**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 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:*** | | 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: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| objectInstance | Managed object instance identified by its DN. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| systemDN | Distinguished Name (DN) of an MnSAgent. | type: DN  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: 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: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: LOCKED  isNullable: 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: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: DISABLED  isNullable: False |
| alarmRecords | List of alarm records | type: AlarmRecord  multiplicity: \*  isOrdered: False  isUnique: True  default value: None  isNullable: False |
| numOfAlarmRecords | Number of alarm records in the AlarmList.  allowedValues: Non-negative numbers. | type: integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| lastModification | Time an alarm record was modified the last time. | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: 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: DN  multiplicity: 0..\*  isOrdered: False  isUnique: True  defaultValue: None  isNullable: False |
| alarmId | Identifies an AlarmRecord in the AlarmList. The value is unique within the AlarmList MOI. | type: string  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| notificationId | The Id of the last notification sent as a consequence of updating the AlarmRecord. | type: integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| alarmRaisedTime | Date and time the alarm was raised. | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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: DateTime  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| alarmClearedTime | Date and time the alarm was cleared. | type: DateTime  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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 types  Integrity 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: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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 integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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 integer  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| perceivedSeverity | It indicates the relative level of urgency for operator attention.  allowedValues:  CRITICAL,  MAJOR,  MINOR,  WARNING,  INDETERMINATE,  CLEARED | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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: boolean  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: False  isNullable: False |
| backUpObject | Backup object of the alarmed object as defined in ITU-T Rec. X. 733 [8] | type: DN  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| trendIndication | It indicates if some observed condition is getting better, worse, or not changing.  AllowedValues:  MORE\_SEVERE, NO\_CHANGE, LESS\_SEVERE | type: ENUM  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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: ThresholdInfo  multiplicity: \*  isOrdered: False  isUnique: True defaultValue: None  isNullable: 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: AttributeValueChange  multiplicity: 0..\*  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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: NameValuePair  multiplicity: \*  isOrdered: False  isUnique: True defaultValue: None  isNullable: 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: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| additionalText | Allows a free form text description to be reported as defined in ITU-T Recommendation X. 733 [8]. | type: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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 document  The content of the attribute is a list of attributeNames and string attributeValues. | type: NameValuePair  multiplicity: \*  isOrdered: False  isUnique: True defaultValue: None  isNullable: 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: boolean  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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: DateTime  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| ackUserId | It identifies the last user who has changed the acknowledgement state. | type: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| ackSystemId | It identifies the system that last changed the ackState of an alarm, i.e. acknowledged or unacknowledged the alarm. | type: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| ackState | It identifies the acknowledgement state of an alarm.  AllowedValues: ACKNOWLEDGED, UNACKNOWLEDGED | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| clearUserId | It carries the identity of the user who invokes the clearAlarms operation. | type: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| clearSystemId | Identifier of a system clearing an alarm | type: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| serviceUser | It identifies the service-user whose request for service provided by the serviceProvider led to the generation of the security alarm. | type: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| securityAlarmDetector | It carries the identity of the detector of the security alarm. | type: string  multiplicity: 0..1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| comments | List of comments and data about the comments. | type: AlarmComment  multiplicity: \*  isOrdered: False  isUnique: True defaultValue: None  isNullable: False |
| correlatedNotifications | List of correlated notifications. | type: CorrelatedNotification  multiplicity: \*  isOrdered: False  isUnique: True defaultValue: None  isNullable: False |
| commentTime | Date and Time the comment was created. | type: DateTime  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| commentUserId | It carries the identification of the user who made the comment. | type: string  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: 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: string  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| commentText | It carries the textual comment. | type: string  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| CorrelatedNotification.sourceObjectInstance | It identifies one MonitoredEntity. It is unique within a multivalue attribute based on the CorrelatedNotification data type. | type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A defaultValue: None  isNullable: False |
| CorrelatedNotification.notificationIds | A list of correlated notificationIds. | type: integer  multiplicity: 1..\*  isOrdered: False  isUnique: True defaultValue: None  isNullable: 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

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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***