordmultiplicity: \*isOrdered: FalseisUnique: Truedefault value: NoneisNullable: False |
| numOfAlarmRecords | Number of alarm records in the AlarmList.allowedValues: Non-negative numbers. | type: integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| lastModification | Time an alarm record was modified the last time. | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| unreliableAlarmScope  | Identifies, the part of the alarm scope that may not be reliable.If this parameter is equal to the instance carried in systemDN, then all AlarmRecord instances in the AlarmList may not be reliable.If this parameter is equal to some instance represented by MonitoredEntity, then only AlarmRecord related to this instance and its descendants may not be reliable. | type: DNmultiplicity: 0..\*isOrdered: FalseisUnique: TruedefaultValue: NoneisNullable: False |
| alarmId | Identifies an AlarmRecord in the AlarmList. The value is unique within the AlarmList MOI. | type: stringmultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| notificationId | The Id of the last notification sent as a consequence of updating the AlarmRecord. | type: integermultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| alarmRaisedTime | Date and time the alarm was raised. | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| alarmChangedTime | It indicates the last date and time when the AlarmInformation is changed by the alarmed resource. Changes to AlarmInformation caused by invocations of the management service consumer would not change this date and time. | type: DateTimemultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| alarmClearedTime | Date and time the alarm was cleared. | type: DateTimemultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| alarmType | It indicates the type of alarm. Communications Alarm:An alarm of this type is associated with the procedure and/or process required conveying information from one point to another (ITU-T Recommendation X.733 [8]).Quality of Service Alarm:An alarm of this type is associated with degradation in the quality of a service (ITU T Recommendation X.733 [8]).Processing Error Alarm:An alarm of this type is associated with a software or processing fault (ITU T Recommendation X.733 [8]).Equipment Alarm:An alarm of this type is associated with an equipment fault (ITU-T Recommendation X.733 [8]).Environmental Alarm:An alarm of this type is associated with a condition related to an enclosure in which the equipment resides (ITU-T Recommendation X.733 [8]).Security related alarm typesIntegrity Violation:An indication that information may have been illegally modified, inserted or deleted.Operational Violation:An indication that the provision of the requested service was not possible due to the unavailability, malfunction or incorrect invocation of the service.Physical Violation:An indication that a physical resource has been violated in a way that suggests a security attack.Security Service or Mechanism Violation:An indication that a security attack has been detected by a security service or mechanism.Time Domain Violation: An indication that an event has occurred at an unexpected or prohibited time.Allow values:COMMUNICATIONS\_ALARM, QUALITY\_OF\_SERVICE\_ALARM, PROCESSING\_ERROR\_ALARM, EQUIPMENT\_ALARM, ENVIRONMENTAL\_ALARM, INTEGRITY\_VIOLATION, OPERATIONAL\_VIOLATION, PHYSICAL\_VIOLATION, SECURITY\_SERVICE\_OR\_MECHANISM\_VIOLATION, TIME\_DOMAIN\_VIOLATION | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| probableCause | It qualifies alarm and provides further information than alarmType. This attribute value shall be single-value and of simple type such as integer or string. See Annex A for a complete listing. | type: string or integermultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| specificProblem | It provides further refinement to the probableCause. This attribute value shall be single-valued and of simple type such as integer or string. See definition in ITU-T Recommendation X.733 [8] clause 8.1.2.2. | type: string or integermultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| perceivedSeverity | It indicates the relative level of urgency for operator attention. allowedValues: CRITICAL, MAJOR, MINOR, WARNING, INDETERMINATE, CLEARED | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| backedUpStatus | It indicates if an object (the MonitoredEntity) has a back up. See definition in ITU-T Recommendation X.733 [8] clause 8.1.2.4. | type: booleanmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: FalseisNullable: False |
| backUpObject | Backup object of the alarmed object as defined in ITU-T Rec. X. 733 [8] | type: DNmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| trendIndication | It indicates if some observed condition is getting better, worse, or not changing. AllowedValues:MORE\_SEVERE, NO\_CHANGE, LESS\_SEVERE | type: ENUMmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| thresholdInfo | It indicates the crossed threshold information such as:- The identifier of the monitored attribute whose value has crossed a threshold, - The threshold settings, - The observed value that have crossed a threshold, etc. See definition in ITU-T Recommendation X.733 [8] clause 8.1.2.7. See also for information in 1 32.401 [12] clause 5.6. | type: ThresholdInfomultiplicity: \*isOrdered: FalseisUnique: True defaultValue: NoneisNullable: False |
| stateChangeDefinition | It indicates attribute value changes associated with the alarm for state attributes of the monitored entity (state transitions). The change is reported with the name of the state attribute, the new value and an optional old value. See definition in ITU-T Recommendation X.733 [8] clause 8.1.2.11.The content of the attribute is a list of attributeNames and attributeValues. AttributeValues may be complex types.Beside the new value it may contain the old value as well. | type: AttributeValueChangemultiplicity: 0..\*isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| monitoredAttributes | It indicates attributes of the monitored entity and their values at the time the alarm occurred that are of interest for the alarm report. How these attributes are chosen is outside of the scope of the present document. See definition in ITU-T Recommendation X.733 [8] clause 8.1.2.11.The content of the attribute is a list of attributeName- attributeValue pairs. AttributeValues may be complex types. | type: NameValuePairmultiplicity: \*isOrdered: FalseisUnique: True defaultValue: NoneisNullable: False |
| proposedRepairActions | Used if the cause is known and the system being managed can suggest one or more solutions to fix the problem causing the alarm as defined in ITU-T Recommendation X. 733 [8] | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| additionalText | Allows a free form text description to be reported as defined in ITU-T Recommendation X. 733 [8]. | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| additionalInformation | This attribute when present allows the inclusion of a set of vendor specific alarm information in the alarm.A specific condition for this optional population is when an alarm presented by the Management System (e.g. via the user interface) has different values of perceived severity, and / or alarm type, compared with the values presented to the Itf-N.Any other uses of additional information on the alarm and its semantics is outside the scope of the present documentThe content of the attribute is a list of attributeNames and string attributeValues. | type: NameValuePairmultiplicity: \*isOrdered: FalseisUnique: True defaultValue: NoneisNullable: False |
| rootCauseIndicator | It indicates that this AlarmInformation is the root cause of the events captured by the notifications whose identifiers are in the related CorrelatedNotification instances. | type: booleanmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| ackTime | It identifies the time when the alarm has been acknowledged or unacknowledged the last time, i.e. it registers the time when ackState changes. | type: DateTimemultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| ackUserId | It identifies the last user who has changed the acknowledgement state.  | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| ackSystemId | It identifies the system that last changed the ackState of an alarm, i.e. acknowledged or unacknowledged the alarm.  | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| ackState | It identifies the acknowledgement state of an alarm. AllowedValues: ACKNOWLEDGED, UNACKNOWLEDGED | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| clearUserId | It carries the identity of the user who invokes the clearAlarms operation. | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| clearSystemId | Identifier of a system clearing an alarm | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| serviceUser | It identifies the service-user whose request for service provided by the serviceProvider led to the generation of the security alarm. | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| serviceProvider | It identifies the service-provider whose service is requested by the serviceUser and the service request provokes the generation of the security alarm.  | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| securityAlarmDetector | It carries the identity of the detector of the security alarm. | type: stringmultiplicity: 0..1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| comments | List of comments and data about the comments. | type: AlarmCommentmultiplicity: \*isOrdered: FalseisUnique: True defaultValue: NoneisNullable: False |
| correlatedNotifications | List of correlated notifications. | type: CorrelatedNotificationmultiplicity: \*isOrdered: FalseisUnique: True defaultValue: NoneisNullable: False |
| commentTime | Date and Time the comment was created. | type: DateTimemultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| commentUserId | It carries the identification of the user who made the comment. | type: stringmultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| commentSystemId | It carries the identification of the system (Management System) from which the comment is made. That system supports the user that made the comment. | type: stringmultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| commentText | It carries the textual comment. | type: stringmultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| CorrelatedNotification.sourceObjectInstance | It identifies one MonitoredEntity. It is unique within a multivalue attribute based on the CorrelatedNotification data type. | type: DNmultiplicity: 1isOrdered: N/AisUnique: N/A defaultValue: NoneisNullable: False |
| CorrelatedNotification.notificationIds | A list of correlated notificationIds. | type: integermultiplicity: 1..\*isOrdered: FalseisUnique: True defaultValue: NoneisNullable: False |
| NOTEs: none. |

***Next change***

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

\*\*\* OpenAPI/TS28111\_FaultNrm.yaml \*\*\*

<CODE BEGINS>

openapi: 3.0.1

info:

 title: Fault Management NRM

 version: 18.1.0

 description: >-

 OAS 3.0.1 definition of the Fault Supervision MnS

 © 2024, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

 All rights reserved.

externalDocs:

 description: 3GPP TS 28.111; Fault Management

 url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.111/

servers:

 - url: '{MnSRoot}/FaultSupervisionMnS/{MnSversion}'

 variables:

 MnSRoot:

 description: See subclause 4.4.3 of TS 32.158

 default: http://example.com/3GPPManagement

 MnSversion:

 description: Version number of the OpenAPI definition

 default: XXX

paths: {}

components:

 schemas:

 #---- Definition of AlarmRecord ----------------------------------------------------#

 AlarmId:

 type: string

 AlarmType:

 type: string

 enum:

 - COMMUNICATIONS\_ALARM

 - QUALITY\_OF\_SERVICE\_ALARM

 - PROCESSING\_ERROR\_ALARM

 - EQUIPMENT\_ALARM

 - ENVIRONMENTAL\_ALARM

 - INTEGRITY\_VIOLATION

 - OPERATIONAL\_VIOLATION

 - PHYSICAL\_VIOLATION

 - SECURITY\_SERVICE\_OR\_MECHANISM\_VIOLATION

 - TIME\_DOMAIN\_VIOLATION

 ProbableCause:

 description: >-

 The value of the probable cause may be a specific standardized string, or any

 vendor provided string. Probable cause strings are not standardized in the

 present document. They may be added in a future version. Up to then the

 mapping of the generic probable cause strings "PROBABLE\_CAUSE\_001" to

 "PROBABLE\_CAUSE\_005" is vendor specific.

 The value of the probable cause may also be an integer. The mapping of integer

 values to probable causes is vendor specific.

 oneOf:

 - anyOf:

 - type: string

 enum:

 - PROBABLE\_CAUSE\_001

 - PROBABLE\_CAUSE\_002

 - PROBABLE\_CAUSE\_003

 - PROBABLE\_CAUSE\_004

 - PROBABLE\_CAUSE\_005

 - type: string

 - type: integer

 SpecificProblem:

 oneOf:

 - type: string

 - type: integer

 PerceivedSeverity:

 type: string

 enum:

 - INDETERMINATE

 - CRITICAL

 - MAJOR

 - MINOR

 - WARNING

 - CLEARED

 TrendIndication:

 type: string

 enum:

 - MORE\_SEVERE

 - NO\_CHANGE

 - LESS\_SEVERE

 ThresholdHysteresis:

 type: object

 required:

 - high

 properties:

 high:

 oneOf:

 - type: integer

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

 low:

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

 ThresholdLevelInd:

 oneOf:

 - type: object

 properties:

 up:

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

 - type: object

 properties:

 down:

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

 ThresholdInfo:

 type: object

 properties:

 observedMeasurement:

 type: string

 observedValue:

 type: number

 thresholdLevel:

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

 armTime:

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

 required:

 - observedMeasurement

 - observedValue

 CorrelatedNotification:

 type: object

 properties:

 sourceObjectInstance:

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

 notificationIds:

 type: array

 items:

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

 required:

 - sourceObjectInstance

 - notificationIds

 CorrelatedNotifications:

 type: array

 items:

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

 AckState:

 type: string

 enum:

 - ACKNOWLEDGED

 - UNACKNOWLEDGED

 AlarmRecord:

 description: >-

 The alarmId is not a property of an alarm record. It is used as key

 in the map of alarm records instead.

 type: object

 properties:

 # alarmId:

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

 objectInstance:

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

 notificationId:

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

 alarmRaisedTime:

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

 alarmChangedTime:

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

 alarmClearedTime:

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

 alarmType:

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

 probableCause:

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

 specificProblem:

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

 perceivedSeverity:

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

 backedUpStatus:

 type: boolean

 backUpObject:

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

 trendIndication:

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

 thresholdinfo:

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

 correlatedNotifications:

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

 stateChangeDefinition:

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

 monitoredAttributes:

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

 proposedRepairActions:

 type: string

 additionalText:

 type: string

 additionalInformation:

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

 rootCauseIndicator:

 type: boolean

 ackTime:

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

 ackUserId:

 type: string

 ackSystemId:

 type: string

 ackState:

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

 clearUserId:

 type: string

 clearSystemId:

 type: string

 serviceUser:

 type: string

 serviceProvider:

 type: string

 securityAlarmDetector:

 type: string

 AlarmList-Single:

 allOf:

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

 unreliableAlarmScope:

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

 #---- Definition of alarm notifications --------------------------------------------#

 AlarmNotificationTypes:

 type: string

 enum:

 - notifyNewAlarm

 - notifyChangedAlarm

 - notifyChangedAlarmGeneral

 - notifyAckStateChanged

 - notifyCorrelatedNotificationChanged

 - notifyComments

 - notifyClearedAlarm

 - notifyAlarmListRebuilt

 - notifyPotentialFaultyAlarmList

 AlarmListAlignmentRequirement:

 type: string

 enum:

 - ALIGNMENT\_REQUIRED

 - ALIGNMENT\_NOT\_REQUIRED

 NotifyNewAlarm:

 allOf:

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

 - type: object

 required:

 - alarmId

 - alarmType

 - probableCause

 - perceivedSeverity

 properties:

 alarmId:

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

 alarmType:

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

 probableCause:

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

 specificProblem:

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

 perceivedSeverity:

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

 backedUpStatus:

 type: boolean

 backUpObject:

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

 trendIndication:

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

 thresholdInfo:

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

 correlatedNotifications:

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

 stateChangeDefinition:

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

 monitoredAttributes:

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

 proposedRepairActions:

 type: string

 additionalText:

 type: string

 additionalInformation:

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

 rootCauseIndicator:

 type: boolean

 NotifyNewSecAlarm:

 allOf:

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

 - type: object

 required:

 - alarmId

 - alarmType

 - probableCause

 - perceivedSeverity

 - serviceUser

 - serviceProvider

 - securityAlarmDetector

 properties:

 alarmId:

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

 alarmType:

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

 probableCause:

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

 specificProblem:

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

 perceivedSeverity:

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

 correlatedNotifications:

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

 additionalText:

 type: string

 additionalInformation:

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

 rootCauseIndicator:

 type: boolean

 serviceUser:

 type: string

 serviceProvider:

 type: string

 securityAlarmDetector:

 type: string

 NotifyClearedAlarm:

 allOf:

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

 - type: object

 required:

 - alarmId

 - alarmType

 - probableCause

 - perceivedSeverity

 properties:

 alarmId:

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

 alarmType:

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

 probableCause:

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

 perceivedSeverity:

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

 correlatedNotifications:

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

 clearUserId:

 type: string

 clearSystemId:

 type: string

 NotifyChangedAlarm:

 allOf:

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

 - type: object

 required:

 - alarmId

 - alarmType

 - probableCause

 - perceivedSeverity

 properties:

 alarmId:

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

 alarmType:

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

 probableCause:

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

 perceivedSeverity:

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

 NotifyChangedAlarmGeneral:

 allOf:

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

 - type: object

 required:

 - alarmId

 - alarmType

 properties:

 alarmId:

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

 alarmType:

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

 probableCause:

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

 specificProblem:

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

 perceivedSeverity:

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

 correlatedNotifications:

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

 backedUpStatus:

 type: boolean

 backUpObject:

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

 trendIndication:

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

 thresholdInfo:

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

 stateChangeDefinition:

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

 monitoredAttributes:

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

 proposedRepairActions:

 type: string

 additionalText:

 type: string

 additionalInformation:

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

 rootCauseIndicator:

 type: boolean

 changedAlarmAttributes:

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

 NotifyChangedSecAlarmGeneral:

 allOf:

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

 - type: object

 required:

 - alarmId

 - alarmType

 - serviceUser

 - serviceProvider

 - securityAlarmDetector

 properties:

 alarmId:

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

 alarmType:

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

 probableCause:

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

 perceivedSeverity:

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

 correlatedNotifications:

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

 additionalText:

 type: string

 additionalInformation:

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

 rootCauseIndicator:

 type: boolean

 serviceUser:

 type: string

 serviceProvider:

 type: string

 securityAlarmDetector:

 type: string

 changedAlarmAttributes:

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

 NotifyCorrelatedNotificationChanged:

 allOf:

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

 - type: object

 required:

 - alarmId

 - correlatedNotifications

 properties:

 alarmId:

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

 correlatedNotifications:

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

 rootCauseIndicator:

 type: boolean

 NotifyAckStateChanged:

 allOf:

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

 - type: object

 required:

 - alarmId

 - alarmType

 - probableCause

 - perceivedSeverity

 - ackState

 - ackUserId

 properties:

 alarmId:

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

 alarmType:

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

 probableCause:

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

 perceivedSeverity:

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

 ackState:

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

 ackUserId:

 type: string

 ackSystemId:

 type: string

 NotifyComments:

 allOf:

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

 - type: object

 required:

 - alarmId

 - alarmType

 - probableCause

 - perceivedSeverity

 - comments

 properties:

 alarmId:

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

 alarmType:

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

 probableCause:

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

 perceivedSeverity:

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

 comments:

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

 NotifyPotentialFaultyAlarmList:

 allOf:

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

 - type: object

 required:

 - reason

 properties:

 reason:

 type: string

 NotifyAlarmListRebuilt:

 allOf:

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

 - type: object

 required:

 - reason

 properties:

 reason:

 type: string

 alarmListAlignmentRequirement:

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

 #---- Definition of resources ------------------------------------------------------#

 Comment:

 type: object

 properties:

 commentTime:

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

 commentUserId:

 type: string

 commentSystemId:

 type: string

 commentText:

 type: string

 Comments:

 description: >-

 Collection of comments. The comment identifiers are allocated by the

 MnS producer and used as key in the map.

 type: object

 additionalProperties:

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

 #----- Definitions in TS 28.111 for TS 28.532 --------------------------#

 resources-faultNrm:

 oneOf:

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

 #----- Definitions in TS 28.111 for TS 28.532 --------------------------#

<CODE ENDS>

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

***Next change***

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

\*\*\* yang-models/\_3gpp-common-fm.yang \*\*\*

<CODE BEGINS>

module \_3gpp-common-fm {

 yang-version 1.1;

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

 prefix "fm3gpp";

 import ietf-yang-types { prefix yang; }

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

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

 import \_3gpp-common-yang-extensions { prefix yext3gpp; }

 organization "3GPP SA5";

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

 description "Defines a Fault Management model

 Copyright 2024, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI,

 TTA, TTC). All rights reserved.";

 reference "3GPP TS 28.111";

 revision 2024-05-12 {

 description "The definition of the module was from TS 28.623 to TS 28.111";

 reference CR-0008 ;

 }

 revision 2024-03-06 { reference CR-0333 ; }

 revision 2024-02-24 { reference CR-0346; }

 revision 2024-01-18 {

 description "The specification of the file is moved from 28.623 to 28.532";

 reference "28.623 CR-0315";

 }

 revision 2023-09-18 { reference CR-0271; }

 revision 2023-05-10 { reference CR-0250; }

 revision 2022-10-24 { reference CR-0196; }

 revision 2021-08-08 { reference "CR-0132"; }

 revision 2021-06-02 { reference "CR-0130"; }

 revision 2020-06-03 { reference "CR-0091"; }

 revision 2020-02-24 { reference "S5-201365"; }

 feature AcknowledgeByConsumer {

 description "Indicates whether alarm acknowledgement by the consumer is

 supported.";

 }

 typedef eventType {

 type enumeration {

 enum COMMUNICATIONS\_ALARM {

 value 2;

 }

 enum QUALITY\_OF\_SERVICE\_ALARM {

 value 3;

 }

 enum PROCESSING\_ERROR\_ALARM {

 value 4;

 }

 enum EQUIPMENT\_ALARM {

 value 5;

 }

 enum ENVIRONMENTAL\_ALARM {

 value 6;

 }

 enum INTEGRITY\_VIOLATION {

 value 7;

 }

 enum OPERATIONAL\_VIOLATION {

 value 8;

 }

 enum PHYSICAL\_VIOLATION {

 value 9;

 }

 enum SECURITY\_SERVICE\_OR\_MECHANISM\_VIOLATION {

 value 10;

 }

 enum TIME\_DOMAIN\_VIOLATION {

 value 11;

 }

 }

 description "General category for the alarm.";

 }

 typedef severity-level {

 type enumeration {

 enum CRITICAL { value 3; }

 enum MAJOR { value 4; }

 enum MINOR { value 5; }

 enum WARNING { value 6; }

 enum INDETERMINATE { value 7; }

 enum CLEARED { value 8; }

 }

 description "The possible alarm severities";

 }

 grouping AlarmCommentGrp {

 leaf commentTime {

 type yang:date-and-time;

 config false;

 mandatory true;

 description "Date and Time the comment was created.";

 }

 leaf commentUserId {

 type string;

 mandatory true;

 description "It carries the identification of the user who made the

 comment.";

 }

 leaf commentSystemId {

 type string;

 mandatory true;

 description "It carries the identification of the system (

 Management System) from which the comment is made. That system

 supports the user that made the comment.";

 }

 leaf commentText {

 type string;

 mandatory true;

 description "It carries the textual comment.";

 }

 }

 grouping AlarmRecordGrp {

 description "Contains alarm information of an alarmed object instance.

 A new record is created in the alarm list when an alarmed object

 instance generates an alarm and no alarm record exists with the same

 values for objectInstance, alarmType, probableCause and specificProblem.

 When a new record is created the MnS producer creates an alarmId, that

 unambiguously identifies an alarm record in the AlarmList.

 Alarm records are maintained only for active alarms. Inactive alarms are

 automatically deleted by the MnS producer from the AlarmList.

 Active alarms are alarms whose

 a) perceivedSeverity is not CLEARED, or whose

 b) perceivedSeverity is CLEARED and its ackState is not ACKNOWLEDED.";

 leaf alarmId {

 type string;

 mandatory true;

 description "Identifies the alarmRecord";

 yext3gpp:notNotifyable;

 yext3gpp:inVariant;

 }

 leaf objectInstance {

 type types3gpp:DistinguishedName;

 config false ;

 mandatory true;

 yext3gpp:notNotifyable;

 yext3gpp:inVariant;

 }

 leaf notificationId {

 type int32;

 config false ;

 mandatory true;

 description "The Id of the last notification updating the AlarmRecord.";

 yext3gpp:notNotifyable;

 }

 leaf alarmRaisedTime {

 type yang:date-and-time ;

 mandatory true;

 config false ;

 yext3gpp:notNotifyable;

 }

 leaf alarmChangedTime {

 type yang:date-and-time ;

 config false ;

 description "not applicable if related alarm has not changed";

 yext3gpp:notNotifyable;

 }

 leaf alarmClearedTime {

 type yang:date-and-time ;

 config false ;

 description "not applicable if related alarm was not cleared";

 yext3gpp:notNotifyable;

 }

 leaf alarmType {

 type eventType;

 config false ;

 mandatory true;

 description "General category for the alarm.";

 yext3gpp:notNotifyable;

 yext3gpp:inVariant;

 }

 leaf probableCause {

 type union {

 type int32;

 type string;

 }

 config false ;

 mandatory true;

 yext3gpp:notNotifyable;

 yext3gpp:inVariant;

 }

 leaf specificProblem {

 type union {

 type int32;

 type string;

 }

 config false ;

 reference "ITU-T Recommendation X.733 clause 8.1.2.2.";

 yext3gpp:notNotifyable;

 yext3gpp:inVariant;

 }

 leaf perceivedSeverity {

 type severity-level;

 mandatory true;

 description "This is Writable only if producer supports consumer

 to set perceivedSeverity to CLEARED";

 yext3gpp:notNotifyable;

 }

 leaf backedUpStatus {

 type boolean;

 config false ;

 description "Indicates if an object (the MonitoredEntity) has a back

 up. See definition in ITU-T Recommendation X.733 clause 8.1.2.4.";

 yext3gpp:notNotifyable;

 }

 leaf backUpObject {

 type types3gpp:DistinguishedName;

 config false ;

 description "Backup object of the alarmed object as defined in

 ITU-T Rec. X. 733";

 yext3gpp:notNotifyable;

 }

 leaf trendIndication {

 type enumeration {

 enum MORE\_SEVERE;

 enum NO\_CHANGE;

 enum LESS\_SEVERE;

 }

 config false ;

 description "Indicates if some observed condition is getting better,

 worse, or not changing. ";

 reference "ITU-T Recommendation X.733 clause 8.1.2.6.";

 yext3gpp:notNotifyable;

 }

 grouping ThresholdInfoGrp {

 leaf measurementType {

 type string;

 mandatory true;

 }

 leaf direction {

 type enumeration {

 enum INCREASING;

 enum DECREASING;

 }

 mandatory true;

 description "

 If it is 'Increasing', the threshold crossing notification is

 triggered when the measurement value equals or exceeds a

 thresholdValue.

 If it is 'Decreasing', the threshold crossing notification is

 triggered when the measurement value equals or below a

 thresholdValue.";

 }

 leaf thresholdLevel {

 type string;

 }

 leaf thresholdValue {

 type string;

 }

 leaf hysteresis {

 type string;

 description "The hysteresis has a threshold high and a threshold

 low value that are different from the threshold value.

 A hysteresis, therefore, defines the threshold-high and

 threshold-low levels within which the measurementType value is

 allowed to oscillate without triggering the threshold crossing

 notification.";

 }

 }

 list thresholdInfo {

 config false ;

 yext3gpp:notNotifyable;

 description "Indicates the crossed threshold";

 uses ThresholdInfoGrp;

 }

 list stateChangeDefinition {

 key attributeName;

 config false ;

 description "Indicates MO attribute value changes associated with the

 alarm for state attributes of the monitored entity (state transitions).

 The change is reported with the name of the state attribute, the new

 value and an optional old value.

 See definition in ITU-T Recommendation X.733 [4] clause 8.1.2.10.";

 yext3gpp:notNotifyable;

 leaf attributeName {

 type string;

 }

 anydata newValue {

 mandatory true;

 description "The new value of the attribute. The content of this data

 node shall be in accordance with the data model for the attribute.";

 }

 anydata oldValue{

 description "The old value of the attribute. The content of this data

 node shall be in accordance with the data model for the attribute.";

 }

 }

 list monitoredAttributes {

 key attributeName;

 config false ;

 yext3gpp:notNotifyable;

 description "Attributes of the monitored entity and their

 values at the time the alarm occurred that are of interest for the

 alarm report.";

 reference "ITU-T Recommendation X.733 clause 8.1.2.11.";

 leaf attributeName {

 type string;

 }

 anydata value {

 mandatory true;

 description "The value of the attribute. The content of this data

 node shall be in accordance with the data model for the attribute.";

 }

 }

 leaf proposedRepairActions {

 type string;

 config false ;

 description "Indicates proposed repair actions. See definition in

 ITU-T Recommendation X.733 clause 8.1.2.12.";

 yext3gpp:notNotifyable;

 }

 leaf additionalText {

 type string;

 config false ;

 yext3gpp:notNotifyable;

 }

 list additionalInformation {

 key name;

 config false ;

 yext3gpp:notNotifyable;

 description "Vendor specific alarm information in the alarm.";

 uses types3gpp:nameValuePair;

 }

 leaf rootCauseIndicator {

 type boolean;

 default false;

 config false ;

 description "It indicates that this AlarmInformation is the root cause

 of the events captured by the notifications whose identifiers are in

 the related CorrelatedNotification instances.";

 yext3gpp:notNotifyable;

 }

 list comments {

 yext3gpp:inVariant;

 yext3gpp:notNotifyable;

 description "List of comments and data about the comments.";

 key idx;

 leaf idx { type uint32; }

 uses AlarmCommentGrp;

 }

 leaf ackTime {

 if-feature AcknowledgeByConsumer;

 type yang:date-and-time ;

 config false ;

 description "It identifies the time when the alarm has been

 acknowledged or unacknowledged the last time, i.e. it registers the

 time when ackState changes.";

 yext3gpp:notNotifyable;

 }

 leaf ackUserId {

 if-feature AcknowledgeByConsumer;

 type string;

 description "It identifies the last user who has changed the

 Acknowledgement State.";

 yext3gpp:notNotifyable;

 }

 leaf ackSystemId {

 if-feature AcknowledgeByConsumer;

 type string;

 description "It identifies the system (Management System) that last

 changed the ackState of an alarm, i.e. acknowledged or unacknowledged

 the alarm.";

 yext3gpp:notNotifyable;

 }

 leaf ackState {

 if-feature AcknowledgeByConsumer;

 type enumeration {

 enum ACKNOWLEDGED {

 description "The alarm has been acknowledged.";

 }

 enum UNACKNOWLEDGED {

 description "The alarm has unacknowledged or the alarm has never

 been acknowledged.";

 }

 }

 yext3gpp:notNotifyable;

 }

 leaf clearUserId {

 type string;

 description "Carries the identity of the user who invokes the

 clearAlarms operation.";

 yext3gpp:notNotifyable;

 }

 leaf clearSystemId {

 type string;

 yext3gpp:notNotifyable;

 }

 leaf serviceUser {

 type string;

 config false ;

 description "It identifies the service-user whose request for service

 provided by the serviceProvider led to the generation of the

 security alarm.";

 yext3gpp:notNotifyable;

 }

 leaf serviceProvider {

 type string;

 config false ;

 description "It identifies the service-provider whose service is

 requested by the serviceUser and the service request provokes the

 generation of the security alarm.";

 yext3gpp:notNotifyable;

 }

 leaf securityAlarmDetector {

 type string;

 config false ;

 yext3gpp:notNotifyable;

 }

 list correlatedNotifications {

 key sourceObjectInstance;

 description "List of correlated notifications";

 leaf sourceObjectInstance {

 type types3gpp:DistinguishedName;

 }

 leaf-list notificationIds {

 type int32;

 min-elements 1;

 }

 }

 }

 grouping AlarmListGrp {

 description "Represents the AlarmList IOC.";

 leaf administrativeState {

 type types3gpp:BasicAdministrativeState ;

 default LOCKED;

 description "When set to UNLOCKED, the alarm list is updated.

 When the set to LOCKED, the existing alarm records are not

 updated, and new alarm records are not added to the alarm list.";

 }

 leaf operationalState {

 type types3gpp:OperationalState ;

 default DISABLED;

 config false;

 description "The producer sets this attribute to ENABLED, indicating

 that it has the resource and ability to record alarm in AlarmList

 else, it sets the attribute to DISABLED.";

 }

 leaf numOfAlarmRecords {

 type uint32 ;

 config false;

 mandatory true;

 description "The number of alarm records in the AlarmList";

 yext3gpp:notNotifyable;

 }

 leaf lastModification {

 type yang:date-and-time ;

 config false;

 description "The last time when an alarm record was modified";

 yext3gpp:notNotifyable;

 }

 list alarmRecords {

 key alarmId;

 description "List of alarmRecords";

 yext3gpp:notNotifyable;

 uses AlarmRecordGrp;

 }

 leaf-list unreliableAlarmScope {

 type types3gpp:DistinguishedName;

 config false;

 yext3gpp:notNotifyable;

 description "Identifies, the part of the alarm scope that may not be

 reliable.

 If this parameter is equal to the instance carried in systemDN,

 then all AlarmRecord instances in the AlarmList may not be reliable.

 If this parameter is equal to some instance represented by

 MonitoredEntity, then only AlarmRecord related to this instance and

 its descendants may not be reliable.";

 }

 }

 grouping FmSubtree {

 description "Contains FM related classes.

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

 - SubNetwork

 - ManagedElement

 If some YAM wants to augment these classes/list/groupings they must

 augment all user classes!";

 list AlarmList {

 key id;

 max-elements 1;

 yext3gpp:only-system-created;

 description "The AlarmList represents the capability to store and manage

 alarm records. The management scope of an AlarmList is defined by all

 descendant objects of the base managed object, which is the object

 name-containing the AlarmList, and the base object itself.

 AlarmList instances are created by the system or are pre-installed.

 They cannot be created nor deleted by MnS consumers.

 When the alarm list is locked or disabled, the existing alarm records

 are not updated, and new alarm records are not added to the alarm list";

 uses top3gpp:Top\_Grp ;

 container attributes {

 uses AlarmListGrp ;

 }

 }

 }

}

<CODE ENDS>

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

***End of changes***