TSGS#27(05)0021

Source: SA5 (Telecom Management)

Title: CR 32.111-x Fault Management; Alarm IRP

Document for: Approval

Agenda Item: 7.5.3

Doc-1st-Level	Spec	CR	R	Phase	Subject	Ca	VerCr	Doc-2nd-Level	Workitem
SP-050021	32.111-2	038	--	R99	Inclusion of additional event types for duplicate probable causes	F	3.3.0	S5-056057	OAM-NIM
SP-050021	32.111-2	039	--	Rel-4	Inclusion of additional event types for duplicate probable causes	A	4.7.0	S5-056058	OAM-NIM
SP-050021	32.111-2	040	--	Rel-5	Inclusion of additional event types for duplicate probable causes	A	5.5.0	S5-056059	OAM-NIM
SP-050021	32.111-3	042	--	Rel-5	Update the IS-SS relatioship in the Alarm IRP CORBA SS	F	5.5.1	S5-056103	OAM-NIM
SP-050021	32.111-2	041	--	Rel-6	Inclusion of additional event types for duplicate probable causes	A	6.3.0	S5-056060	OAM-NIM
SP-050021	32.111-3	043	--	Rel-6	Update the IS-SS relatioship in the Alarm IRP CORBA SS	F	6.1.0	S5-056104	OAM-NIM
SP-050021	32.111-4	030	--	Rel-5	Add missing definition of getAlarmList return value - Align with the IS (TS 32.111-2)	F	5.8.0	S5-047089	OAM-NIM
SP-050021	32.111-4	031	--	Rel-6	Add missing definition of getAlarmList return value - Align with the IS (TS 32.111-2)	A	6.3.0	S5-056062	OAM-NIM
SP-050021	32.111-2	042	--	Rel-6	Add vendorSpecificAlarmType attribute in alarm information table and notifyNewAlarm	C	6.3.0	S5-056099	OAM-NIM
SP-050021	32.111-3	038	--	Rel-6	IDL incompliant to the style guide	F	6.1.0	S5-056064	OAM-NIM
SP-050021	32.111-3	039	--	Rel-6	Align notifyAckStateChanged parameters mapping table with the IS (TS 32.111-2)	F	6.1.0	S5-056030	OAM-NIM
SP-050021	32.111-3	040	--	Rel-6	Add vendor specific AlarmType attribute in alarm IRP CORBA Solution Set - Align with the IS (TS 32.111-2)	F	6.1.0	S5-056100	OAM-NIM
SP-050021	32.111-3	041	--	Rel-6	Add definitions in IDLs - Align with the IS (TS 32.111-2)	F	6.1.0	S5-056101	OAM-NIM

CR-Form-v7

CHANGE REQUEST

⌘ 32.111-4 CR 030 ⌘rev - ⌘ Current version: 5.8.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [ ] Radio Access Network [X] Core Network [X]

Title:	⌘	Add missing definition of getAlarmList return value - Align with the IS (TS 32.111-2)
Source:	⌘	**SA5** (olaf.pollakowski@siemens.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	19/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction 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.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	It is not defined how to populate the additionalInformation field of alarm notifications emitted during an alarm alignment process. Hence, not all attributes of AlarmInformation are synchronized. This is required however by the IS.
Summary of change:	⌘	It is described how to populate the additionalInformation field of alarm notifications emitted during an alarm alignment process. This requires also the introduction of an alarmRaisedTime and an alarmClearedTime parameter.
Consequences if not approved:	⌘	Not all attributes of AlarmInformation are synchronized during an alarm alaignment. However, this is required by the IS

Clauses affected:	⌘	4, 5, 6, Annex A

Other specs affected: ⌘

Y	N	
	X	Other core specifications
	X	Test specifications
	X	O&M Specifications

⌘

Other comments: ⌘ Rel-6 Miror CR in S5-056062

4 Basic aspects

…

4.1.6 Alignment of alarm conditions over the Itf-N

The IRP Manager is able to trigger the alarm conditions alignment using the Action *getAlarmList*

The following specifies the logical steps of the alignment procedure, by describing a possible implementation. Any other implementation showing the same behaviour on the Itf-N interface is compliant with the present document.

- The Manager sends to the Agent a *getAlarmList* request containing the following information:
  - *alarmAckState*, used to select the alarms from the Agent's alarm list for the current alignment (e.g. all active alarms).
  - *destination*, identifying the destination to which event reports that have passed the filter conditions are sent.
  - *filter*, this optional parameter defines the conditions an alarm notification shall fulfil in order to be forwarded to the Manager. It applies only for the current alignment request.
- After evaluation of the request, the Agent first generates an *alignmentId* value, which unambiguously identifies this alignment process. This value is used by the Manager to correlate alarm reports to the corresponding alignment requests, in case this Manager issues several alarm alignments in parallel.
- The Agent creates a temporary Event Forwarding Discriminator (EFD) instance for the purpose of this alarm alignment, using the parameters *destination* and *filter* received in the request. If the *filter* parameter is absent in the alarm synchronisation request, all alarm notifications are forwarded to the Manager through this EFD, taking into account both the *filter* constraint currently active for the event reporting to the manager having invoked the synchronisation request and the value of the parameter *alarmAckState*.
  The filter is set by the Agent automatically in order to forward only those alarm notifications containing, at the beginning of the field *additionalText*, the string "(ALIGNMENT-<alignmentId>)". The filter must also forward the notification *notifyAlarmAlignmentEnd* indicating the end of the alarm alignment process. The alarm alignment end notifications of other alignment processes shall be filtered out using the *alignmentId* carried by the event information parameter of *notifyAlarmAlignmentEnd*.
- The Agent sends back a *getAlarmList* response, which contains the *alignmentId* described above and the *status* information, indicating the result of the request. (see the message flow in Figure 1).
- The Agent scans now its alarm list. For every alarm, which matches the criteria defined by the *alarmAckState* parameter and the *filter* parameter, the Agent inserts, at the beginning of the field *additionalText*, the string "(ALIGNMENT-<alignmentId>)".
- Depending on the event being reported, the *additionalInformation* field of every alarm notification shall carry the parameters *ackTimeParameter, ackStateParameter, ackUserIdParameter, ackSystemIdParameter, clearUserIdParameter, clearSystemIdParameter, commentsParameter, alarmRaisedTimeParameter* or *alarmClearedTimeParameter.*
- According to ITU-T Recommendation X.734 [6], the Agent forwards these alarm notifications towards all EFDs.

  NOTE: These alarm notifications can reach the current Manager only via the temporary EFD created for the current alignment. They are filtered out:

  a) By all the EFD instances used for "real-time" alarm reporting, due to the presence of the sub-string "ALIGNMENT" in the field *additionalText* (see 3GPP TS 32.304 [10]).

  b) By all temporary EFD instances possibly created for parallel alignments, due to the presence of the unambiguous sub-string "<alignmentId>" in the *additionalText* field.
- At the end of the alarm alignment process the Agent shall send the dedicated notification *notifyAlarmAlignmentEnd* in order to indicate the end of the current alignment process (unambiguously identified by the *alignmentId*). In case the alarm list is empty or no alarm matches the the criteria defined by the

alarmAckState parameter and the *filter* paramter the notification *notifyAlarmAlignmentEnd* shall be emitted directly after the ~~the~~ agent has send the *getAlarmList* response.

- The temporary EFD of the current alarm alignment process shall forward only alarm alignment end notifications carrying in the event information field the *alignmnentId* of this alignment process. All other alarm alignment end notifications shall be filtered out.
- After sending the notification *notifyAlarmAlignmentEnd* the Agent automatically deletes the temporary EFD instance (see figure 1).

At the end of the alarm conditions alignment the acknowledgement state and the comments assigned to each alarm are implicitly synchronised between the IRPAgent and the IRPManager that has requested the alignment.

…

5 GDMO definitions

…

5.6 Parameters

5.6.1 ackStateParameter

```
ackStateParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.AckState;
   BEHAVIOUR
      ackStateParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 1};

ackStateParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in alarm notifications reporting the
   acknowledgement/unacknowledgement of an alarm or in case these are emitted for alarm
   synchronisation purposes.This parameter models the optional additionalInformation field of the
   alarm notification. If present, it informs the IRPManagerNM about the current acknowledgement
   state of the present alarm.";
```

5.6.2 ackSystemIdParameter

```
ackSystemIdParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.SystemId;
   BEHAVIOUR
      ackSystemIdParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 2};

ackSystemIdParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in alarm notifications reporting the
   acknowledgement/unacknowledgement of an alarm or in case these are emitted for alarm
   synchronisation purposes.This parameter models the optional additionalInformation field of the
   alarm notification. If present, it informs the IRPManagerNM about the identifier of the
   management system where the present alarm has been acknowledged.";
```

5.6.3 ackTimeParameter

```
ackTimeParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.AckTime;
   BEHAVIOUR
      ackTimeParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 3};

ackTimeParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in alarm notifications reporting the
   acknowledgement/unacknowledgement of an alarm or in case these are emitted for alarm
   synchronisation purposes.This parameter models the optional additionalInformation field of the
   alarm notification. If present, it informs the IRPManagerNM about the time the present alarm has
   been acknowledged by the Agent.";
```

5.6.4 ackUserIdParameter

```
ackUserIdParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
```

```
      TS32-111-4TypeModule.UserId;
   BEHAVIOUR
      ackUserIdParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 4};

ackUserIdParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried bymodels the optional additionalInformation infield of the alarm
   notifications reporting the acknowledgement/unacknowledgement of an alarm or in case these are
   emitted for alarm synchronisation purposes. If present, it informs the IRPManagerNM about the
   identifier of the user who acknowledged the present alarm.";
```

5.6.5 clearUserIdParameter

```
clearUserIdParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.UserId;
   BEHAVIOUR
      clearUserIdParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 5};

clearUserIdParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in the alarm notifications reporting the
   clearance of an alarm. It identifies the user that has invoked the clearAlarms operation, that
   has led to the clearance of the reported alarm clearance.";
```

5.6.6 clearSystemIdParameter

```
clearSystemIdParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.UserId;
   BEHAVIOUR
      clearSystemIdParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 6};

clearSystemIdParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in the alarm notifications reporting the
   clearance of an alarm. It identifies the system on which the IRPManager, where the clearAlarms
   operation that has led to the clearance of the reported alarm, is running";
```

5.6.7 commentsParameter

```
commentsParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.AlarmComments;
   BEHAVIOUR
      commentsParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 7};

commentsParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by the attribute additionalInformation in alarm notifications
   reporting the addition of a Comment or in case these are emitted for alarm synchronisation
   purposes. If present, it informs the IRPManager about the comments assigned to an alarm. Every
   single comment includes the following data: commentText, commentTime, commentUserId and
   (optionally) commentSystemId.";
```

5.6.8 alarmRaisedTimeParameter

```
alarmRaisedTimeParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.AlarmRaisedTime;
```

```
    BEHAVIOUR
        alarmRaisedTimeParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 80603};

alarmRaisedTimeParameterBehaviour BEHAVIOUR
DEFINED AS
    "This parameter is carried by additionalInformation in alarm notifications in case these are
    emitted for alarm synchronisation purposes. If present, it informs the IRPManager about the time
    the present alarm has been raised.";
```

5.6.9 alarmClearedTimeParameter

```
alarmClearedTimeParameter PARAMETER
    CONTEXT
        TS32-111-4TypeModule.AlarmInfo.additionalInformation;
    WITH SYNTAX
        TS32-111-4TypeModule.AlarmClearedTime;
    BEHAVIOUR
        alarmClearedTimeParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 90603};

alarmClearedTimeParameterBehaviour BEHAVIOUR
DEFINED AS
    "This parameter is carried by additionalInformation in alarm notifications in case these are
    emitted for alarm synchronisation purposes. If present, it informs the IRPManager about the time
    the present alarm has been cleared.";
```

6 ASN.1 definitions for Alarm IRP

```
TS32-111-4TypeModule {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-Operation-
Maintenance(3) ts-32-111(111) part4(4) informationModel(0) asn1Module(2) version1(1)}

DEFINITIONS IMPLICIT TAGS ::=
BEGIN

--EXPORTS everything

IMPORTS

NotificationIdentifier, Destination, EventTime, ProbableCause, PerceivedSeverity
   FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 1}

AlarmInfo
   FROM Notification-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 2}

CMISFilter, ObjectInstance, ObjectClass, EventTypeId
   FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) modules(0) protocol(3)};

baseNodeUMTS                 OBJECT IDENTIFIER ::= {itu-t (0) identified-organization (4)
                                                    etsi (0) mobileDomain (0)
                                                    umts-Operation-Maintenance (3)}

ts32-111Prefix               OBJECT IDENTIFIER ::= {baseNodeUMTS ts-32-111(111)}
ts32-111Part4                OBJECT IDENTIFIER ::= {ts32-111Prefix part4(4)}
ts32-111-4InfoModel          OBJECT IDENTIFIER ::= {ts32-111Part4 informationModel(0)}

ts32-111AlarmObjectClass     OBJECT IDENTIFIER ::= {ts32-111-4InfoModel managedObjectClass(3)}
ts32-111AlarmPackage         OBJECT IDENTIFIER ::= {ts32-111-4InfoModel package(4)}
ts32-111AlarmParameter       OBJECT IDENTIFIER ::= {ts32-111-4InfoModel parameter(5)}
ts32-111AlarmAttribute       OBJECT IDENTIFIER ::= {ts32-111-4InfoModel attribute(7)}
ts32-111AlarmAction          OBJECT IDENTIFIER ::= {ts32-111-4InfoModel action(9)}
ts32-111AlarmNotification    OBJECT IDENTIFIER ::= {ts32-111-4InfoModel notification(10)}



-- Start of 3GPP SA5 own definitions

AckErrorList ::= SET OF ErrorInfo

AlarmReference ::= SEQUENCE
   {
   moi                          ObjectInstance OPTIONAL, -- absent if scope of uniquness of
                                                         -- notificationId is across IRPAgent
   notificationIdentifier       NotificationIdentifier
   }

AckOrUnackAlarmsInfo ::= SEQUENCE
   {
   alarmReferenceList           SET OF AlarmReference,
   ackUserId                    UserId,
   ackSystemId                  SystemId OPTIONAL
   }

AckOrUnackAlarmsReply ::= SEQUENCE
   {
   status                       ErrorCauses,
   errorAlarmReferenceList      AckErrorList
   }

AckState ::= ENUMERATED
   {
   acknowledged    (0),
   unacknowledged  (1)
   }

AckTime ::= GeneralizedTime

AlarmAlignmentEndStatus ::= ENUMERATED
   {
   successfulCompletion  (0),    -- the alarm alignment has been completed successfully
   aborted               (1),    -- the alarm alignment has been aborted via the invocation
```

```
                                -- of the operation abortGetAlarmList
   error                (255)   -- the alarm alignment has been aborted due to an internal error
   }

AlarmChoice ::= ENUMERATED
   {
   allAlarms                  (0),
   allActiveAlarms            (1),
   allActiveAndAckAlarms      (2),
   allActiveAndUnackAlarms    (3),
   allClearedAndUnackAlarms   (4),
   allUnackAlarms             (5)
   }

AlarmClearedTime ::= GeneralizedTime

AlarmComments ::= SET OF SingleAlarmComment

AlarmAlignmentEndStatus ::= ENUMERATED
   {
   successfulCompletion  (0),   -- the alarm alignment has been completed successfully
   aborted               (1),   -- the alarm alignment has been aborted via the invocation
                                -- of the operation abortGetAlarmList
   error                (255)   -- the alarm alignment has been aborted due to an internal error
   }

AlarmRaisedTime ::= GeneralizedTime

AlarmsCountSummary ::= SEQUENCE
...
```

Annex A (informative): List of assigned Object Identifiers

This annex provides a list with all object identifiers that have been assigned in TS 32.111-4 up to the latest version of Release 5. These object identifiers shall not be assigned to new objects.

Basic Object Name	Name and OID of the current TS Version	Name and OIDs of previous TS Versions
Managed Object Classes		
alarmControl	Name: alarmControlR0508 OID : ts32-111AlarmObjectClass 10508	Name: alarmControl OID : ts32-111AlarmObjectClass 1
Packages		
alarmControlBasicPackage	Name: alarmControlBasicPackageR0508 OID : ts32-111AlarmPackage 10508	Name: alarmControlBasicPackage OID : ts32-111AlarmPackage 1
alarmCountPackage	Name: alarmCountPackage OID : ts32-111AlarmPackage 2	--
alarmAcknowledgementPackage	Name: alarmAcknowledgementPackage OID : ts32-111AlarmPackage 3	--
alarmUnacknowledgementPackage	Name: alarmUnacknowledgementPackage OID : ts32-111AlarmPackage 4	--
alarmCommentPackage	Name: alarmCommentPackage OID : ts32-111AlarmPackage 5	--
alarmIRPVersionPackage	Name: alarmIRPVersionPackage OID : ts32-111AlarmPackage 6	--
alarmProfilePackage	Name: alarmProfilePackage OID : ts32-111AlarmPackage 7	--
alarmPotentialFaultyAlarmListPackage	Name: alarmPotentialFaultyAlarmListPackageR80602 OID : ts32-111AlarmPackage 80602	Name: alarmPotentialFaultyAlarmListPackage OID : ts32-111AlarmPackage 8
alarmClearPackage	Name: alarmClearPackage OID : ts32-111AlarmPackage 9	--
x721AlarmNotificationsPackage	Name: x721AlarmNotificationsPackage OID : ts32-111AlarmPackage 10	--
Actions		
acknowledgeAlarms	Name: acknowledgeAlarms OID : ts32-111AlarmAction 1	--
getAlarmCount	Name: getAlarmCount OID : ts32-111AlarmAction 2	--
getAlarmList	Name: getAlarmList OID : ts32-111AlarmAction 3	--
setComment	Name: setComment OID : ts32-111AlarmAction 4	--
getAlarmIRPVersion	Name: getAlarmIRPVersion OID : ts32-111AlarmAction 5	--
getAlarmIRPNotificationProfile	Name: getAlarmIRPNotificationProfile OID : ts32-111AlarmAction 6	--
getAlarmIRPOperationProfile	Name: getAlarmIRPOperationProfile OID : ts32-111AlarmAction 7	--
unacknowledgeAlarms	Name: unacknowledgeAlarms OID : ts32-111AlarmAction 8	--
clearAlarms	Name: clearAlarms OID : ts32-111AlarmAction 9	--
Notifications		
notifyAlarmListRebuilt	Name: notifyAlarmListRebuiltR0602 OID : ts32-111AlarmNotification 10602	Name: notifyAlarmListRebuilt OID : ts32-111AlarmNotification 1
notifyComments	--	Name: notifyComments OID : ts32-111AlarmNotification 2
notifyPotentialFaultyAlarmList	Name: notifyPotentialFaultyAlarmListR0602 OID : ts32-111AlarmNotification 30602	Name: notifyPotentialFaultyAlarmList OID : ts32-111AlarmNotification 3
notifyAlarmAlignmentEnd	Name: notifyAlarmAlignmentEndR0602 OID : ts32-111AlarmNotification 40602	Name: notifyAlarmAlignmentEnd OID : ts32-111AlarmNotification 4
Attributes		

alarmControlId	Name: alarmControlId OID : ts32-111AlarmAttribute 1	--
alarmsCountSummary	Name: alarmsCountSummary OID : ts32-111AlarmAttribute 2	--
supportedAlarmIRPVersions	Name: supportedAlarmIRPVersions OID : ts32-111AlarmAttribute 3	--
rebuiltObjectClass	Name: rebuiltObjectClass OID : ts32-111AlarmAttribute 40602	--
rebuiltObjectInstance	Name: rebuiltObjectInstance OID : ts32-111AlarmAttribute 50602	--
potentialFaultyObjectClass	Name: potentialFaultyObjectClass OID : ts32-111AlarmAttribute 60602	--
potentialFaultyObjectInstance	Name: potentialFaultyObjectInstance OID : ts32-111AlarmAttribute 70602	--
alignmentId	Name: alignmentId OID : ts32-111AlarmAttribute 80602	--
alarmAlignmentEndStatus	Name: alarmAlignmentEndStatus OID : -111AlarmAttribute 90602	--
Parameters		
ackStateParameter	Name: ackStateParameter OID : ts32-111AlarmParameter 1	--
ackSystemIdParameter	Name: ackSystemIdParameter OID : ts32-111AlarmParameter 2	--
ackTimeParameter	Name: ackTimeParameter OID : ts32-111AlarmParameter 3	--
ackUserIdParameter	Name: ackUserIdParameter OID : ts32-111AlarmParameter 4	--
clearUserIdParameter	Name: clearUserIdParameter OID : ts32-111AlarmParameter 5	--
clearSystemIdParameter	Name: clearSystemIdParameter OID : ts32-111AlarmParameter 6	--
commentsParameter	Name: commentsParameter OID : ts32-111AlarmParameter 7	--
alarmRaisedTimeParameter	Name: alarmRaisedTimeParameter OID : ts32-111AlarmParameter 80603	--
alarmClearedTimeParameter	Name: alarmClearedTimeParameter OID : ts32-111AlarmParameter 90603	--
Name Bindings		

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Dec 2003	S_22	SP-030627	023	--	Add missing parts for the support of security alarms	5.6.0	5.7.0
Dec 2003	S_22	SP-030627	024	--	Mapping completion of getAlarmList	5.6.0	5.7.0
Jan 2004	--	--	--	--	Editorial (Tables & CMIP code cosmetics)	5.7.0	5.7.1
Sep 2004	S_25	SP-040561	027	--	Align with the IS 32.111-2 the possibility to apply filters to notification parameters	5.7.1	5.8.0

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-056030***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7

CHANGE REQUEST

⌘ **32.111-3** **CR** **039** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Align notifyAckStateChanged parameters mapping table with the IS (TS 32.111-2)
Source:	⌘	**SA5** (Nortel – Suzèle Lariven – lariven@nortelnetworks.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	01/10/2004
Category:	⌘	F
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Alignment with 32.111-2.
Summary of change:	⌘	The dedicated ackTime parameter is removed so that the ackTime is carried only once in eventTime.
Consequences if not approved:	⌘	Inconsistency between Alarm IRP IS and Alarm IRP CORBA Solution Set.

Clauses affected:	⌘	5.3

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

Change in Clause 5.3

5.3 Notification parameter mapping

Reference 3G TS 32.111-2 [6] defines semantics of parameters carried in notifications. The following tables indicate the mapping of these parameters to their OMG CORBA Structured Event (defined in OMG Notification Service [1]) equivalents. The composition of OMG Structured Event, as defined in the OMG Notification Service [1], is:

```
Header
      Fixed Header
           domain_name
           type_name
           event_name
      Variable Header
Body
      filterable_body_fields
      remaining_body
```

The following tables list all OMG Structured Event attributes in the second column. The first column identifies the Alarm IRP: IS [6] defined notification parameters.

[…]

Table 13: Mapping for `notifyAckStateChanged`

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding IS attribute.	domain_name		See that of notifyNewAlarm.
notificationType	type_name	M	This is the NOTIFY_FM_ACK_STATE_CHANGED of interface NotificationType of module AlarmIRPConstDefs.
alarmType	event_name	M	See that of notifyNewAlarm.
There is no corresponding IS attribute.	variable Header		
objectClass, objectInstance	One NV pair of filterable_ body_fields	M	See that of notifyNewAlarm.
notificationId	One NV pair of remaining_body	M	See that of notifyNewAlarm.
eventTime	One NV pair of filterable_ body_fields	M	See that of notifyNewAlarm.
systemDN	One NV pair of filterable_ body_fields	M	See that of notifyNewAlarm.
probableCause	One NV pair of filterable_ body_fields	M	See that of notifyNewAlarm.
perceived Severity	One NV pair of filterable_ body_fields	M	See that of notifyNewAlarm.
alarmId	One NV pair of remaining_body	M	See that of notifyNewAlarm.
~~ackTime~~	~~One NV pair of remaining_body~~	~~M~~	~~Name of NV pair is the ACK_TIME of interface AttributeNameValue of module AlarmIRPConstDefs.~~ ~~Value of NV pair is a IRPTime of module ManagedGenericIRPConstDefs.~~
ackUserId	One NV pair of remaining_body	M	Name of NV pair is the ACK_USER_ID of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
ackSystemId	One NV pair of remaining_body	O	Name of NV pair is the ACK_SYSTEM_ID of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
ackState	One NV pair of remaining_body	M	Name of NV pair is the ACK_STATE of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a short defined by interface AckState of module AlarmIRPConstDefs.

End of Change in Clause 5.3

End of Document

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2000	S_07	SP-000012	--	--	Approved at TSG SA #7 and placed under Change Control	2.0.0	3.0.0
Mar 2000	--	--	--	--	cosmetic	3.0.0	3.0.1
Jun 2000	S_08	SP-000253	005	--	Split of TS - Part 3: Alarm Integration Reference Point (IRP): CORBA Solution Set (SS)	3.0.1	3.1.0
Sep 2000	S_09	SP-000439	003	--	Correct push_structured_event of push_structured_events	3.1.0	3.2.0
Sep 2000	S_09	SP-000439	004	--	Remove the use of interface to encapsulate const strings	3.1.0	3.2.0
Dec 2000	S_10	SP-000521	001	1	Allow "Structured Event Filterable Body Fields" to be absent if parameters are not used	3.2.0	3.3.0
Dec 2000	S_10	SP-000521	002	1	Specific behaviour of the Iterator	3.2.0	3.3.0
Dec 2000	S_10	SP-000521	005	--	Inconsistent qualifiers	3.2.0	3.3.0
Mar 2001	S_11	SP-010032	006	--	Missing how "Notify Alarm List Rebuilt" reason attribute is located in Structured Event	3.3.0	3.4.0
Mar 2001	S_11	SP-010032	007	--	Use alarmInformationBody in additionalInformation.ackTime	3.3.0	3.4.0
Jun 2001	S_12	SP-010239	008	--	Probable Cause "Intrusion Detection" is missing	3.4.0	3.5.0
Jun 2001	S_12	SP-010282	009	--	Alarm IRP: CORBA SS Rel4 - Addition of feature.	3.5.1	4.0.0
Sep 2001	S_13	SP-010469	010	--	Correction of BadAlarmInformationIdSeq parameter type	4.0.0	4.1.0
Sep 2001	S_13	SP-010474	011	--	Definition of thresholdInfo in Alarm IRP: CORBA SS	4.0.0	4.1.0
Sep 2001	S_13	SP-010522	012	--	Eliminate guesses on IDL file names in Alarm IRP: CORBA SS	4.0.0	4.1.0
Mar 2002	S_15	SP-020015	014	--	Correction of erroneous and addition of missing mapping tables	4.1.0	4.2.0
Mar 2002	S_15	SP-020028	015	--	Addition of "perceivedSeverity" as parameter to "acknowledgeAlarms" operation (CORBA SS)	4.1.0	4.2.0
Mar 2002	S_15	--	--	--	Automatic upgrade to Rel-5 (no Rel-5 CR)	4.2.0	5.0.0
Sep 2002	S_17	SP-020476	017	--	Addition of "indeterminate" probable cause in IDL definition	5.0.0	5.1.0
Sep 2002	S_17	SP-020477	018	--	Add clearAlarm and other updates	5.0.0	5.1.0
Sep 2002	S_17	SP-020478	021	--	Add security alarms support in Alarm IRP: CORBA SS	5.0.0	5.1.0
Sep 2002	S_17	SP-020479	019	--	Add optional string parameters in CORBA Solution Set	5.0.0	5.1.0
Dec 2002	S_18	SP-020751	023	--	Add additionalInformation parameter in notification in Alarm IRP: CORBA SS (Alignment with Information Service in Rel-5 32111-2)	5.1.0	5.2.0
Dec 2002	S_18	SP-020752	024	--	Add notifyPotentialFaultyAlarmList in Alarm IRP: CORBA SS (Alignment with Information Service in Rel-5 32111-2)	5.1.0	5.2.0
Mar 2003	S_19	SP-030064	026	--	Correction of CORBA ALARM_IRP_VERSION in line with adopted Rel-5 policy	5.2.0	5.3.0
Mar 2003	S_19	SP-030062	028	--	Add missing ITU-T M.3100 Probable Cause values & Correct CORBA IDL errors	5.2.0	5.3.0
Mar 2003	S_19	SP-030138	029	--	Correction of CORBA IDL Optional clearSystemId	5.2.0	5.3.0
Jun 2003	S_20	SP-030276	030	--	Correction of CORBA type definition in struct "AlarmInformationIdAndSev"	5.3.0	5.4.0
Dec 2003	S_22	SP-030626	031	--	Add missing IDL definitions to support Security Alarms	5.4.0	5.5.0
Dec 2003	S_22	SP-030628	032	--	Remove references to GSM 12.11	5.5.0	6.0.0
Dec 2003	S_22	SP-030629	033	--	Align operation getAlarmList with the notification notifyAlarmListRebuilt	5.5.0	6.0.0
Dec 2004	S_26	SP-040791	034	--	Remove redundant ackTime parameter in notifyAckStateChanged	6.0.0	6.1.0
Dec 2004	S_26	SP-040791	035	--	Correction of probable cause definition for AlarmIRP IDL file.	6.0.0	6.1.0
Dec 2004	S_26	SP-040791	036	--	Add mandatory exception operationNotSupported for optional operations in AlarmIRP - Align IDL style with IDL Style Guide in 32.150	6.0.0	6.1.0
Dec 2004	S_26	SP-040791	037	--	Correction of filterable parameters - Align with the IS in 32.111-2	6.0.0	6.1.0

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-056057***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.111-2** **CR** **038** ⌘ **rev** **-** ⌘ Current version: **3.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☒

Title:	⌘	Inclusion of additional event types for duplicate probable causes
Source:	⌘	SA5 (mohanr@lucent.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	18/02/2005
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	The event types for certain probable causes duplicated from other specifications are not correct. They do not represent the value in the main ITU/GSM spec.
Summary of change:	⌘	The event types with errors have been corrected.
Consequences if not approved:	⌘	If not approved, the 3GPP spec is not aligned to the value in the original ITU-T/GSM specification. This can result in different interpretations leading to interoperability issues.

Clauses affected:	⌘	Annex B

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
	X		O&M Specifications	Rel-4/5/6 TS 32.111-2

Other comments:	⌘	Rel-4/Rel-5/Rel-6 mirror CRs in S5-056058, S5-056059 & S5-056060.

Change in Clause Annex B

Annex B (normative): Probable Causes

This appendix lists probable causes and their corresponding event types.

Sources of these probable causes are ITU-T Recommendation M.3100 [11], ITU-T Recommendation X.721 [3], ITU-T Recommendation X.733 [2], ITU-T Recommendation X.736 [15] and GSM 12.11 [4].

The list may be extended in the future, e.g. with UMTS-specific probable causes.

Table B.1: Probable Causes from ITU-T Recommendation M.3100 [11]

M.3100 Probable cause	Event type
Indeterminate	Unknown
Alarm Indication Signal (AIS)	Communications
Broadcast Channel Failure	Communications
Call Setup Failure	Communications
Communications Receive Failure	Communications
Communications Transmit Failure	Communications
Connection Establishment Error	Communications
Degraded Signal	Communications
Demodulation Failure	Communications
Far End Receiver Failure (FERF)	Communications
Framing Error	Communications
Invalid Message Received	Communications
Local Node Transmission Error	Communications
Loss Of Frame (LOF)	Communications
Loss Of Pointer (LOP)	Communications
Loss Of Signal (LOS)	Communications
Modulation Failure	Communications
Payload Type Mismatch	Communications
Transmission Error	Communications
Remote Alarm Interface	Communications
Remote Node Transmission Error	Communications
Routing Failure	Communications
Excessive Bit Error Rate (EBER)	Communications
Path Trace Mismatch	Communications
Unavailable	Communications
Signal Label Mismatch	Communications
Loss Of Multi Frame	Communications
Antenna Failure	Equipment
Back Plane Failure	Equipment
Battery Charging Failure	Equipment
Data Set Problem	Equipment
Disk Failure	Equipment
Equipment Identifier Duplication	Equipment
External IF Device Problem	Equipment
Frequency Hopping Failure	Equipment
IO Device Error	Equipment
Line Card Problem	Equipment
Loss Of Redundancy	Equipment
Loss Of Synchronization	Equipment
Multiplexer Problem	Equipment
NE Identifier Duplication	Equipment
Power Problem	Equipment
Power Supply Failure	Equipment
Processor Problem	Equipment
Protection Path Failure	Equipment

M.3100 Probable cause	Event type
Protecting Resource Failure	Equipment
Protection Mechanism Failure	Equipment
Real Time Clock Failure	Equipment
Receiver Failure	Equipment
Replaceable Unit Missing	Equipment
Replaceable Unit Type Mismatch	Equipment
Signal Quality Evaluation Failure	Equipment
Synchronization Source Mismatch	Equipment
Terminal Problem	Equipment
Timing Problem	Equipment
Transceiver Failure	Equipment
Transmitter Failure	Equipment
Trunk Card Problem	Equipment
Replaceable Unit Problem	Equipment
Air Compressor Failure	Environmental
Air Conditioning Failure	Environmental
Air Dryer Failure	Environmental
Battery Discharging	Environmental
Battery Failure	Environmental
Commercial Power Failure	Environmental
Cooling Fan Failure	Environmental
Cooling System Failure	Environmental
Engine Failure	Environmental
Fire Detector Failure	Environmental
Fuse Failure	Environmental
Generator Failure	Environmental
Low Battery Threshold	Environmental
Pump Failure	Environmental
Rectifier Failure	Environmental
Rectifier High Voltage	Environmental
Rectifier Low F Voltage	Environmental
Ventilation System Failure	Environmental
Enclosure Door Open	Environmental
Explosive Gas	Environmental
External Equipment Failure	Environmental
External Point Failure	Environmental
Fire	Environmental
Flood	Environmental
High Humidity	Environmental
High Temperature	Environmental
High Wind	Environmental
Ice Build Up	Environmental
Intrusion Detection	Environmental
Low Fuel	Environmental
Low Humidity	Environmental
Low Cable Pressure	Environmental
Low Temperature	Environmental
Low Water	Environmental
Smoke	Environmental
Toxic Gas	Environmental
Application Subsystem Failure	Processing Error
Configuration Or Customisation Error	Processing Error
Database Inconsistency	Processing Error
File Error	Processing Error
Storage Capacity Problem	Processing Error
Memory Mismatch	Processing Error
Corrupt Data	Processing Error
Loss of Real Time	Processing Error
Out Of CPU Cycles	Processing Error
Out Of Memory	Processing Error
Reinitialized	Processing Error
Software Environment Problem	Processing Error
Software Error	Processing Error
Software Download Failure	Processing Error

M.3100 Probable cause	Event type
Timeout Expired	Processing Error
Underlaying Resources Unavailable	Processing Error
Version Mismatch	Processing Error
Bandwidth Reduced	Quality of service
Congestion	Quality of service
Excessive Error Rate	Quality of service
Excessive Response Time	Quality of service
Excessive Retransmission Rate	Quality of service
Reduced Logging Capability	Quality of service
System Resources Overload	Quality of service

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Table B.4 identifies probable causes that are defined by more than one standard. This is for information only.

Table B.4: Duplicated Probable Causes

Duplicated Probable Cause	GSM 12.11	X.721 X.733	X.736	M.3100	Event Type
Broadcast Channel Failure	X			X	Communications
Call Establishment Failure (X.721/X.733) Call Setup Failure (M.3100)		X		X	Communications
Connection Establishment Error	X			X	Communications
Degraded Signal		X		X	Communications
Framing Error		X		X	Communications
Invalid Message Received	X			X	Communications
Local Node Transmission Error		X		X	Communications
Loss of Frame		X		X	Communications
Loss of Signal		X		X	Communications
Remote Node Transmission Error		X		X	Communications
Routing Failure	X			X	Communications
Antenna Failure (M.3100) Antenna Problem (GSM 12.11)	X			X	Equipment
Battery Charging Failure (M.3100) Battery Charging Fault (GSM 12.11)	X			X	Equipment
Disk Failure (M.3100) Disk Problem (GSM 12.11)	X			X	Equipment
Equipment Failure (GSM 12.11) Equipment Malfunction (X.721/X.733)	X	X			Equipment
Frequency Hopping Failure	X			X	Equipment
IO Device Error (M.3100) Input/Output Device Error (X.721/X.733)		X		X	Equipment
Loss Of Redundancy (M.3100) Lost Redundancy (GSM 12.11)	X			X	Equipment
Loss Of Synchronization	X			X	Equipment
Multiplexer Problem		X		X	Equipment
Power Problem		X		X	Equipment
Power Supply Failure	X			X	Equipment
Processor Problem		X		X	Equipment
Receiver Failure	X	X		X	Equipment
Signal Quality Evaluation Failure (M.3100) Signal Quality Evaluation Fault (GSM 12.11)	X			X	Equipment
Timing Problem		X		X	Equipment
Transceiver Failure (M.3100) Transceiver Problem (GSM 12.11)	X			X	Equipment
Transmitter Failure	X	X		X	Equipment
Cooling System Failure	X			X	Environmental
External Equipment Failure	X			X	Environmental
Enclosure Door Open		X		X	Environmental
Fan Failure (GSM 12.11) Cooling Fan Failure (M.3100)	X			X	Environmental
Fire Detected (X.721/X.733) Fire (M.3100)		X		X	Environmental
Flood Detected (X.721/X.733) Flood (M.3100)		X		X	Environmental
High Humidity	X			X	Environmental
High Temperature	X			X	Environmental
Intrusion Detected (GSM 12.11) Intrusion Detection (X.736/M.3100)	X		X	X	Environmental (GSM 12.11); Physical Violation (X.736/M.3100)
Low Humidity	X			X	Environmental
Low Temperature	X			X	Environmental
Pump Failure		X		X	Environmental
Smoke Detected (GSM 12.11) Smoke (M.3100)	X			X	Environmental
Application Subsystem Failure		X		X	Processing Error
Bandwidth Reduced Bandwidth Reduction (X.721/X.733)		X		X	~~Processing Error~~ Quality of Service

Duplicated Probable Cause	GSM 12.11	X.721 X.733	X.736	M.3100	Event Type
Configuration or Customization Error (M.3100) Configuration or Customizing Error (X.721/X.733)		X		X	Processing Error
Database Inconsistency	X			X	Processing Error
File Error		X		X	Processing Error
Storage Capacity Problem		X		X	Processing Error
Excessive Bit Error Rate (M.3100) Excessive Error Rate (GSM 12.11) Excessive Error Rate	X			X	Communications (M.3100) Quality of Service (GSM 12.11/M.3100) ~~Processing Error~~
Corrupt Data		X		X	Processing Error
Out Of Memory		X		X	Processing Error
Software Error		X		X	Processing Error
Timeout Expired	X			X	Processing Error
Underlaying Resource Unavailable (M.3100) Underlying Resource Unavailable (X.721/X.733)		X		X	Processing Error
Version Mismatch		X		X	Processing Error
Congestion		X		X	Quality of Service
Reduced Logging Capability	X			X	Quality of Service
System Resources Overload	X			X	Quality of Service
Excessive Response Time (M.3100) Response Time Excessive (X.721/X.733)		X		X	Quality of Service
Excessive Retransmission Rate (M.3100) Re-Transmission Rate Excessive (X.721/X,733)		X		X	Quality of Service

End of Change in Clause Annex B

Annex E (informative): Change history

Change history					
TSG SA#	**Version**	**CR**	**Tdoc SA**	**New Version**	**Subject/Comment**
S_07	2.0.0	-	SP-000012	3.0.0	Approved at TSG SA #7 and placed under Change Control
Mar 2000	3.0.0			3.0.1	Cosmetic
S_08	3.0.1	004	SP-000250	3.1.0	Split of TS - Part 2: Alarm Integration Reference Point (IRP): Information Service (IS)
Sep 2000	3.1.0			3.1.1	Cosmetic
S_09	3.1.1	001	SP-000438	3.2.0	Correction of qualifier for SystemDN
S_09	3.1.1	002	SP-000438	3.2.0	Addition of a missing constraint in acknowledgeAlarm operation
S_10	3.2.0	003	SP-000520	3.3.0	Incorrect modifiable attributes
S_10	3.2.0	004	SP-000520	3.3.0	Add acknowledgement information to getAlarmList result
S_10	3.2.0	005	SP-000520	3.3.0	Identification of valid Event Types and Extended Event Types within Notifications
S_10	3.2.0	006	SP-000520	3.3.0	A cleared Alarm shall be given perceived severity "Cleared" and nothing else
S_10	3.2.0	007	SP-000520	3.3.0	Inconsistent behaviour for cleared not yet acknowledged alarms

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-056058***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.111-2** **CR** **039** ⌘ **rev** **-** ⌘ Current version: **4.7.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☒

Title:	⌘	Inclusion of additional event types for duplicate probable causes
Source:	⌘	SA5 (mohanr@lucent.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	18/02/2005
Category:	⌘	**A**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	The event types for certain probable causes duplicated from other specifications are not correct. They do not represent the value in the main ITU/GSM spec.
Summary of change:	⌘	The event types with errors have been corrected.
Consequences if not approved:	⌘	If not approved, the 3GPP spec is not aligned to the value in the original ITU-T/GSM specification. This can lead to different interpretations leading interoperable issues.

Clauses affected:	⌘	Annex B

Other specs affected:	⌘	Y	N	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	Rel-5/6 TS 32.111-2
		X			

Other comments:	⌘	Rel-99 parent CR in S5-056057. Rel-5/6 mirror CRs in S5-056059, S5-056060.

Change in Clause Annex B

Annex B (normative): Probable Causes

This appendix lists probable causes and their corresponding event types.

Sources of these probable causes are ITU-T Recommendation M.3100 [11], ITU-T Recommendation X.721 [3], ITU-T Recommendation X.733 [2], ITU-T Recommendation X.736 [15] and GSM 12.11 [4].

The list may be extended in the future, e.g. with UMTS-specific probable causes.

Table B.1: Probable Causes from ITU-T Recommendation M.3100 [11]

M.3100 Probable cause	Event type
Indeterminate	Unknown
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Communications Transmit Failure	Communications
Connection Establishment Error	Communications
Degraded Signal	Communications
Demodulation Failure	Communications
Far End Receiver Failure (FERF)	Communications
Framing Error	Communications
Invalid Message Received	Communications
Local Node Transmission Error	Communications
Loss Of Frame (LOF)	Communications
Loss Of Pointer (LOP)	Communications
Loss Of Signal (LOS)	Communications
Modulation Failure	Communications
Payload Type Mismatch	Communications
Transmission Error	Communications
Remote Alarm Interface	Communications
Remote Node Transmission Error	Communications
Routing Failure	Communications
Excessive Bit Error Rate (EBER)	Communications
Path Trace Mismatch	Communications
Unavailable	Communications
Signal Label Mismatch	Communications
Loss Of Multi Frame	Communications
Antenna Failure	Equipment
Back Plane Failure	Equipment
Battery Charging Failure	Equipment
Data Set Problem	Equipment
Disk Failure	Equipment
Equipment Identifier Duplication	Equipment
External IF Device Problem	Equipment
Frequency Hopping Failure	Equipment
IO Device Error	Equipment
Line Card Problem	Equipment
Loss Of Redundancy	Equipment
Loss Of Synchronization	Equipment
Multiplexer Problem	Equipment
NE Identifier Duplication	Equipment
Power Problem	Equipment
Power Supply Failure	Equipment
Processor Problem	Equipment
Protection Path Failure	Equipment

M.3100 Probable cause	Event type
Protecting Resource Failure	Equipment
Protection Mechanism Failure	Equipment
Real Time Clock Failure	Equipment
Receiver Failure	Equipment
Replaceable Unit Missing	Equipment
Replaceable Unit Type Mismatch	Equipment
Signal Quality Evaluation Failure	Equipment
Synchronization Source Mismatch	Equipment
Terminal Problem	Equipment
Timing Problem	Equipment
Transceiver Failure	Equipment
Transmitter Failure	Equipment
Trunk Card Problem	Equipment
Replaceable Unit Problem	Equipment
Air Compressor Failure	Environmental
Air Conditioning Failure	Environmental
Air Dryer Failure	Environmental
Battery Discharging	Environmental
Battery Failure	Environmental
Commercial Power Failure	Environmental
Cooling Fan Failure	Environmental
Cooling System Failure	Environmental
Engine Failure	Environmental
Fire Detector Failure	Environmental
Fuse Failure	Environmental
Generator Failure	Environmental
Low Battery Threshold	Environmental
Pump Failure	Environmental
Rectifier Failure	Environmental
Rectifier High Voltage	Environmental
Rectifier Low F Voltage	Environmental
Ventilation System Failure	Environmental
Enclosure Door Open	Environmental
Explosive Gas	Environmental
External Equipment Failure	Environmental
External Point Failure	Environmental
Fire	Environmental
Flood	Environmental
High Humidity	Environmental
High Temperature	Environmental
High Wind	Environmental
Ice Build Up	Environmental
Intrusion Detection	Environmental
Low Fuel	Environmental
Low Humidity	Environmental
Low Cable Pressure	Environmental
Low Temperature	Environmental
Low Water	Environmental
Smoke	Environmental
Toxic Gas	Environmental
Application Subsystem Failure	Processing Error
Configuration Or Customisation Error	Processing Error
Database Inconsistency	Processing Error
File Error	Processing Error
Storage Capacity Problem	Processing Error
Memory Mismatch	Processing Error
Corrupt Data	Processing Error
Loss of Real Time	Processing Error
Out Of CPU Cycles	Processing Error
Out Of Memory	Processing Error
Reinitialized	Processing Error
Software Environment Problem	Processing Error
Software Error	Processing Error
Software Download Failure	Processing Error

M.3100 Probable cause	Event type
Timeout Expired	Processing Error
Underlaying Resources Unavailable	Processing Error
Version Mismatch	Processing Error
Bandwidth Reduced	Quality of service
Congestion	Quality of service
Excessive Error Rate	Quality of service
Excessive Response Time	Quality of service
Excessive Retransmission Rate	Quality of service
Reduced Logging Capability	Quality of service
System Resources Overload	Quality of service

…

Table B.4 identifies probable causes that are defined by more than one standard. This is for information only.

Table B.4: Duplicated Probable Causes

Duplicated Probable Cause	GSM 12.11	X.721 X.733	X.736	M.3100	Event Type
Broadcast Channel Failure	X			X	Communications
Call Establishment Failure (X.721/X.733) Call Setup Failure (M.3100)		X		X	Communications
Connection Establishment Error	X			X	Communications
Degraded Signal		X		X	Communications
Framing Error		X		X	Communications
Invalid Message Received	X			X	Communications
Local Node Transmission Error		X		X	Communications
Loss of Frame		X		X	Communications
Loss of Signal		X		X	Communications
Remote Node Transmission Error		X		X	Communications
Routing Failure	X			X	Communications
Antenna Failure (M.3100) Antenna Problem (GSM 12.11)	X			X	Equipment
Battery Charging Failure (M.3100) Battery Charging Fault (GSM 12.11)	X			X	Equipment
Disk Failure (M.3100) Disk Problem (GSM 12.11)	X			X	Equipment
Equipment Failure (GSM 12.11) Equipment Malfunction (X.721/X.733)	X	X			Equipment
Frequency Hopping Failure	X			X	Equipment
IO Device Error (M.3100) Input/Output Device Error (X.721/X.733)		X		X	Equipment
Loss Of Redundancy (M.3100) Lost Redundancy (GSM 12.11)	X			X	Equipment
Loss Of Synchronization	X			X	Equipment
Multiplexer Problem		X		X	Equipment
Power Problem		X		X	Equipment
Power Supply Failure	X			X	Equipment
Processor Problem		X		X	Equipment
Receiver Failure	X	X		X	Equipment
Signal Quality Evaluation Failure (M.3100) Signal Quality Evaluation Fault (GSM 12.11)	X			X	Equipment
Timing Problem		X		X	Equipment
Transceiver Failure (M.3100) Transceiver Problem (GSM 12.11)	X			X	Equipment
Transmitter Failure	X	X		X	Equipment
Cooling System Failure	X			X	Environmental
External Equipment Failure	X			X	Environmental
Enclosure Door Open		X		X	Environmental
Fan Failure (GSM 12.11) Cooling Fan Failure (M.3100)	X			X	Environmental
Fire Detected (X.721/X.733) Fire (M.3100)		X		X	Environmental
Flood Detected (X.721/X.733) Flood (M.3100)		X		X	Environmental
High Humidity	X			X	Environmental
High Temperature	X			X	Environmental
Intrusion Detected (GSM 12.11) Intrusion Detection (X.736/M.3100)	X		X	X	Environmental (GSM 12.11); Physical Violation (X.736/M.3100)
Low Humidity	X			X	Environmental
Low Temperature	X			X	Environmental
Pump Failure		X		X	Environmental
Smoke Detected (GSM 12.11) Smoke (M.3100)	X			X	Environmental
Application Subsystem Failure		X		X	Processing Error
Bandwidth Reduced ~~(M.3100)~~ Bandwidth Reduction (X.721/X.733)		X		X	~~Processing Error~~ Quality of Service

Duplicated Probable Cause	GSM 12.11	X.721 X.733	X.736	M.3100	Event Type
Configuration or Customization Error (M.3100) Configuration or Customizing Error (X.721/X.733)		X		X	Processing Error
Database Inconsistency	X			X	Processing Error
File Error		X		X	Processing Error
Storage Capacity Problem		X		X	Processing Error
Excessive Bit Error Rate (M.3100) Excessive Error Rate (GSM 12.11) Excessive Error Rate	X			X	Communications (M.3100) Quality of Service (GSM 12.11/M.3100) ~~Processing Error~~
Corrupt Data		X		X	Processing Error
Out Of Memory		X		X	Processing Error
Software Error		X		X	Processing Error
Timeout Expired	X			X	Processing Error
Underlaying Resource Unavailable (M.3100) Underlying Resource Unavailable (X.721/X.733)		X		X	Processing Error
Version Mismatch		X		X	Processing Error
Congestion		X		X	Quality of Service
Reduced Logging Capability	X			X	Quality of Service
System Resources Overload	X			X	Quality of Service
Excessive Response Time (M.3100) Response Time Excessive (X.721/X.733)		X		X	Quality of Service
Excessive Retransmission Rate (M.3100) Re-Transmission Rate Excessive (X.721/X,733)		X		X	Quality of Service

End of Change in Clause Annex B

Annex D (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Dec 2002	S_18	SP-020751	019	--	Add additionalInformation parameter in notification in Alarm IRP: IS	4.4.0	4.5.0
Mar 2003	S_19	SP-030062	021	--	Add Missing ITU-T M.3100 Probable Causes	4.5.0	4.6.0
Mar 2003	S_19	SP-030063	023	--	Corrections regarding Alarm Acknowledgement and Alarm Comments - alignment with 32.111-1	4.5.0	4.6.0
Jun 2004	S_24	SP-040241	030	--	Incorrect alarm interface class diagram	4.6.0	4.7.0

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-056059***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.111-2** **CR** **040** ⌘ **rev** **-** ⌘ Current version: **5.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☒

Title:	⌘	Inclusion of additional event types for duplicate probable causes
Source:	⌘	SA5 (mohanr@lucent.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	18/02/2005
Category:	⌘	**A**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	The event types for certain probable causes duplicated from other specifications are not correct. They do not represent the value in the main ITU/GSM spec.
Summary of change:	⌘	The event types with errors have been corrected.
Consequences if not approved:	⌘	If not approved, the 3GPP spec is not aligned to the value in the original ITU-T/GSM specification. This can lead to different interpretations leading interoperable issues.

Clauses affected:	⌘	Annex B			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
		X		O&M Specifications	Rel-5 32.111-3
Other comments:	⌘	R99/Rel-4 parent CRs 32.111-2 in S5-056057/ S5-056058 Rel-6 mirror CR in S5-056060. Rel-5 Child CR 32.111-3 in S5-056103			

Change in Clause Annex B

Annex B (normative): Probable Causes

This appendix lists probable causes and their corresponding event types.

Sources of these probable causes are ITU-T Recommendation M.3100 [11], ITU-T Recommendation X.721 [3], ITU-T Recommendation X.733 [2], ITU-T Recommendation X.736 [15] and GSM 12.11 [4].

The list may be extended in the future, e.g. with UMTS-specific probable causes.

Table B.1: Probable Causes from ITU-T Recommendation M.3100 [11]

M.3100 Probable cause	Event type
Indeterminate	Unknown
Alarm Indication Signal (AIS)	Communications
Broadcast Channel Failure	Communications
Call Setup Failure	Communications
Communications Receive Failure	Communications
Communications Transmit Failure	Communications
Connection Establishment Error	Communications
Degraded Signal	Communications
Demodulation Failure	Communications
Far End Receiver Failure (FERF)	Communications
Framing Error	Communications
Invalid Message Received	Communications
Local Node Transmission Error	Communications
Loss Of Frame (LOF)	Communications
Loss Of Pointer (LOP)	Communications
Loss Of Signal (LOS)	Communications
Modulation Failure	Communications
Payload Type Mismatch	Communications
Transmission Error	Communications
Remote Alarm Interface	Communications
Remote Node Transmission Error	Communications
Routing Failure	Communications
Excessive Bit Error Rate (EBER)	Communications
Path Trace Mismatch	Communications
Unavailable	Communications
Signal Label Mismatch	Communications
Loss Of Multi Frame	Communications
Antenna Failure	Equipment
Back Plane Failure	Equipment
Battery Charging Failure	Equipment
Data Set Problem	Equipment
Disk Failure	Equipment
Equipment Identifier Duplication	Equipment
External IF Device Problem	Equipment
Frequency Hopping Failure	Equipment
IO Device Error	Equipment
Line Card Problem	Equipment
Loss Of Redundancy	Equipment
Loss Of Synchronization	Equipment
Multiplexer Problem	Equipment
NE Identifier Duplication	Equipment
Power Problem	Equipment
Power Supply Failure	Equipment
Processor Problem	Equipment
Protection Path Failure	Equipment

M.3100 Probable cause	Event type
Protecting Resource Failure	Equipment
Protection Mechanism Failure	Equipment
Real Time Clock Failure	Equipment
Receiver Failure	Equipment
Replaceable Unit Missing	Equipment
Replaceable Unit Type Mismatch	Equipment
Signal Quality Evaluation Failure	Equipment
Synchronization Source Mismatch	Equipment
Terminal Problem	Equipment
Timing Problem	Equipment
Transceiver Failure	Equipment
Transmitter Failure	Equipment
Trunk Card Problem	Equipment
Replaceable Unit Problem	Equipment
Air Compressor Failure	Environmental
Air Conditioning Failure	Environmental
Air Dryer Failure	Environmental
Battery Discharging	Environmental
Battery Failure	Environmental
Commercial Power Failure	Environmental
Cooling Fan Failure	Environmental
Cooling System Failure	Environmental
Engine Failure	Environmental
Fire Detector Failure	Environmental
Fuse Failure	Environmental
Generator Failure	Environmental
Low Battery Threshold	Environmental
Pump Failure	Environmental
Rectifier Failure	Environmental
Rectifier High Voltage	Environmental
Rectifier Low F Voltage	Environmental
Ventilation System Failure	Environmental
Enclosure Door Open	Environmental
Explosive Gas	Environmental
External Equipment Failure	Environmental
External Point Failure	Environmental
Fire	Environmental
Flood	Environmental
High Humidity	Environmental
High Temperature	Environmental
High Wind	Environmental
Ice Build Up	Environmental
Intrusion Detection	Environmental
Low Fuel	Environmental
Low Humidity	Environmental
Low Cable Pressure	Environmental
Low Temperature	Environmental
Low Water	Environmental
Smoke	Environmental
Toxic Gas	Environmental
Application Subsystem Failure	Processing Error
Configuration Or Customisation Error	Processing Error
Database Inconsistency	Processing Error
File Error	Processing Error
Storage Capacity Problem	Processing Error
Memory Mismatch	Processing Error
Corrupt Data	Processing Error
Loss of Real Time	Processing Error
Out Of CPU Cycles	Processing Error
Out Of Memory	Processing Error
Reinitialized	Processing Error
Software Environment Problem	Processing Error
Software Error	Processing Error
Software Download Failure	Processing Error

M.3100 Probable cause	Event type
Timeout Expired	Processing Error
Underlaying Resources Unavailable	Processing Error
Version Mismatch	Processing Error
Bandwidth Reduced	Quality of service
Congestion	Quality of service
Excessive Error Rate	Quality of service
Excessive Response Time	Quality of service
Excessive Retransmission Rate	Quality of service
Reduced Logging Capability	Quality of service
System Resources Overload	Quality of service

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Table B.4 identifies probable causes that are defined by more than one standard. This is for information only.

Table B.4: Duplicated Probable Causes

Duplicated Probable Cause	GSM 12.11	X.721 X.733	X.736	M.3100	Event Type
Broadcast Channel Failure	X			X	Communications
Call Establishment Failure (X.721/X.733) Call Setup Failure (M.3100)		X		X	Communications
Connection Establishment Error	X			X	Communications
Degraded Signal		X		X	Communications
Framing Error		X		X	Communications
Invalid Message Received	X			X	Communications
Local Node Transmission Error		X		X	Communications
Loss of Frame		X		X	Communications
Loss of Signal		X		X	Communications
Remote Node Transmission Error		X		X	Communications
Routing Failure	X			X	Communications
Antenna Failure (M.3100) Antenna Problem (GSM 12.11)	X			X	Equipment
Battery Charging Failure (M.3100) Battery Charging Fault (GSM 12.11)	X			X	Equipment
Disk Failure (M.3100) Disk Problem (GSM 12.11)	X			X	Equipment
Equipment Failure (GSM 12.11) Equipment Malfunction (X.721/X.733)	X	X			Equipment
Frequency Hopping Failure	X			X	Equipment
IO Device Error (M.3100) Input/Output Device Error (X.721/X.733)		X		X	Equipment
Loss Of Redundancy (M.3100) Lost Redundancy (GSM 12.11)	X			X	Equipment
Loss Of Synchronization	X			X	Equipment
Multiplexer Problem		X		X	Equipment
Power Problem		X		X	Equipment
Power Supply Failure	X			X	Equipment
Processor Problem		X		X	Equipment
Receiver Failure	X	X		X	Equipment
Signal Quality Evaluation Failure (M.3100) Signal Quality Evaluation Fault (GSM 12.11)	X			X	Equipment
Timing Problem		X		X	Equipment
Transceiver Failure (M.3100) Transceiver Problem (GSM 12.11)	X			X	Equipment
Transmitter Failure	X	X		X	Equipment
Cooling System Failure	X			X	Environmental
External Equipment Failure	X			X	Environmental
Enclosure Door Open		X		X	Environmental
Fan Failure (GSM 12.11) Cooling Fan Failure (M.3100)	X			X	Environmental
Fire Detected (X.721/X.733) Fire (M.3100)		X		X	Environmental
Flood Detected (X.721/X.733) Flood (M.3100)		X		X	Environmental
High Humidity	X			X	Environmental
High Temperature	X			X	Environmental
Intrusion Detected (GSM 12.11) Intrusion Detection (X.736/M.3100)	X		X	X	Environmental (GSM 12.11); Physical Violation (X.736/M.3100)
Low Humidity	X			X	Environmental
Low Temperature	X			X	Environmental
Pump Failure		X		X	Environmental
Smoke Detected (GSM 12.11) Smoke (M.3100)	X			X	Environmental
Application Subsystem Failure		X		X	Processing Error
Bandwidth Reduced ~~(M.3100)~~ Bandwidth Reduction (X.721/X.733)		X		X	~~Processing Error~~ Quality of Service

Duplicated Probable Cause	GSM 12.11	X.721 X.733	X.736	M.3100	Event Type
Configuration or Customization Error (M.3100) Configuration or Customizing Error (X.721/X.733)		X		X	Processing Error
Database Inconsistency	X			X	Processing Error
File Error		X		X	Processing Error
Storage Capacity Problem		X		X	Processing Error
Excessive Bit Error Rate (M.3100) Excessive Error Rate (GSM 12.11) Excessive Error Rate	X			X	Communications (M.3100) Quality of Service (GSM 12.11/M.3100) ~~Processing Error~~
Corrupt Data		X		X	Processing Error
Out Of Memory		X		X	Processing Error
Software Error		X		X	Processing Error
Timeout Expired	X			X	Processing Error
Underlaying Resource Unavailable (M.3100) Underlying Resource Unavailable (X.721/X.733)		X		X	Processing Error
Version Mismatch		X		X	Processing Error
Congestion		X		X	Quality of Service
Reduced Logging Capability	X			X	Quality of Service
System Resources Overload	X			X	Quality of Service
Excessive Response Time (M.3100) Response Time Excessive (X.721/X.733)		X		X	Quality of Service
Excessive Retransmission Rate (M.3100) Re-Transmission Rate Excessive (X.721/X,733)		X		X	Quality of Service

End of Change in Clause Annex B

Annex D (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Mar 2003	S_19	SP-030062	022	--	Add Missing ITU-T M.3100 Probable Causes	5.2.0	5.3.0
Mar 2003	S_19	SP-030063	024	--	Corrections regarding Alarm Acknowledgement and Alarm Comments - alignment with 32.111-1	5.2.0	5.3.0
Mar 2003	S_19	SP-030138	025	--	Add Missing security event types and probable causes	5.2.0	5.3.0
Jun 2003	S_20	SP-030275	026	--	Correction of imported references table for managedGenericIRP	5.3.0	5.4.0
Dec 2004	S_26	SP-040791	033	--	Correct the time carried by the eventTime parameter of notifyComments	5.4.0	5.5.0

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-056060***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.111-2** **CR** **041** ⌘ **rev** **-** ⌘ Current version: **6.3.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☒

Title:	⌘	Inclusion of additional event types for duplicate probable causes
Source:	⌘	SA5 (mohanr@lucent.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	18/02/2005
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	The event types for certain probable causes duplicated from other specifications are not correct. They do not represent the value in the main ITU/GSM spec.
Summary of change:	⌘	The event types with errors have been corrected.
Consequences if not approved:	⌘	If not approved, the 3GPP spec is not aligned to the value in the original ITU-T/GSM specification. This can lead to different interpretations leading interoperable issues.

Clauses affected:	⌘	Annex B			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
		X		O&M Specifications	Rel-6 32.111-3
Other comments:	⌘	R99/Rel-4/Rel-5 parent CRs 32.111-2 in S5-056057 / S5-056058 / S5-056059. Rel-6 Child CR 32.111-3 in S5-056104.			

Change in Clause Annex B

Annex B (normative): Probable Causes

This annex lists probable causes and their corresponding event types.

Sources of these probable causes are ITU-T Recommendation M.3100 [11], ITU-T Recommendation X.721 [3], ITU-T Recommendation X.733 [2], and ITU-T Recommendation X.736 [15]. In addition, probable causes for 2G and 3G wireless systems are listed.

Table B.1: Probable Causes from ITU-T Recommendation M.3100 [11]

M.3100 Probable cause	Event type
Indeterminate	Unknown
Alarm Indication Signal (AIS)	Communications
Broadcast Channel Failure	Communications
Call Setup Failure	Communications
Communications Receive Failure	Communications
Communications Transmit Failure	Communications
Connection Establishment Error	Communications
Degraded Signal	Communications
Demodulation Failure	Communications
Far End Receiver Failure (FERF)	Communications
Framing Error	Communications
Invalid Message Received	Communications
Local Node Transmission Error	Communications
Loss Of Frame (LOF)	Communications
Loss Of Pointer (LOP)	Communications
Loss Of Signal (LOS)	Communications
Modulation Failure	Communications
Payload Type Mismatch	Communications
Transmission Error	Communications
Remote Alarm Interface	Communications
Remote Node Transmission Error	Communications
Routing Failure	Communications
Excessive Bit Error Rate (EBER)	Communications
Path Trace Mismatch	Communications
Unavailable	Communications
Signal Label Mismatch	Communications
Loss Of Multi Frame	Communications
Antenna Failure	Equipment
Back Plane Failure	Equipment
Battery Charging Failure	Equipment
Data Set Problem	Equipment
Disk Failure	Equipment
Equipment Identifier Duplication	Equipment
External IF Device Problem	Equipment
Frequency Hopping Failure	Equipment
IO Device Error	Equipment
Line Card Problem	Equipment
Loss Of Redundancy	Equipment
Loss Of Synchronization	Equipment
Multiplexer Problem	Equipment
NE Identifier Duplication	Equipment
Power Problem	Equipment
Power Supply Failure	Equipment
Processor Problem	Equipment
Protection Path Failure	Equipment
Protecting Resource Failure	Equipment

M.3100 Probable cause	Event type
Protection Mechanism Failure	Equipment
Real Time Clock Failure	Equipment
Receiver Failure	Equipment
Replaceable Unit Missing	Equipment
Replaceable Unit Type Mismatch	Equipment
Signal Quality Evaluation Failure	Equipment
Synchronization Source Mismatch	Equipment
Terminal Problem	Equipment
Timing Problem	Equipment
Transceiver Failure	Equipment
Transmitter Failure	Equipment
Trunk Card Problem	Equipment
Replaceable Unit Problem	Equipment
Air Compressor Failure	Environmental
Air Conditioning Failure	Environmental
Air Dryer Failure	Environmental
Battery Discharging	Environmental
Battery Failure	Environmental
Commercial Power Failure	Environmental
Cooling Fan Failure	Environmental
Cooling System Failure	Environmental
Engine Failure	Environmental
Fire Detector Failure	Environmental
Fuse Failure	Environmental
Generator Failure	Environmental
Low Battery Threshold	Environmental
Pump Failure	Environmental
Rectifier Failure	Environmental
Rectifier High Voltage	Environmental
Rectifier Low F Voltage	Environmental
Ventilation System Failure	Environmental
Enclosure Door Open	Environmental
Explosive Gas	Environmental
External Equipment Failure	Environmental
External Point Failure	Environmental
Fire	Environmental
Flood	Environmental
High Humidity	Environmental
High Temperature	Environmental
High Wind	Environmental
Ice Build Up	Environmental
Intrusion Detection	Environmental
Low Fuel	Environmental
Low Humidity	Environmental
Low Cable Pressure	Environmental
Low Temperature	Environmental
Low Water	Environmental
Smoke	Environmental
Toxic Gas	Environmental
Application Subsystem Failure	Processing Error
Configuration Or Customisation Error	Processing Error
Database Inconsistency	Processing Error
File Error	Processing Error
Storage Capacity Problem	Processing Error
Memory Mismatch	Processing Error
Corrupt Data	Processing Error
Loss of Real Time	Processing Error
Out Of CPU Cycles	Processing Error
Out Of Memory	Processing Error
Reinitialized	Processing Error
Software Environment Problem	Processing Error
Software Error	Processing Error
Software Download Failure	Processing Error
Timeout Expired	Processing Error

M.3100 Probable cause	Event type
Underlaying Resources Unavailable	Processing Error
Version Mismatch	Processing Error
Bandwidth Reduced	Quality of service
Congestion	Quality of service
Excessive Error Rate	Quality of service
Excessive Response Time	Quality of service
Excessive Retransmission Rate	Quality of service
Reduced Logging Capability	Quality of service
System Resources Overload	Quality of service

…

Table B.4 identifies probable causes that are defined by more than one standard. This is for information only.

Table B.4: Duplicated Probable Causes

Duplicated Probable Cause	2G & 3G	X.721 X.733	X.736	M.3100	Event Type
Broadcast Channel Failure	X			X	Communications
Call Establishment Failure (X.721/X.733) Call Setup Failure (M.3100)		X		X	Communications
Connection Establishment Error	X			X	Communications
Degraded Signal		X		X	Communications
Framing Error		X		X	Communications
Invalid Message Received	X			X	Communications
Local Node Transmission Error		X		X	Communications
Loss of Frame		X		X	Communications
Loss of Signal		X		X	Communications
Remote Node Transmission Error		X		X	Communications
Routing Failure	X			X	Communications
Antenna Failure (M.3100) Antenna Problem (2G & 3G)	X			X	Equipment
Battery Charging Failure (M.3100) Battery Charging Fault (2G & 3G)	X			X	Equipment
Disk Failure (M.3100) Disk Problem (2G & 3G)	X			X	Equipment
Equipment Failure (2G & 3G) Equipment Malfunction (X.721/X.733)	X	X			Equipment
Frequency Hopping Failure	X			X	Equipment
IO Device Error (M.3100) Input/Output Device Error (X.721/X.733)		X		X	Equipment
Loss Of Redundancy (M.3100) Lost Redundancy (2G & 3G)	X			X	Equipment
Loss Of Synchronization	X			X	Equipment
Multiplexer Problem		X		X	Equipment
Power Problem		X		X	Equipment
Power Supply Failure	X			X	Equipment
Processor Problem		X		X	Equipment
Receiver Failure	X	X		X	Equipment
Signal Quality Evaluation Failure (M.3100) Signal Quality Evaluation Fault (2G & 3G)	X			X	Equipment
Timing Problem		X		X	Equipment
Transceiver Failure (M.3100) Transceiver Problem (2G & 3G)	X			X	Equipment
Transmitter Failure	X	X		X	Equipment
Cooling System Failure	X			X	Environmental
External Equipment Failure	X			X	Environmental
Enclosure Door Open		X		X	Environmental
Fan Failure (2G & 3G) Cooling Fan Failure (M.3100)	X			X	Environmental
Fire Detected (X.721/X.733) Fire (M.3100)		X		X	Environmental
Flood Detected (X.721/X.733) Flood (M.3100)		X		X	Environmental
High Humidity	X			X	Environmental
High Temperature	X			X	Environmental
Intrusion Detected (2G & 3G) Intrusion Detection (X.736/M.3100)	X		X	X	Environmental (2G & 3G); Physical Violation (X.736/M.3100)
Low Humidity	X			X	Environmental
Low Temperature	X			X	Environmental
Pump Failure		X		X	Environmental
Smoke Detected (2G & 3G) Smoke (M.3100)	X			X	Environmental
Application Subsystem Failure		X		X	Processing Error
Bandwidth Reduced ~~(M.3100)~~ Bandwidth Reduction (X.721/X.733)		X		X	Quality of Service ~~Processing Error~~

Duplicated Probable Cause	2G & 3G	X.721 X.733	X.736	M.3100	Event Type
Configuration or Customization Error (M.3100) Configuration or Customizing Error (X.721/X.733)		X		X	Processing Error
Database Inconsistency	X			X	Processing Error
File Error		X		X	Processing Error
Storage Capacity Problem		X		X	Processing Error
Excessive Bit Error Rate (M.3100) Excessive Error Rate (2G & 3G) Excessive Error Rate	X			X	Communications (M.3100) Quality of Service (GSM 12.11/M.3100) ~~Processing Error~~
Corrupt Data		X		X	Processing Error
Out Of Memory		X		X	Processing Error
Software Error		X		X	Processing Error
Timeout Expired	X			X	Processing Error
Underlaying Resource Unavailable (M.3100) Underlying Resource Unavailable (X.721/X.733)		X		X	Processing Error
Version Mismatch		X		X	Processing Error
Congestion		X		X	Quality of Service
Reduced Logging Capability	X			X	Quality of Service
System Resources Overload	X			X	Quality of Service
Excessive Response Time (M.3100) Response Time Excessive (X.721/X.733)		X		X	Quality of Service
Excessive Retransmission Rate (M.3100) Re-Transmission Rate Excessive (X.721/X,733)		X		X	Quality of Service

End of Change in Clause Annex B

Annex D (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
Dec 2004	S_26	SP-040790	032	--	Add Generic System Context – Align with 32.150	6.2.0	6.3.0
Dec 2004	S_26	SP-040791	034	--	Correct the time carried by the eventTime parameter of notifyComments	6.2.0	6.3.0
Dec 2004	S_26	SP-040791	035	--	Remove redundant ackTime parameter in notifyAckStateChanged	6.2.0	6.3.0
Dec 2004	S_26	SP-040791	036	--	Correct description of thresholdInformation – Align with 32.401	6.2.0	6.3.0
Dec 2004	S_26	SP-040791	037	--	Correction of probable cause for alarms.	6.2.0	6.3.0

CR-Form-v7

CHANGE REQUEST

⌘ 32.111-4 CR 031 ⌘rev - ⌘ Current version: 6.3.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [ ] Radio Access Network [X] Core Network [X]

Title:	⌘	Add missing definition of getAlarmList return value - Align with the IS (TS 32.111-2)
Source:	⌘	**SA5** (olaf.pollakowski@siemens.com, clemens.suerbaum@siemens.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	28/01/2005
Category:	⌘	**A**
Release:	⌘	Rel-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction 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.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	It is not defined how to populate the additionalInformation field of alarm notifications emitted during an alarm alignment process. Hence, not all attributes of AlarmInformation are synchronized. This is required however by the IS.
Summary of change:	⌘	It is described how to populate the additionalInformation field of alarm notifications emitted during an alarm alignment process. This requires also the introduction of an alarmRaisedTime and an alarmClearedTime parameter.
Consequences if not approved:	⌘	Not all attributes of AlarmInformation are synchronized during an alarm alaignment. However, this is required by the IS

Clauses affected:	⌘	4, 5, 6, Annex A

Other specs affected: ⌘

Y	N	
	X	Other core specifications
	X	Test specifications
	X	O&M Specifications

⌘

Other comments: ⌘ Rel-6 Miror CR of S5-047089

Change in Clause 4, 5, 6, Annex A

4 Basic aspects

…

4.1.6 Alignment of alarm conditions over the Itf-N

The IRP Manager is able to trigger the alarm conditions alignment using the Action *getAlarmList*

The following specifies the logical steps of the alignment procedure, by describing a possible implementation. Any other implementation showing the same behaviour on the Itf-N interface is compliant with the present document.

- The Manager sends to the Agent a *getAlarmList* request containing the following information:
  - *alarmAckState*, used to select the alarms from the Agent's alarm list for the current alignment (e.g. all active alarms).
  - *baseObjectClass*, *baseObjectInstance*, identifies the part of the alarm list to be uploaded.
  - *destination*, identifying the destination to which event reports that have passed the filter conditions are sent.
  - *filter*, this optional parameter defines the conditions an alarm notification shall fulfil in order to be forwarded to the Manager. It applies only for the current alignment request.
- After evaluation of the request, the Agent first generates an *alignmentId* value, which unambiguously identifies this alignment process. This value is used by the Manager to correlate alarm reports to the corresponding alignment requests, in case this Manager issues several alarm alignments in parallel.
- The Agent creates a temporary Event Forwarding Discriminator (EFD) instance for the purpose of this alarm alignment, using the parameters *destination* and *filter* received in the request. If the *filter* parameter is absent in the alarm synchronisation request, all alarm notifications are forwarded to the Manager through this EFD, taking into account both the *filter* constraint currently active for the event reporting to the manager having invoked the synchronisation request and the value of the parameter *alarmAckState*.
  The filter is set by the Agent automatically in order to forward only those alarm notifications containing, at the beginning of the field *additionalText*, the string "(ALIGNMENT-<alignmentId>)". The filter must also forward the notification *notifyAlarmAlignmentEnd* indicating the end of the alarm alignment process. The alarm alignment end notifications of other alignment processes shall be filtered out using the *alignmentId* carried by the event information parameter of *notifyAlarmAlignmentEnd*.
- The Agent sends back a *getAlarmList* response, which contains the *alignmentId* described above and the *status* information, indicating the result of the request. (see the message flow in Figure 1).
- The Agent scans now its alarm list. For every alarm, which matches the criteria defined by the *alarmAckState* parameter and the *filter* parameter, the Agent inserts, at the beginning of the field *additionalText*, the string "(ALIGNMENT-<alignmentId>)".
- Depending on the event being reported, the *additionalInformation* field of every alarm notification shall carry the parameters *ackTimeParameter, ackStateParameter, ackUserIdParameter, ackSystemIdParameter, clearUserIdParameter, clearSystemIdParameter, commentsParameter, alarmRaisedTimeParameter* or *alarmClearedTimeParameter.*
- According to ITU-T Recommendation X.734 [6], the Agent forwards these alarm notifications towards all EFDs.

  NOTE: These alarm notifications can reach the current Manager only via the temporary EFD created for the current alignment. They are filtered out:

  a) By all the EFD instances used for "real-time" alarm reporting, due to the presence of the sub-string "ALIGNMENT" in the field *additionalText* (see 3GPP TS 32.304 [10]).

  b) By all temporary EFD instances possibly created for parallel alignments, due to the presence of the unambiguous sub-string "<alignmentId>" in the additionalText field.

- At the end of the alarm alignment process the Agent shall send the dedicated notification *notifyAlarmAlignmentEnd* in order to indicate the end of the current alignment process (unambiguously identified by the *alignmentId*). In case the alarm list is empty or no alarm matches the criteria defined by the *alarmAckState* parameter and the *filter* parameter the notification *notifyAlarmAlignmentEnd* shall be emitted directly after the agent has send the *getAlarmList* response.

- The temporary EFD of the current alarm alignment process shall forward only alarm alignment end notifications carrying in the event information field the *alignmnentId* of this alignment process. All other alarm alignment end notifications shall be filtered out.

- After sending the notification *notifyAlarmAlignmentEnd* the Agent automatically deletes the temporary EFD instance (see figure 1).

At the end of the alarm conditions alignment the acknowledgement state and the comments assigned to each alarm are implicitly synchronised between the IRPAgent and the IRPManager that has requested the alignment.

…

5 GDMO definitions

…

5.6 Parameters

5.6.1 ackStateParameter

```
ackStateParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.AckState;
   BEHAVIOUR
      ackStateParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 1};

ackStateParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in alarm notifications reporting the
   acknowledgement/unacknowledgement of an alarm or in case these are emitted for alarm
   synchronisation purposes.This parameter models the optional additionalInformation field of the
   alarm notification. If present, it informs the IRPManagerNM about the current acknowledgement
   state of the present alarm.";
```

5.6.2 ackSystemIdParameter

```
ackSystemIdParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.SystemId;
   BEHAVIOUR
      ackSystemIdParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 2};

ackSystemIdParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in alarm notifications reporting the
   acknowledgement/unacknowledgement of an alarm or in case these are emitted for alarm
   synchronisation purposes.This parameter models the optional additionalInformation field of the
   alarm notification. If present, it informs the IRPManagerNM about the identifier of the
   management system where the present alarm has been acknowledged.";
```

5.6.3 ackTimeParameter

```
ackTimeParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.AckTime;
   BEHAVIOUR
      ackTimeParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 3};

ackTimeParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in alarm notifications reporting the
   acknowledgement/unacknowledgement of an alarm or in case these are emitted for alarm
   synchronisation purposes.This parameter models the optional additionalInformation field of the
   alarm notification. If present, it informs the IRPManagerNM about the time the present alarm has
   been acknowledged by the Agent.";
```

5.6.4 ackUserIdParameter

```
ackUserIdParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule .AlarmInfo.additionalInformation;
   WITH SYNTAX
```

```
      TS32-111-4TypeModule.UserId;
   BEHAVIOUR
      ackUserIdParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 4};

ackUserIdParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried bymodels the optional additionalInformation infield of the alarm
   notifications reporting the acknowledgement/unacknowledgement of an alarm or in case these are
   emitted for alarm synchronisation purposes. If present, it informs the IRPManagerNM about the
   identifier of the user who acknowledged the present alarm.";
```

5.6.5 clearUserIdParameter

```
clearUserIdParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule .AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.UserId;
   BEHAVIOUR
      clearUserIdParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 5};

clearUserIdParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in the alarm notifications reporting the
   clearance of an alarm. It identifies the user that has invoked the clearAlarms operation, that
   has led to the clearance of the reported alarm clearance.";
```

5.6.6 clearSystemIdParameter

```
clearSystemIdParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.UserId;
   BEHAVIOUR
      clearSystemIdParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 6};

clearSystemIdParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by additionalInformation in the alarm notifications reporting the
   clearance of an alarm. It identifies the system on which the IRPManager, where the clearAlarms
   operation that has led to the clearance of the reported alarm, is running";
```

5.6.7 commentsParameter

```
commentsParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.AlarmComments;
   BEHAVIOUR
      commentsParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 7};

commentsParameterBehaviour BEHAVIOUR
DEFINED AS
   "This parameter is carried by the attribute additionalInformation in alarm notifications
   reporting the addition of a Comment or in case these are emitted for alarm synchronisation
   purposes. If present, it informs the IRPManager about the comments assigned to an alarm. Every
   single comment includes the following data: commentText, commentTime, commentUserId and
   (optionally) commentSystemId.";
```

5.6.8 alarmRaisedTimeParameter

```
alarmRaisedTimeParameter PARAMETER
   CONTEXT
      TS32-111-4TypeModule.AlarmInfo.additionalInformation;
   WITH SYNTAX
      TS32-111-4TypeModule.AlarmRaisedTime;
```

```
    BEHAVIOUR
        alarmRaisedTimeParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 80603};

alarmRaisedTimeParameterBehaviour BEHAVIOUR
DEFINED AS
    "This parameter is carried by additionalInformation in alarm notifications in case these are
    emitted for alarm synchronisation purposes. If present, it informs the IRPManager about the time
    the present alarm has been raised.";
```

5.6.9 alarmClearedTimeParameter

```
alarmClearedTimeParameter PARAMETER
    CONTEXT
        TS32-111-4TypeModule.AlarmInfo.additionalInformation;
    WITH SYNTAX
        TS32-111-4TypeModule.AlarmClearedTime;
    BEHAVIOUR
        alarmClearedTimeParameterBehaviour;
REGISTERED AS {ts32-111AlarmParameter 90603};

alarmClearedTimeParameterBehaviour BEHAVIOUR
DEFINED AS
    "This parameter is carried by additionalInformation in alarm notifications in case these are
    emitted for alarm synchronisation purposes. If present, it informs the IRPManager about the time
    the present alarm has been cleared.";
```

6 ASN.1 definitions for Alarm IRP

```
TS32-111-4TypeModule {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-Operation-
Maintenance(3) ts-32-111(111) part4(4) informationModel(0) asn1Module(2) version1(1)}

DEFINITIONS IMPLICIT TAGS ::=
BEGIN

--EXPORTS everything

IMPORTS

NotificationIdentifier, Destination, EventTime, ProbableCause, PerceivedSeverity
   FROM Attribute-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 1}

AlarmInfo
   FROM Notification-ASN1Module {joint-iso-ccitt ms(9) smi(3) part2(2) asn1Module(2) 2}

CMISFilter, ObjectInstance, ObjectClass, EventTypeId
   FROM CMIP-1 {joint-iso-ccitt ms(9) cmip(1) modules(0) protocol(3)};

baseNodeUMTS                 OBJECT IDENTIFIER ::= {itu-t (0) identified-organization (4)
                                                    etsi (0) mobileDomain (0)
                                                    umts-Operation-Maintenance (3)}

ts32-111Prefix               OBJECT IDENTIFIER ::= {baseNodeUMTS ts-32-111(111)}
ts32-111Part4                OBJECT IDENTIFIER ::= {ts32-111Prefix part4(4)}
ts32-111-4InfoModel          OBJECT IDENTIFIER ::= {ts32-111Part4 informationModel(0)}

ts32-111AlarmObjectClass     OBJECT IDENTIFIER ::= {ts32-111-4InfoModel managedObjectClass(3)}
ts32-111AlarmPackage         OBJECT IDENTIFIER ::= {ts32-111-4InfoModel package(4)}
ts32-111AlarmParameter       OBJECT IDENTIFIER ::= {ts32-111-4InfoModel parameter(5)}
ts32-111AlarmAttribute       OBJECT IDENTIFIER ::= {ts32-111-4InfoModel attribute(7)}
ts32-111AlarmAction          OBJECT IDENTIFIER ::= {ts32-111-4InfoModel action(9)}
ts32-111AlarmNotification    OBJECT IDENTIFIER ::= {ts32-111-4InfoModel notification(10)}



-- Start of 3GPP SA5 own definitions


AbortGetAlarmListInfo ::= SEQUENCE
   {
   alignmentIdReferenceList      SET OF INTEGER
   }

AbortGetAlarmListReply ::= SEQUENCE
   {
   errorAlignmentIdReferenceList      SET OF ErrorInfoAbortGetAlarmList,
   status                             ErrorCauses
   }

AckErrorList ::= SET OF ErrorInfo

AlarmReference ::= SEQUENCE
   {
   moi                          ObjectInstance OPTIONAL, -- absent if scope of uniquness of
                                                         -- notificationId is across IRPAgent
   notificationIdentifier       NotificationIdentifier
   }

AckOrUnackAlarmsInfo ::= SEQUENCE
   {
   alarmReferenceList           SET OF AlarmReference,
   ackUserId                    UserId,
   ackSystemId                  SystemId OPTIONAL
   }

AckOrUnackAlarmsReply ::= SEQUENCE
   {
   status                       ErrorCauses,
   errorAlarmReferenceList      AckErrorList
   }
```

```
AckState ::= ENUMERATED
   {
   acknowledged    (0),
   unacknowledged  (1)
   }

AckTime ::= GeneralizedTime

AlarmAlignmentEndStatus ::= ENUMERATED
   {
   successfulCompletion  (0),    -- the alarm alignment has been completed successfully
   aborted               (1),    -- the alarm alignment has been aborted via the invocation
                                 -- of the operation abortGetAlarmList
   error               (255)     -- the alarm alignment has been aborted due to an internal error
   }

AlarmChoice ::= ENUMERATED
   {
   allAlarms                 (0),
   allActiveAlarms           (1),
   allActiveAndAckAlarms     (2),
   allActiveAndUnackAlarms   (3),
   allClearedAndUnackAlarms  (4),
   allUnackAlarms            (5)
   }

AlarmClearedTime ::= GeneralizedTime

AlarmComments ::= SET OF SingleAlarmComment

~~AlarmAlignmentEndStatus ::= ENUMERATED~~
~~   {~~
~~   successfulCompletion  (0),    -- the alarm alignment has been completed successfully~~
~~   aborted               (1),    -- the alarm alignment has been aborted via the invocation~~
~~                                 -- of the operation abortGetAlarmList~~
~~   error               (255)     -- the alarm alignment has been aborted due to an internal error~~
~~   }~~

AlarmRaisedTime ::= GeneralizedTime

AlarmsCountSummary ::= SEQUENCE
   {
   activeAlarmsCount       INTEGER,   -- this is the sum of criticalCount, majorCount,
                                      -- minorCount, warningCount and indeterminateCount
   criticalCount           INTEGER,
   majorCount              INTEGER,
   minorCount              INTEGER,
   warningCount            INTEGER,
   indeterminateCount      INTEGER,
   clearedCount            INTEGER
   }

...
```

Annex A (informative): List of assigned Object Identifiers

This annex provides a list with all object identifiers that have been assigned in TS 32.111-4 in Release 5 up to V5.7.0 and in Release 6 up to the latest version. These object identifiers shall not be assigned to new objects.

Basic Object Name	Name and OID of the current TS Version	Name and OIDs of previous TS Versions
Managed Object Classes		
alarmControl	Name: alarmControlR0602 OID : ts32-111AlarmObjectClass 10602	Name: alarmControl OID : ts32-111AlarmObjectClass 1
Packages		
alarmControlBasicPackage	Name: alarmControlBasicPackageR0602 OID : ts32-111AlarmPackage 10602	Name: alarmControlBasicPackage OID : ts32-111AlarmPackage 1
alarmCountPackage	Name: alarmCountPackage OID : ts32-111AlarmPackage 2	--
alarmAcknowledgementPackage	Name: alarmAcknowledgementPackage OID : ts32-111AlarmPackage 3	--
alarmUnacknowledgementPackage	Name: alarmUnacknowledgementPackage OID : ts32-111AlarmPackage 4	--
alarmCommentPackage	Name: alarmCommentPackage OID : ts32-111AlarmPackage 5	--
alarmIRPVersionPackage	Name: alarmIRPVersionPackage OID : ts32-111AlarmPackage 6	--
alarmProfilePackage	Name: alarmProfilePackage OID : ts32-111AlarmPackage 7	--
alarmPotentialFaultyAlarmListPackage	Name: alarmPotentialFaultyAlarmListPackageR0602 OID : ts32-111AlarmPackage 80602	Name: alarmPotentialFaultyAlarmListPackage OID : ts32-111AlarmPackage 8
alarmClearPackage	Name: alarmClearPackage OID : ts32-111AlarmPackage 9	--
x721AlarmNotificationsPackage	Name: x721AlarmNotificationsPackage OID : ts32-111AlarmPackage 10	--
Actions		
~~Basic Action name~~	~~Name and OID of the current TS version~~	~~Name and OIDs of previous TS versions~~
acknowledgeAlarms	Name: acknowledgeAlarms OID : ts32-111AlarmAction 1	--
getAlarmCount	Name: getAlarmCount OID : ts32-111AlarmAction 2	--
getAlarmList	Name: getAlarmList OID : ts32-111AlarmAction 3	--
setComment	Name: setComment OID : ts32-111AlarmAction 4	--
getAlarmIRPVersion	Name: getAlarmIRPVersion OID : ts32-111AlarmAction 5	--
getAlarmIRPNotificationProfile	Name: getAlarmIRPNotificationProfile OID : ts32-111AlarmAction 6	--
getAlarmIRPOperationProfile	Name: getAlarmIRPOperationProfile OID : ts32-111AlarmAction 7	--
unacknowledgeAlarms	Name: unacknowledgeAlarms OID : ts32-111AlarmAction 8	--
clearAlarms	Name: clearAlarms OID : ts32-111AlarmAction 9	--
abortGetAlarmList	Name: abortGetAlarmList OID : ts32-111AlarmAction 10	--
Notifications		
notifyAlarmListRebuilt	Name: notifyAlarmListRebuiltR0602 OID : ts32-111AlarmNotification 10602	Name: notifyAlarmListRebuilt OID : ts32-111AlarmNotification 1
notifyComments	--	Name: notifyComments OID : ts32-111AlarmNotification 2
notifyPotentialFaultyAlarmList	Name: notifyPotentialFaultyAlarmListR0602 OID : ts32-111AlarmNotification 30602	Name: notifyPotentialFaultyAlarmList OID : ts32-111AlarmNotification 3
notifyAlarmAlignmentEnd	Name: notifyAlarmAlignmentEndR0602 OID : ts32-111AlarmNotification 40602	Name: notifyAlarmAlignmentEnd OID : ts32-111AlarmNotification 4

Attributes		
alarmControlId	Name: alarmControlId OID : ts32-111AlarmAttribute 1	--
alarmsCountSummary	Name: alarmsCountSummary OID : ts32-111AlarmAttribute 2	--
supportedAlarmIRPVersions	Name: supportedAlarmIRPVersions OID : ts32-111AlarmAttribute 3	--
rebuiltObjectClass	Name: rebuiltObjectClass OID : ts32-111AlarmAttribute 40602	--
rebuiltObjectInstance	Name: rebuiltObjectInstance OID : ts32-111AlarmAttribute 50602	--
potentialFaultyObjectClass	Name: potentialFaultyObjectClass OID : ts32-111AlarmAttribute 60602	--
potentialFaultyObjectInstance	Name: potentialFaultyObjectInstance OID : ts32-111AlarmAttribute 70602	--
alignmentId	Name: alignmentId OID : ts32-111AlarmAttribute 80602	--
alarmAlignmentEndStatus	Name: alarmAlignmentEndStatus OID : ts32-111AlarmAttribute 90602	--
Parameters		
ackStateParameter	Name: ackStateParameter OID : ts32-111AlarmParameter 1	--
ackSystemIdParameter	Name: ackSystemIdParameter OID : ts32-111AlarmParameter 2	--
ackTimeParameter	Name: ackTimeParameter OID : ts32-111AlarmParameter 3	--
ackUserIdParameter	Name: ackUserIdParameter OID : ts32-111AlarmParameter 4	--
clearUserIdParameter	Name: clearUserIdParameter OID : ts32-111AlarmParameter 5	--
clearSystemIdParameter	Name: clearSystemIdParameter OID : ts32-111AlarmParameter 6	--
commentsParameter	Name: commentsParameter OID : ts32-111AlarmParameter 7	--
alarmRaisedTimeParameter	Name: alarmRaisedTimeParameter OID : ts32-111AlarmParameter 80603	--
alarmClearedTimeParameter	Name: alarmClearedTimeParameter OID : ts32-111AlarmParameter 90603	--
Name Bindings		

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Jan 2004	--	--	--	--	Editorial (Tables & CMIP code cosmetics)	6.0.0	6.0.1
Mar 2004	S_23	SP-040120	026	--	Addition of a method to abort an ongoing alarm alignment process in the asynchronous mode of the operation getAlarmList	6.0.1	6.1.0
Sep 2004	S_25	SP-040561	028	--	Align with the IS 32.111-2 the possibility to apply filters to notification parameters	6.1.0	6.2.0
Dec 2004	S_26	SP-040791	029	--	Remove redundant ackTime parameter in notifyAckStateChanged	6.2.0	6.3.0

CR-Form-v7.1

CHANGE REQUEST

⌘ 32.111-3 CR 038 ⌘rev - ⌘ Current version: 6.1.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [ ] Radio Access Network [X] Core Network [X]

Title:	⌘	IDL incompliant to the style guide
Source:	⌘	SA5 (huangsq@zte.com.cn)
Work item code:	⌘	OAM-NIM
Date:	⌘	28/01/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction 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.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	The IDL does not reflect the format recommended by the style guide (TS 32.150).
Summary of change:	⌘	Add double slash between " #endif " and the macro.
Consequences if not approved:	⌘	The IDL won't conform to the styleguide, and will compile erros when using java compilers (e.g., idlj.exe).

Clauses affected:	⌘	Annex A

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments: ⌘

Annex A (normative):
IDL specifications

A.1 IDL specification (file name "AlarmIRPConstDefs.idl")

```
//File: AlarmIRPConstDefs.idl

#ifndef _ALARMIRPCONSTDEFS_IDL_
#define _ALARMIRPCONSTDEFS_IDL_

#include "CosNotification.idl"
#include "ManagedGenericIRPConstDefs.idl"

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: AlarmIRPConstDefs
This module contains commonly used definitions for Alarm IRP
================================================================
*/
module AlarmIRPConstDefs
{
   /*
   The format of Distinguished Name (DN) is specified in 3GPP TS 32.300
   "Name Conventions for Managed Objects".
   */
   typedef string DN;

   /* DNTypeOpt is an optional type.
   If the discriminator is true the value is present.
   Otherwise the value is null.
   */
   union DNTypeOpt switch (boolean)
   {
      case TRUE: DN value;
   };

   /*
   This block identifies the alarm types specified for this IRP version.
   These types carry the same semantics as the TMN ITU-T defined event
   types of the same name.
   Their encodings for this version of Alarm IRP are defined here.  Other IRP
   documents, or other versions of Alarm IRP, shall identify their own
   alarm types for their use.  They shall define their encodings
   as well.  Values defined here are unique among themselves.
   */
   interface AlarmType
   {
      const string COMMUNICATIONS_ALARM = "x1";
      const string PROCESSING_ERROR_ALARM = "x2";
      const string ENVIRONMENTAL_ALARM = "x3";
      const string QUALITY_OF_SERVICE_ALARM = "x4";
      const string EQUIPMENT_ALARM = "x5";
      const string INTEGRITY_VIOLATION = "x6";
      const string OPERATIONAL_VIOLATION = "x7";
      const string PHYSICAL_VIOLATION = "x8";
      const string SECURITY_SERVICE_OR_MECHANISM_VIOLATION = "x9";
      const string TIME_DOMAIN_VIOLATION = "x10";
```

```
   };

   /*
   This block identifies the notification types defined by this
   Alarm IRP version.
   */
   interface NotificationType
   {
      const string NOTIFY_FM_NEW_ALARM = "x1";
      const string NOTIFY_FM_CHANGED_ALARM = "x2";
      const string NOTIFY_FM_ACK_STATE_CHANGED = "x3";
      const string NOTIFY_FM_COMMENT_ADDED = "x4";
      const string NOTIFY_FM_CLEARED_ALARM = "x5";
      const string NOTIFY_FM_ALARM_LIST_REBUILT = "x6";
      const string NOTIFY_FM_POTENTIAL_FAULTY_ALARM_LIST = "x7";
   };

   /*
   This block identifies the levels of severity.
   */
   interface PerceivedSeverity
   {
      const short INDETERMINATE = 1;
      const short CRITICAL = 2;
      const short MAJOR = 3;
      const short MINOR = 4;
      const short WARNING = 5;
      const short CLEARED = 6;
   };

   /*
   This block identifies the probable cause of a reported alarm.
   */
   interface ProbableCause
   {
      /*
      Probable causes originating from M.3100.
      Values below correspond to M.3100 values.
      */
      const short INDETERMINATE = 0;
      const short ALARM_INDICATION_SIGNAL = 1;
      const short CALL_SETUP_FAILURE = 2;
      const short DEGRADED_SIGNAL = 3;
      const short FAR_END_RECEIVER_FAILURE = 4;
      const short FRAMING_ERROR = 5;
      const short LOSS_OF_FRAME = 6;
      const short LOSS_OF_POINTER = 7;
      const short LOSS_OF_SIGNAL = 8;
      const short PAYLOAD_TYPE_MISMATCH = 9;

      // Values 10 correspond to a duplicated probable cause      const short
REMOTE_ALARM_INTERFACE = 11;
      const short EXCESSIVE_BIT_ERROR_RATE = 12;
      const short PATH_TRACE_MISMATCH = 13;
      const short UNAVAILABLE = 14;
      const short SIGNAL_LABEL_MISMATCH = 15;
      const short LOSS_OF_MULTI_FRAME = 16;
      const short COMMUNICATIONS_RECEIVE_FAILURE = 17;
      const short COMMUNICATIONS_TRANSMIT_FAILURE = 18;
      const short MODULATION_FAILURE = 19;
      const short DEMODULATION_FAILURE = 20;
      // Values 21-26 correspond to duplicated probable causes
      // Values 27-50 are reserved for M.3100 potential future extensions
```

```
const short BACK_PLANE_FAILURE = 51;
const short DATA_SET_PROBLEM = 52;
const short EQUIPMENT_IDENTIFIER_DUPLICATION = 53;
const short EXTERNAL_IF_DEVICE_PROBLEM = 54;
const short LINE_CARD_PROBLEM = 55;
const short MULTIPLEXER_PROBLEM = 56;
const short NE_IDENTIFIER_DUPLICATION = 57;
const short POWER_PROBLEM = 58;
const short PROCESSOR_PROBLEM = 59;
const short PROTECTION_PATH_FAILURE = 60;
const short RECEIVER_FAILURE = 61;
const short REPLACEABLE_UNIT_MISSING = 62;
const short REPLACEABLE_UNIT_TYPE_MISMATCH = 63;
const short SYNCHRONIZATION_SOURCE_MISMATCH = 64;
const short TERMINAL_PROBLEM = 65;
const short TIMING_PROBLEM = 66;
const short TRANSMITTER_FAILURE = 67;
const short TRUNK_CARD_PROBLEM = 68;
const short REPLACEABLE_UNIT_PROBLEM = 69;
const short REAL_TIME_CLOCK_FAILURE = 70;
// Values 71-80 correspond to duplicated probable causes
const short PROTECTION_MECHANISM_FAILURE = 81;
const short PROTECTING_RESOURCE_FAILURE = 82;
// Values 83-100 are reserved for M.3100 potential future extensions
const short AIR_COMPRESSOR_FAILURE = 101;
const short AIR_CONDITIONING_FAILURE = 102;
const short AIR_DRYER_FAILURE = 103;
const short BATTERY_DISCHARGING = 104;
const short BATTERY_FAILURE = 105;
const short COMMERCIAL_POWER_FAILURE = 106;
const short COOLING_FAN_FAILURE = 107;
const short ENGINE_FAILURE = 108;
const short FIRE_DETECTOR_FAILURE = 109;
const short FUSE_FAILURE = 110;
const short GENERATOR_FAILURE = 111;
const short LOW_BATTERY_THRESHOLD = 112;
const short PUMP_FAILURE = 113;
const short RECTIFIER_FAILURE = 114;
const short RECTIFIER_HIGH_VOLTAGE = 115;
const short RECTIFIER_LOW_F_VOLTAGE = 116;
const short VENTILATION_SYSTEM_FAILURE = 117;
const short ENCLOSURE_DOOR_OPEN = 118;
const short EXPLOSIVE_GAS = 119;
const short FIRE = 120;
const short FLOOD = 121;
const short HIGH_HUMIDITY = 122;
const short HIGH_TEMPERATURE = 123;
const short HIGH_WIND = 124;
const short ICE_BUILD_UP = 125;
const short INTRUSION_DETECTION = 126;
const short LOW_FUEL = 127;
const short LOW_HUMIDITY = 128;
const short LOW_CABLE_PRESSURE = 129;
const short LOW_TEMPERATURE = 130;
const short LOW_WATER = 131;
const short SMOKE = 132;
const short TOXIC_GAS = 133;
// Values 134-135 correspond to duplicated probable causes
const short EXTERNAL_POINT_FAILURE = 136;
// Values 137-150 are reserved for potential M.3100 future extensions
const short STORAGE_CAPACITY_PROBLEM = 151;
const short MEMORY_MISMATCH = 152;
const short CORRUPT_DATA = 153;
```

```
const short OUT_OF_CPU_CYCLES = 154;
const short SOFTWARE_ENVIRONMENT_PROBLEM = 155;
const short SOFTWARE_DOWNLOAD_FAILURE = 156;
const short LOSS_OF_REAL_TIME = 157;
const short REINITIALIZED = 158;
// Values 159-167 correspond to duplicated probable causes
// Values 168-200 are reserved for potential M.3100 future extensions
// Values 201-202 correspond to duplicated probable causes
const short EXCESSIVE_ERROR_RATE = 203;
// Values 204-207 correspond to duplicated probable causes
// Values 208-300 are reserved for potential M.3100 future extensions
/*
Probable causes originating from X.721.
Values below correspond to X.721 values with an offset of 300.
*/
const short ADAPTER_ERROR = 301;
const short APPLICATION_SUBSYSTEM_FAILURE = 302;
const short BANDWIDTH_REDUCED = 303;
// Value 304 corresponds to a duplicated probable cause
const short COMMUNICATIONS_PROTOCOL_ERROR = 305;
const short COMMUNICATIONS_SUBSYSTEM_FAILURE = 306;
const short CONFIGURATION_OR_CUSTOMIZATION_ERROR = 307;
const short CONGESTION = 308;
// Value 309 corresponds to a duplicated probable cause
const short CPU_CYCLES_LIMIT_EXCEEDED = 310;
const short DATA_SET_OR_MODEM_ERROR = 311;
// Value 312 corresponds to a duplicated probable cause
const short DTE_DCE_INTERFACE_ERROR = 313;
// Value 314 corresponds to a duplicated probable cause
const short EQUIPMENT_MALFUNCTION = 315;
const short EXCESSIVE_VIBRATION = 316;
const short FILE_ERROR = 317;
// Values 318-320 correspond to duplicated probable causes
const short HEATING_OR_VENTILATION_OR_COOLING_SYSTEM_PROBLEM = 321;
const short HUMIDITY_UNACCEPTABLE = 322;
const short INPUT_OUTPUT_DEVICE_ERROR = 323;
const short INPUT_DEVICE_ERROR = 324;
const short LAN_ERROR = 325;
const short LEAK_DETECTED = 326;
const short LOCAL_NODE_TRANSMISSION_ERROR = 327;
// Values 328-329 correspond to duplicated probable causes
const short MATERIAL_SUPPLY_EXHAUSTED = 330;
// Value 331 corresponds to a duplicated probable cause
const short OUT_OF_MEMORY = 332;
const short OUTPUT_DEVICE_ERROR = 333;
const short PERFORMANCE_DEGRADED = 334;
// Value 335 corresponds to a duplicated probable cause
const short PRESSURE_UNACCEPTABLE = 336;
// Values 337-338 correspond to duplicated probable causes
const short QUEUE_SIZE_EXCEEDED = 339;
const short RECEIVE_FAILURE = 340;
// Value 341 corresponds to a duplicated probable cause
const short REMOTE_NODE_TRANSMISSION_ERROR = 342;
const short RESOURCE_AT_OR_NEARING_CAPACITY = 343;
const short RESPONSE_TIME_EXCESSIVE = 344;
const short RETRANSMISSION_RATE_EXCESSIVE = 345;
const short SOFTWARE_ERROR = 346;
const short SOFTWARE_PROGRAM_ABNORMALLY_TERMINATED = 347;
const short SOFTWARE_PROGRAM_ERROR = 348;
// Value 349 corresponds to a duplicated probable cause
const short TEMPERATURE_UNACCEPTABLE = 350;
const short THRESHOLD_CROSSED = 351;
// Value 352 corresponds to a duplicated probable cause
```

```
const short TOXIC_LEAK_DETECTED = 353;
const short TRANSMIT_FAILURE = 354;
// Value 355 corresponds to a duplicated probable cause
const short UNDERLYING_RESOURCE_UNAVAILABLE = 356;
const short VERSION_MISMATCH = 357;
// Values 358-500 are reserved for potential X.721 future extensions
/*
Probable causes for 2G & 3G wireless systems.
*/
const short A_BIS_TO_BTS_INTERFACE_FAILURE = 501;
const short A_BIS_TO_TRX_INTERFACE_FAILURE = 502;
const short ANTENNA_PROBLEM = 503;
const short BATTERY_BREAKDOWN = 504;
const short BATTERY_CHARGING_FAULT = 505;
const short CLOCK_SYNCHRONIZATION_PROBLEM = 506;
const short COMBINER_PROBLEM = 507;
const short DISK_PROBLEM = 508;
// Value 509 corresponds to a duplicated probable cause
const short EXCESSIVE_RECEIVER_TEMPERATURE = 510;
const short EXCESSIVE_TRANSMITTER_OUTPUT_POWER = 511;
const short EXCESSIVE_TRANSMITTER_TEMPERATURE = 512;
const short FREQUENCY_HOPPING_DEGRADED = 513;
const short FREQUENCY_HOPPING_FAILURE = 514;
const short FREQUENCY_REDEFINITION_FAILED = 515;
const short LINE_INTERFACE_FAILURE = 516;
const short LINK_FAILURE = 517;
const short LOSS_OF_SYNCHRONIZATION = 518;
const short LOST_REDUNDANCY = 519;
const short MAINS_BREAKDOWN_WITH_BATTERY_BACKUP = 520;
const short MAINS_BREAKDOWN_WITHOUT_BATTERY_BACKUP = 521;
const short POWER_SUPPLY_FAILURE = 522;
const short RECEIVER_ANTENNA_FAULT = 523;
// Value 524 corresponds to a duplicated probable cause
const short RECEIVER_MULTICOUPLER_FAILURE = 525;
const short REDUCED_TRANSMITTER_OUTPUT_POWER = 526;
const short SIGNAL_QUALITY_EVALUATION_FAULT = 527;
const short TIMESLOT_HARDWARE_FAILURE = 528;
const short TRANSCEIVER_PROBLEM = 529;
const short TRANSCODER_PROBLEM = 530;
const short TRANSCODER_OR_RATE_ADAPTER_PROBLEM = 531;
const short TRANSMITTER_ANTENNA_FAILURE = 532;
const short TRANSMITTER_ANTENNA_NOT_ADJUSTED = 533;
// Value 534 corresponds to a duplicated probable cause
const short TRANSMITTER_LOW_VOLTAGE_OR_CURRENT = 535;
const short TRANSMITTER_OFF_FREQUENCY = 536;
const short DATABASE_INCONSISTENCY = 537;
const short FILE_SYSTEM_CALL_UNSUCCESSFUL = 538;
const short INPUT_PARAMETER_OUT_OF_RANGE = 539;
const short INVALID_PARAMETER = 540;
const short INVALID_POINTER = 541;
const short MESSAGE_NOT_EXPECTED = 542;
const short MESSAGE_NOT_INITIALIZED = 543;
const short MESSAGE_OUT_OF_SEQUENCE = 544;
const short SYSTEM_CALL_UNSUCCESSFUL = 545;
const short TIMEOUT_EXPIRED = 546;
const short VARIABLE_OUT_OF_RANGE = 547;
const short WATCH_DOG_TIMER_EXPIRED = 548;
const short COOLING_SYSTEM_FAILURE = 549;
const short EXTERNAL_EQUIPMENT_FAILURE = 550;
const short EXTERNAL_POWER_SUPPLY_FAILURE = 551;
const short EXTERNAL_TRANSMISSION_DEVICE_FAILURE = 552;
// Values 553-560 correspond to duplicated probable causes
const short REDUCED_ALARM_REPORTING = 561;
```

```
   const short REDUCED_EVENT_REPORTING = 562;
   const short RECUCED_LOGGING_CAPABILITY = 563;
   const short SYSTEM_RESOURCES_OVERLOAD = 564;
   const short BROADCAST_CHANNEL_FAILURE = 565;
   const short CONNECTION_ESTABLISHMENT_ERROR = 566;
   const short INVALID_MESSAGE_RECEIVED = 567;
   const short INVALID_MSU_RECEIVED = 568;
   const short LAPD_LINK_PROTOCOL_FAILURE = 569;
   const short LOCAL_ALARM_INDICATION = 570;
   const short REMOTE_ALARM_INDICATION = 571;
   const short ROUTING_FAILURE = 572;
   const short SS7_PROTOCOL_FAILURE = 573;
   const short TRANSMISSION_ERROR = 574;
   // Value 575 corresponds to a duplicated probable cause
   // Values 576-700 are reserved for potential future extensions
   // for 2G & 3G wireless systems
   /*
   Probable causes originating from M.3100 security alarm causes.
   Values below correspond to M.3100 values with an offset of 700.
   */
   const short AUTHENTICATION_FAILURE= 701;
   const short BREACH_OF_CONFIDENTIALITY = 702;
   const short CABLE_TAMPER = 703;
   const short DELAYED_INFORMATION = 704;
   const short DENIAL_OF_SERVICE = 705;
   const short DUPLICATE_INFORMATION = 706;
   const short INFORMATION_MISSING = 707;
   const short INFORMATION_MODIFICATION_DETECTED = 708;
   const short INFORMATION_OUT_OF_SEQUENCE = 709;
   // Value 710 corresponds to a duplicated probable cause
   const short KEY_EXPIRED = 711;
   const short NON_REPUDIATION_FAILURE = 712;
   const short OUT_OF_HOURS_ACTIVITY = 713;
   const short OUT_OF_SERVICE = 714;
   const short PROCEDURAL_ERROR = 715;
   const short UNAUTHORISED_ACCESS_ATTEMPT = 716;
   const short UNEXPECTED_INFORMATION= 717;
   const short UNSPECIFIED_REASON = 718;
   // Values 719-800 are reserved for potential M.3100 future extensions
};

/*
This block identifies the acknowledgement state of a reported alarm.
*/
interface AckState
{
   const short ACKNOWLEDGED = 1;
   const short UNACKNOWLEDGED = 2;
};

/*
This block identifies attributes which are included as part of the Alarm IRP
These attribute values should not clash with those defined for the attributes
of notification header (see IDL of Notification IRP).
*/
interface AttributeNameValue
{
   const string ALARM_ID = "f";
   const string PROBABLE_CAUSE = "g";
   const string PERCEIVED_SEVERITY = "h";
   const string SPECIFIC_PROBLEM = "i";
   const string ADDITIONAL_TEXT = "j";
   const string ACK_TIME = "k";
```

```
   const string ACK_USER_ID = "l";
   const string ACK_SYSTEM_ID = "m";
   const string ACK_STATE = "n";
   const string COMMENTS = "o";
   const string BACKED_UP_STATUS = "p";
   const string BACK_UP_OBJECT = "q";
   const string THRESHOLD_INFO = "r";
   const string TREND_INDICATION = "s";
   const string STATE_CHANGE_DEFINITION = "t";
   const string MONITORED_ATTRIBUTES = "u";
   const string PROPOSED_REPAIR_ACTIONS = "v";
   const string CORRELATED_NOTIFICATIONS = "w";
   const string REASON = "x";
   const string CLEAR_USER_ID = "y";
   const string CLEAR_SYSTEM_ID = "z";
   const string ALARM_LIST_ALIGNMENT_REQUIREMENT = "ff";
   const string SERVICE_USER = "gg";
   const string SERVICE_PROVIDER = "hh";
   const string SECURITY_ALARM_DETECTOR = "ii";
};

/*
Defines the content of a Comment
*/
struct Comment
{
   ManagedGenericIRPConstDefs::IRPTime comment_time;
   string comment_text;
   string user_id;
   string system_id;
};

/*
Defines a set of comments which are placed in the COMMENTS attribute
of a structured event.
*/
typedef sequence <Comment> CommentSet;

/*
It indicates if an object has a back up.
True implies backed up.  False implies not backed up.
*/
typedef boolean BackedUpStatusType;

/*
It indicates if the threshold crossed was in the up or down direction.
*/
enum ThresholdIndicationType {UP, DOWN};

/*
It indicates if the AlarmList alignment is required.
*/
enum AlarmListAlignmentRequirementType {REQUIRED, NOTREQUIRED};

/* FloatTypeOpt is an optional type.
If the discriminator is true the value is present.
Otherwise the value is null.
*/
union FloatTypeOpt switch (boolean)
{
   case TRUE: float value;
};
```

```
/* ThresholdLevelIndType describes multi-level
threshold crossings.
Up is the only permitted choice for a counter.
If indication is "up", low value is optional.
@member indication: indicates up or down direction
  of crossing.
@member low: the low observed value.
@member high: the high observed value.
*/
struct ThresholdLevelIndType
{
   ThresholdIndicationType indication;
   FloatTypeOpt low;
   float high;
};

/* ThresholdLevelIndTypeOpt is an optional type.
If the discriminator is true the value is present.
Otherwise, the value is null.
*/
union ThresholdLevelIndTypeOpt switch (boolean)
{
   case TRUE: ThresholdLevelIndType value;
};

/* ThresholdInfoType indicates some gauge or counter
attribute passed a set threshold.
@member attributeID: identifies the attribute that
  crossed the threshold.
@member observedValue: attributes that are of type
  integer will be converted to floats.
@member thresholdlevel: This parameter is for
  multi-level thresholds. Optional.
@member armTime: May contain empty string.
*/
struct ThresholdInfoType
{
   string attributeID;
   float observedValue;
   ThresholdLevelIndTypeOpt thresholdLevel;
   string armTime;
};

/*
It indicates if some observed condition is getting better, worse,
or not changing.
*/
enum TrendIndicationType {LESSSEVERE, NOCHANGE, MORESEVERE};

/*
It is used to report a changed attribute value.
*/
struct AttributeValueChangeType
{
   string attribute_name;
   any    old_value;  // type depends on attribute
   any    new_value;  // type depends on attribute
};

typedef sequence <AttributeValueChangeType> AttributeChangeSetType;

/*
It is used to report an attribute and its value.
```

```
*/
struct AttributeValueType
{
   string attribute_name;
   any    value;  // type depends on the attribute
};

typedef sequence <AttributeValueType> AttributeSetType;

typedef sequence <long> NotifIdSetType;

/*
This holds identifiers of notifications that are correlated.
*/
struct CorelatedNotification
{
   DN source;  // Contains DN of MO that emitted the set of notifications
               // DN string format in compliance with Name Convention for
               // Managed Object.
               // This may be a zero-length string.  In this case, the MO
               // is identified by the value of the MOI attribute
               // of the Structured Event, i.e., the notification.
   NotifIdSetType notif_id_set;  // Set of related notification ids
};

/*
Correlated Notification sets are sets of Correlated Notification
structures.
*/
typedef sequence <CorelatedNotification> CorrelatedNotificationSetType;

/*
Define the structure of Alarm ID and Perceived Severity used within the
alarm acknowledgment operation. Note: perceived_severity is an optional
parameter. If this value is present, it must have one of the defined values
of Interface PerceivedSeverity.
*/
struct AlarmInformationIdAndSev
{
   string alarm_information_reference;
   ManagedGenericIRPConstDefs::ShortTypeOpt perceived_severity;
};

/*
Define set of the above structure of Alarm ID and Perceived Severity.
*/
typedef sequence <AlarmInformationIdAndSev> AlarmInformationIdAndSevSeq;

/*
It indicates the reason for an alarm acknowledgement to have failed:
  - The specified Alarm Information is absent from the Alarm List
  - The Perceived Severity to be acknowledged has changed and/or is different
    within the Alarm List
  - The acknowledgement failed for some other reason
*/
enum AcknowledgeFailureCategories
{
   UNKNOWNALARMID,
   WRONGPERCEIVEDSEVERITY,
   ACKNOWLEDGMENTFAILED
};

/*
```

```
    Define the structure returned when an operation fails for a set of alarm ids.
    A reason is provided in order to indicate why the operation failed.
    */
    struct BadAlarmInformationId
    {
       string alarm_information_reference;
       string reason;
    };

    /*
    Define the structure returned when the acknowledge operation fails for a set
    of alarm ids.
    A failure category and a reason are provided in order to indicate why the
    operation failed.
    */
    struct BadAcknowledgeAlarmInfo
    {
       string alarm_information_reference;
       AcknowledgeFailureCategories failure_category;
       string reason;
    };

    typedef sequence <BadAlarmInformationId> BadAlarmInformationIdSeq;
    typedef sequence <BadAcknowledgeAlarmInfo> BadAcknowledgeAlarmInfoSeq;
    typedef sequence <string> AlarmInformationIdSeq;
    typedef CosNotification::EventBatch AlarmInformationSeq;
};
#endif // _ALARMIRPCONSTDEFS_IDL_
```

A.2 IDL specification (file name “AlarmIRPSystem.idl”)

```
//File: AlarmIRPSystem.idl

#ifndef _ALARMIRPSYSTEM_IDL_
#define _ALARMIRPSYSTEM_IDL_

#include "AlarmIRPConstDefs.idl"
#include "ManagedGenericIRPSystem.idl"

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: AlarmIRPSystem
This module contains the specification of all operations of Alarm IRP Agent.
================================================================
*/
module AlarmIRPSystem
{
   /*
   System fails to complete the operation.  System can provide reason
   to qualify the exception.  The semantics carried in reason
   is outside the scope of this IRP.
   */
   exception GetAlarmIRPVersions { string reason; };
   exception GetAlarmIRPOperationsProfile { string reason; };
   exception GetAlarmIRPNotificationProfile { string reason; };
   exception AcknowledgeAlarms { string reason; };
   exception UnacknowledgeAlarms { string reason; };
   exception CommentAlarms { string reason; };
   exception ClearAlarms { string reason; };
   exception GetAlarmList { string reason; };
   exception GetAlarmCount { string reason; };
   exception NextAlarmInformations { string reason; };

   /*
   The AlarmInformationIterator is used to iterate through a snapshot of
   Alarm Informations taken from the Alarm List when IRPManager invokes
   get_alarm_list. IRPManager uses it to pace the return of Alarm
   Informations.
   IRPAgent controls the life-cycle of the iterator. However, a destroy
   operation is provided to handle the case where IRPManager wants to stop
   the iteration procedure before reaching the last iteration.
   */
   interface AlarmInformationIterator
   {
      /*
      This method returns between 1 and "how_many" Alarm Informations. The
      IRPAgent may return less than "how_many" items even if there are more
      items to return. "how_many" must be non-zero. Return TRUE if there may
      be more Alarm Information to return. Return FALSE if there are no more
      Alarm Information to be returned.
      If FALSE is returned, the IRPAgent will automatically destroy the
      iterator.
      */
      boolean next_alarmInformations (
         in unsigned short how_many,
         out AlarmIRPConstDefs::AlarmInformationSeq alarm_informations
      )
      raises (NextAlarmInformations, ManagedGenericIRPSystem::InvalidParameter);

      /*
```

```
   This method destroys the iterator.
   */
   void destroy();
};

interface AlarmIRP
{
   /*
   Return the list of all supported Alarm IRP versions.
   Implementations are to provide a return value consisting of one or more
   IRPVersions.
   Each IRPVersion is defined by the rule in the clause titled
   "IRP document version number string"
   */
   ManagedGenericIRPConstDefs::VersionNumberSet get_alarm_IRP_versions (
   )
   raises (GetAlarmIRPVersions);

   /*
   Return the list of all supported operations and their supported
   parameters for a specific Alarm IRP version.
   */
   ManagedGenericIRPConstDefs::MethodList get_alarm_IRP_operations_profile (
      in ManagedGenericIRPConstDefs::VersionNumber alarm_irp_version
   )
   raises (GetAlarmIRPOperationsProfile,
           ManagedGenericIRPSystem::OperationNotSupported,
           ManagedGenericIRPSystem::InvalidParameter);

   /*
   Return the list of all supported notifications and their supported
   parameters for a specific Alarm IRP version.
   */
   ManagedGenericIRPConstDefs::MethodList get_alarm_IRP_notification_profile
   (
      in ManagedGenericIRPConstDefs::VersionNumber alarm_irp_version
   )
   raises (GetAlarmIRPNotificationProfile,
           ManagedGenericIRPSystem::OperationNotSupported,
           ManagedGenericIRPSystem::InvalidParameter);

   /*
   Request to acknowledge one or more alarms.
   */
   ManagedGenericIRPConstDefs::Signal acknowledge_alarms (
      in AlarmIRPConstDefs::AlarmInformationIdAndSevSeq
         alarm_information_id_and_sev_list,
      in string ack_user_id,
      in ManagedGenericIRPConstDefs::StringTypeOpt ack_system_id,
      out AlarmIRPConstDefs::BadAcknowledgeAlarmInfoSeq
         bad_ack_alarm_info_list
   )
   raises (AcknowledgeAlarms, ManagedGenericIRPSystem::ParameterNotSupported,
           ManagedGenericIRPSystem::InvalidParameter);

   /*
   Request to remove acknowledgement information of one or more alarms.
   */
   ManagedGenericIRPConstDefs::Signal unacknowledge_alarms (
      in AlarmIRPConstDefs::AlarmInformationIdSeq alarm_information_id_list,
      in string ack_user_id,
      in ManagedGenericIRPConstDefs::StringTypeOpt ack_system_id,
      out AlarmIRPConstDefs::BadAlarmInformationIdSeq
```

```
       bad_alarm_information_id_list
)
raises (UnacknowledgeAlarms,
        ManagedGenericIRPSystem::OperationNotSupported,
        ManagedGenericIRPSystem::ParameterNotSupported,
        ManagedGenericIRPSystem::InvalidParameter);

/*
Make comment to one or more alarms.
*/
ManagedGenericIRPConstDefs::Signal comment_alarms (
   in AlarmIRPConstDefs::AlarmInformationIdSeq alarm_information_id_list,
   in string comment_user_id,
   in ManagedGenericIRPConstDefs::StringTypeOpt comment_system_id,
   in string comment_text,
   out AlarmIRPConstDefs::BadAlarmInformationIdSeq
       bad_alarm_information_id_list
)
raises (CommentAlarms, ManagedGenericIRPSystem::OperationNotSupported,
        ManagedGenericIRPSystem::ParameterNotSupported,
        ManagedGenericIRPSystem::InvalidParameter);

/*
Request to clear one or more alarms.
*/
ManagedGenericIRPConstDefs::Signal clear_alarms (
   in AlarmIRPConstDefs::AlarmInformationIdSeq alarm_information_id_list,
   in string clear_user_id,
   in ManagedGenericIRPConstDefs::StringTypeOpt clear_system_id,
   out AlarmIRPConstDefs::BadAlarmInformationIdSeq
      bad_alarm_information_id_list
)
raises (ClearAlarms, ManagedGenericIRPSystem::ParameterNotSupported,
        ManagedGenericIRPSystem::InvalidParameter);

/*
This method returns Alarm Informations.
If flag is TRUE, all returned Alarm Informations shall be
in AlarmInformationSeq that contains 0 or more Alarm Informations.
Output parameter iter shall be useless.
If flag is FALSE, no Alarm Informations shall be in AlarmInformationSeq.
IRPAgent needs to use iter to retrieve them.
*/
AlarmIRPConstDefs::AlarmInformationSeq get_alarm_list (
   in ManagedGenericIRPConstDefs::StringTypeOpt filter,
   in AlarmIRPConstDefs::DNTypeOpt base_object,
   out boolean flag,
   out AlarmInformationIterator iter
)
raises (GetAlarmList, ManagedGenericIRPSystem::ParameterNotSupported,
        ManagedGenericIRPSystem::InvalidParameter);

/*
This method returns the count of Alarm Informations.
*/
void get_alarm_count (
   in ManagedGenericIRPConstDefs::StringTypeOpt filter,
   out unsigned long critical_count,
   out unsigned long major_count,
   out unsigned long minor_count,
   out unsigned long warning_count,
   out unsigned long indeterminate_count,
   out unsigned long cleared_count
```

```
      )
      raises (GetAlarmCount, ManagedGenericIRPSystem::OperationNotSupported,
              ManagedGenericIRPSystem::ParameterNotSupported,
              ManagedGenericIRPSystem::InvalidParameter);
   };
};

#endif // _ALARMIRPSYSTEM_IDL_
```

A.3 IDL specification (file name "AlarmIRPNotifications.idl")

```
//File: AlarmIRPNotifications.idl

#ifndef _ALARMIRPNOTIFICATIONS_IDL_
#define _ALARMIRPNOTIFICATIONS_IDL_

#include "AlarmIRPConstDefs.idl"
#include "NotificationIRPConstDefs.idl"
#include “NotificationIRPNotifications.idl”

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: AlarmIRPNotifications
This module contains notifications for Alarm IRP
================================================================
*/

module AlarmIRPNotifications
{

   interface NotifyNewAlarm: NotificationIRPNotifications::Notify
   {
      const string EVENT_TYPE = "notifyNewAlarm";

      /**
       * This constant defines the name of the jobId property,
       * which is transported in the filterable_body fields.
       * The data type for the value of this property
       * is short.
       */
      const string PROBABLE_CAUSE =
         AlarmIRPConstDefs::AttributeNameValue::PROBABLE_CAUSE;
      /**
       * This constant defines the name of the jobId property,
       * which is transported in the filterable_body fields.
       * The data type for the value of this property
       * is short.
       */
      const string PERCEIVED_SEVERITY =
         AlarmIRPConstDefs::AttributeNameValue::PERCEIVED_SEVERITY;
      /**
       * This constant defines the name of the jobId property,
       * which is transported in the filterable_body fields.
       * The data type for the value of this property
       * is string.
       */
      const string SPECIFIC_PROBLEM =
         AlarmIRPConstDefs::AttributeNameValue::SPECIFIC_PROBLEM;
```

```
/**
 * This constant defines the name of the jobId property,
 * which is transported in the filterable_body fields.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::CorrelatedNotificationSetType.
 */
const string CORRELATED_NOTIFICATIONS =
   AlarmIRPConstDefs::AttributeNameValue::CORRELATED_NOTIFICATIONS;
/**
 * This constant defines the name of the jobId property,
 * which is transported in the filterable_body fields.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::BackedUpStatusType.
 */
const string BACKED_UP_STATUS =
   AlarmIRPConstDefs::AttributeNameValue::BACKED_UP_STATUS;
/**
 * This constant defines the name of the jobId property,
 * which is transported in the filterable_body fields.
 * The data type for the value of this property
 * is a string carrying of DN of the back-up object.
 */
const string BACK_UP_OBJECT =
   AlarmIRPConstDefs::AttributeNameValue::BACK_UP_OBJECT;
/**
 * This constant defines the name of the jobId property,
 * which is transported in the filterable_body fields.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::TrendIndicationType.
 */
const string TREND_INDICATION =
   AlarmIRPConstDefs::AttributeNameValue::TREND_INDICATION;
/**
 * This constant defines the name of the jobId property,
 * which is transported in the filterable_body fields.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::ThresholdInfoType.
 */
const string THRESHOLD_INFO =
   AlarmIRPConstDefs::AttributeNameValue::THRESHOLD_INFO;
/**
 * This constant defines the name of the jobId property,
 * which is transported in the filterable_body fields.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::AttributeChangeSetType.
 */
const string STATE_CHANGE_DEFINITION =
   AlarmIRPConstDefs::AttributeNameValue::STATE_CHANGE_DEFINITION;
/**
 * This constant defines the name of the jobId property,
 * which is transported in the filterable_body fields.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::AttributeSetType.
 */
const string MONITORED_ATTRIBUTES =
   AlarmIRPConstDefs::AttributeNameValue::MONITORED_ATTRIBUTES;
/**
 * This constant defines the name of the jobId property,
 * which is transported in the filterable_body fields.
 * The data type for the value of this property
 * is string.
 */
const string PROPOSED_REPAIR_ACTIONS =
```

```
      AlarmIRPConstDefs::AttributeNameValue::PROPOSED_REPAIR_ACTIONS;
   /**
    * This constant defines the name of the jobId property,
    * which is transported in the filterable_body fields.
    * The data type for the value of this property
    * is string.
    */
   const string ADDITIONAL_TEXT =
      AlarmIRPConstDefs::AttributeNameValue::ADDITIONAL_TEXT;
   /**
    * This constant defines the name of the jobId property,
    * which is transported in the filterable_body fields.
    * The data type for the value of this property
    * is string.If the string is a zero-length string or if this NV pair is
    * absent, the default semantics is that alarmId is a concatenation of
    * managedObjectInstance, eventType, probableCause and specificProblem,
    * if present, of this Structured Event. Since probableCause is encoded
    * as a short, it shall be converted into string before concatenation.
    * The resultant string shall not contain spaces.
    */
   const string ALARM_ID = AlarmIRPConstDefs::AttributeNameValue::ALARM_ID;

   /**
    * This constant defines the name of the jobId property,
    * which is transported in the filterable_body fields.
    * The data type for the value of this property
    * is string.
    */
   const string SERVICE_USER =
      AlarmIRPConstDefs::AttributeNameValue::SERVICE_USER;
   /**
    * This constant defines the name of the jobId property,
    * which is transported in the filterable_body fields.
    * The data type for the value of this property
    * is string.
    */
   const string SERVICE_PROVIDER =
      AlarmIRPConstDefs::AttributeNameValue::SERVICE_PROVIDER;
   /**
    * This constant defines the name of the jobId property,
    * which is transported in the filterable_body fields.
    * The data type for the value of this property
    * is string.
    */
   const string SECURITY_ALARM_DETECTOR =
      AlarmIRPConstDefs::AttributeNameValue::SECURITY_ALARM_DETECTOR;
};

interface NotifyAckStateChanged: NotificationIRPNotifications::Notify
{
   const string EVENT_TYPE = "notifyAckStateChanged";

   /**
    * This constant defines the name of the jobId property,
    * which is transported in the filterable_body fields.
    * The data type for the value of this property
    * is short.
    */
   const string PROBABLE_CAUSE =
      AlarmIRPConstDefs::AttributeNameValue::PROBABLE_CAUSE;
   /**
    * This constant defines the name of the jobId property,
    * which is transported in the filterable_body fields.
```

```
     * The data type for the value of this property
     * is short.
     */
    const string PERCEIVED_SEVERITY =
       AlarmIRPConstDefs::AttributeNameValue::PERCEIVED_SEVERITY;
    /**
     * This constant defines the name of the jobId property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property
     * is string.If the string is a zero-length string or if this NV pair is
     * absent, the default semantics is that alarmId is a concatenation of
     * managedObjectInstance, eventType, probableCause and specificProblem,
     * if present, of this Structured Event. Since probableCause is encoded
     * as a short, it shall be converted into string before concatenation.
     * The resultant string shall not contain spaces.
     */
    const string ALARM_ID =
       AlarmIRPConstDefs::AttributeNameValue::ALARM_ID;
    /**
     * This constant defines the name of the jobId property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property
     * is ManagedGenericIRPConstDefs::IRPTime.
     */
    const string ACK_TIME = AlarmIRPConstDefs::AttributeNameValue:: ACK_TIME;
    /**
     * This constant defines the name of the jobId property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property
     * is string.
     */
    const string ACK_USER_ID =
       AlarmIRPConstDefs::AttributeNameValue::ACK_USER_ID;
    /**
     * This constant defines the name of the jobId property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property
     * is string.
     */
    const string ACK_SYSTEM_ID =
       AlarmIRPConstDefs::AttributeNameValue::ACK_SYSTEM_ID;
    /**
     * This constant defines the name of the jobId property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property
     * is AlarmIRPConstDefs::AckState.
     */
    const string ACK_STATE = AlarmIRPConstDefs::AttributeNameValue::ACK_STATE;

};
interface NotifyClearedAlarm: NotificationIRPNotifications::Notify
{
    const string EVENT_TYPE = "notifyClearedAlarm";

    /**
     * This constant defines the name of the jobId property,
     * which is transported in the filterable_body fields.
     * The data type for the value of this property
     * is short.
     */
    const string PROBABLE_CAUSE =
       AlarmIRPConstDefs::AttributeNameValue::PROBABLE_CAUSE;
    /**
```

```
        * This constant defines the name of the jobId property,
        * which is transported in the filterable_body fields.
        * The data type for the value of this property
        * is short.
        */
       const string PERCEIVED_SEVERITY =
          AlarmIRPConstDefs::AttributeNameValue::PERCEIVED_SEVERITY;
       /**
        * This constant defines the name of the jobId property,
        * which is transported in the filterable_body fields.
        * The data type for the value of this property
        * is string.If the string is a zero-length string or if this NV pair is
        * absent, the default semantics is that alarmId is a concatenation of
        * managedObjectInstance, eventType, probableCause and specificProblem,
        * if present, of this Structured Event. Since probableCause is encoded
        * as a short, it shall be converted into string before concatenation.
        * The resultant string shall not contain spaces.
        */
       const string ALARM_ID = AlarmIRPConstDefs::AttributeNameValue::ALARM_ID;
       /**
        * This constant defines the name of the jobId property,
        * which is transported in the filterable_body fields.
        * The data type for the value of this property
        * is string.
        */
       const string CLEAR_USER_ID =
          AlarmIRPConstDefs::AttributeNameValue::CLEAR_USER_ID;
       /**
        * This constant defines the name of the jobId property,
        * which is transported in the filterable_body fields.
        * The data type for the value of this property
        * is string.
        */
       const string CLEAR_SYSTEM_ID =
          AlarmIRPConstDefs::AttributeNameValue::CLEAR_SYSTEM_ID;
    };
    interface NotifyAlarmListRebuilt: NotificationIRPNotifications::Notify
    {
       const string EVENT_TYPE = "notifyAlarmListRebuilt";

       /**
        * This constant defines the name of the jobId property,
        * which is transported in the filterable_body fields.
        * The data type for the value of this property
        * is string.
        */
       const string REASON = AlarmIRPConstDefs::AttributeNameValue::REASON;
       /**
        * This constant defines the name of the jobId property,
        * which is transported in the filterable_body fields.
        * The data type for the value of this property
        * is AlarmIRPConstDefs::AlarmListAlignmentRequirementType.
        */
       const string ALARM_LIST_ALIGNMENT_REQUIREMENT =

AlarmIRPConstDefs::AttributeNameValue::ALARM_LIST_ALIGNMENT_REQUIREMENT;
    };
    interface NotifyChangedAlarm: NotificationIRPNotifications::Notify
    {
       const string EVENT_TYPE = "notifyChangedAlarm";

    };
    interface NotifyComments: NotificationIRPNotifications::Notify
```

```
   {
      const string EVENT_TYPE = "notifyComments";

      /**
       * This constant defines the name of the jobId property,
       * which is transported in the filterable_body fields.
       * The data type for the value of this property
       * is AlarmIRPConstDefs::CommentSet.
       */
      const string COMMENTS = AlarmIRPConstDefs::AttributeNameValue::COMMENTS;
   };
   interface NotifyPotentialFaultyAlarmList:
NotificationIRPNotifications::Notify
   {
      const string EVENT_TYPE = "notifyPotentialFaultyAlarmList";

      /**
       * This constant defines the name of the jobId property,
       * which is transported in the filterable_body fields.
       * The data type for the value of this property
       * is string.
       */
      const string REASON = AlarmIRPConstDefs::AttributeNameValue::REASON;
   };


};

#endif // _ALARMIRPNOTIFICATIONS_IDL_
```

End of change in Annex A

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2002	S_15	--	--	--	Automatic upgrade to Rel-5 (no Rel-5 CR)	4.2.0	5.0.0
Sep 2002	S_17	SP-020476	017	--	Addition of "indeterminate" probable cause in IDL definition	5.0.0	5.1.0
Sep 2002	S_17	SP-020477	018	--	Add clearAlarm and other updates	5.0.0	5.1.0
Sep 2002	S_17	SP-020478	021	--	Add security alarms support in Alarm IRP: CORBA SS	5.0.0	5.1.0
Sep 2002	S_17	SP-020479	019	--	Add optional string parameters in CORBA Solution Set	5.0.0	5.1.0
Dec 2002	S_18	SP-020751	023	--	Add additionalInformation parameter in notification in Alarm IRP: CORBA SS (Alignment with Information Service in Rel-5 32111-2)	5.1.0	5.2.0
Dec 2002	S_18	SP-020752	024	--	Add notifyPotentialFaultyAlarmList in Alarm IRP: CORBA SS (Alignment with Information Service in Rel-5 32111-2)	5.1.0	5.2.0
Mar 2003	S_19	SP-030064	026	--	Correction of CORBA ALARM_IRP_VERSION in line with adopted Rel-5 policy	5.2.0	5.3.0
Mar 2003	S_19	SP-030062	028	--	Add missing ITU-T M.3100 Probable Cause values & Correct CORBA IDL errors	5.2.0	5.3.0
Mar 2003	S_19	SP-030138	029	--	Correction of CORBA IDL Optional clearSystemId	5.2.0	5.3.0
Jun 2003	S_20	SP-030276	030	--	Correction of CORBA type definition in struct "AlarmInformationIdAndSev"	5.3.0	5.4.0
Dec 2003	S_22	SP-030626	031	--	Add missing IDL definitions to support Security Alarms	5.4.0	5.5.0
Dec 2003	S_22	SP-030628	032	--	Remove references to GSM 12.11	5.5.0	6.0.0
Dec 2003	S_22	SP-030629	033	--	Align operation getAlarmList with the notification notifyAlarmListRebuilt	5.5.0	6.0.0
Dec 2004	S_26	SP-040791	034	--	Remove redundant ackTime parameter in notifyAckStateChanged	6.0.0	6.1.0
Dec 2004	S_26	SP-040791	035	--	Correction of probable cause definition for AlarmIRP IDL file.	6.0.0	6.1.0
Dec 2004	S_26	SP-040791	036	--	Add mandatory exception operationNotSupported for optional operations in AlarmIRP - Align IDL style with IDL Style Guide in 32.150	6.0.0	6.1.0
Dec 2004	S_26	SP-040791	037	--	Correction of filterable parameters - Align with the IS in 32.111-2	6.0.0	6.1.0

CR-Form-v7

CHANGE REQUEST

⌘ 32.111-2 CR 042 ⌘rev - ⌘ Current version: 6.3.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [ ] Radio Access Network [X] Core Network [X]

Title:	⌘	Add vendorSpecificAlarmType attribute in alarm information table and notifyNewAlarm
Source:	⌘	**SA5** (liyewen@chinamobile.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	28/01/2005
Category:	⌘	**C**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:

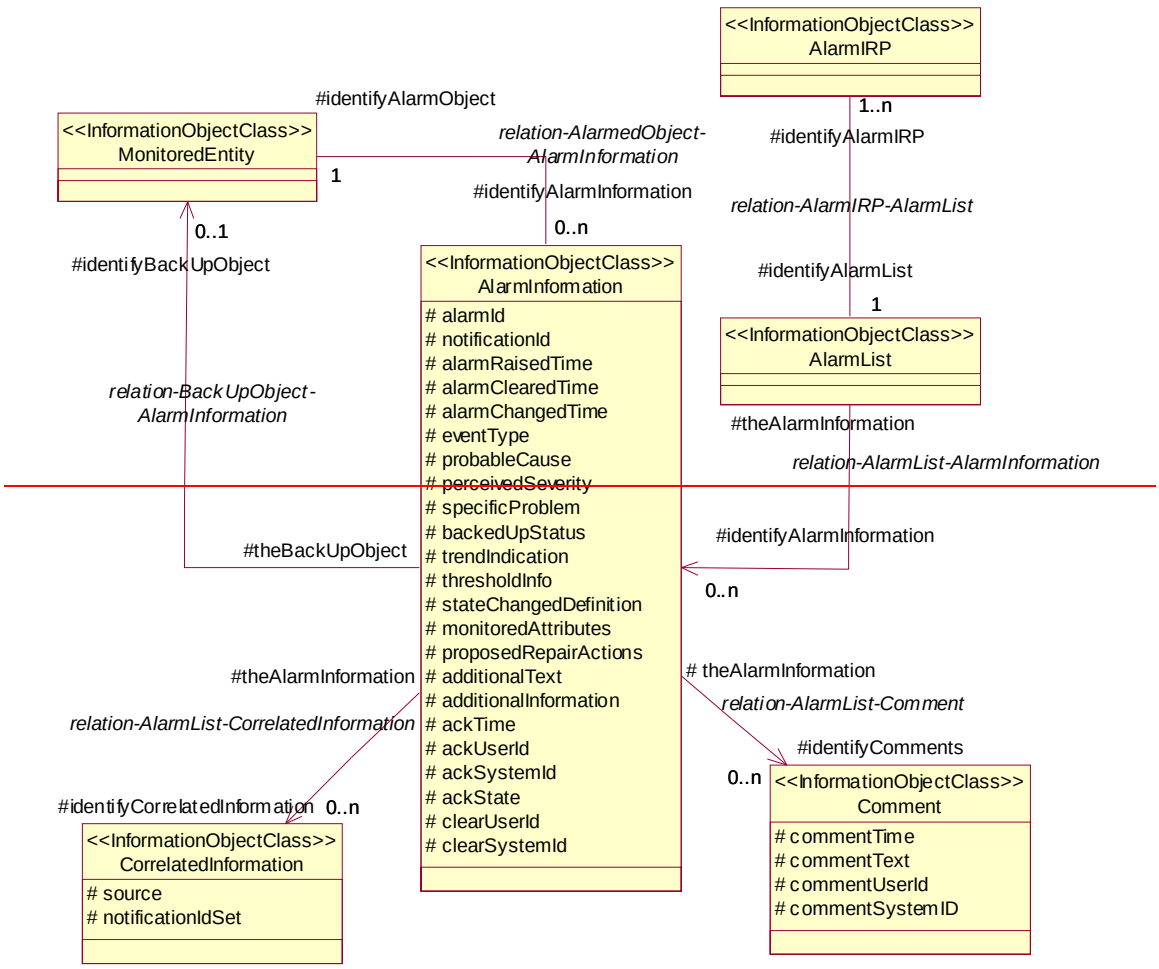
2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	IRPManager can't estimate the alarm importance only base on the unified alarm type. To determine the imporantce correctly, IRPManager need vendorSpecificAlarmType information via Itf-N
Summary of change:	⌘	Add vendorSpecificAlarmType attribute in alarm information table and notifyNewAlarm.
Consequences if not approved:	⌘	IRPManager will lose important alarm information to make right action.

Clauses affected:	⌘	5.2.1, 5.3.1, 5.5.1, 6.8.1			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
		X		O&M Specifications	32.111-3, 32.111-4
Other comments:	⌘				

Change in Clause 5.2.1

5.2.1 Attributes and relationships



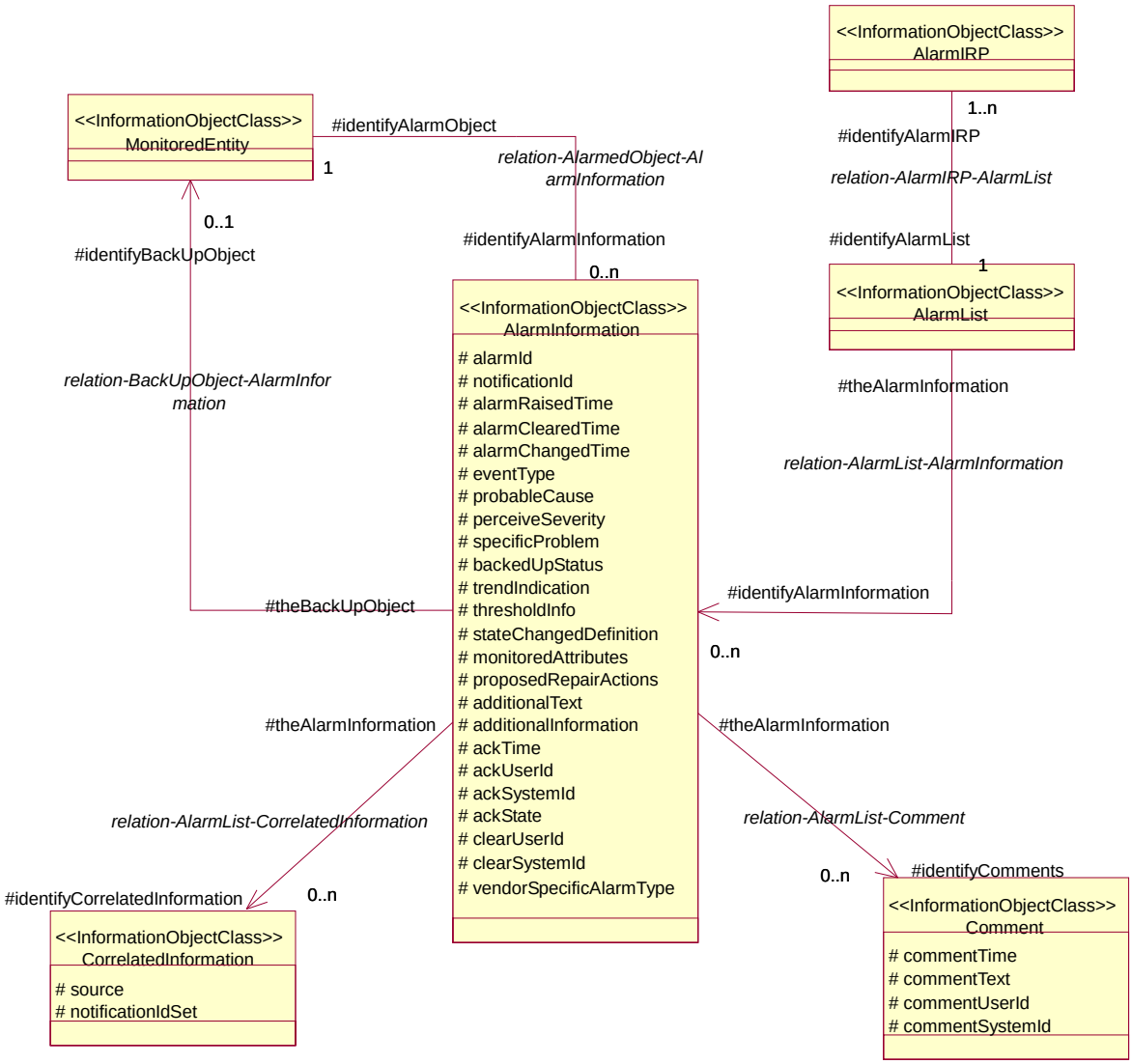


Figure :

End of Change in Clause 5.2.1

Change in Clause 5.3.1.2

5.3.1.2 Attribute

Attribute name	Support Qualifier
alarmId	M
notificationId (note 1)	M
alarmRaisedTime	M
alarmClearedTime	M
alarmChangedTime	O
eventType	M
vendorSpecificAlarmType	O
probableCause	M
perceivedSeverity	M
specificProblem	O
backedUpStatus	O
trendIndication	O
thresholdInfo	O
stateChangedDefinition	O
monitoredAttributes	O
proposedRepairActions	O
additionalText	O
additionalInformation	O
ackTime	M
ackUserId	M
ackSystemId	O
ackState	M
clearUserId	M (see note 2)
clearSystemId	O (see note 2)
serviceUser	O (see note 3)
serviceProvider	O (see note 3)
securityAlarmDetector	O (see note 3)

NOTE 1: This attribute may be "retired/removed" in Release 5 when Log IRP is introduced. Its removal implies that information carried in this attribute is no longer made accessible to IRPManager via the getAlarmList().
NOTE 2: These attributes and qualifiers are applicable only if the IRPAgent supports clearAlarms() (they are absent if clearAlarms() is not supported).
NOTE 3: These attributes must be supported if the IRPAgent emits `notifyNewAlarm` that carries security alarm information.

End of Change in Clause 5.3.1.2

Change in Clause 5.5.1

5.5.1 Definition and legal values

Name	Definition	Legal Values
alarmId	It identifies one AlarmInformation in the AlarmList.	
notificationId	It identifies the notification that carries the AlarmInformation.	
alarmRaisedTime	It indicates the date and time when the alarm is first raised by the alarmed resource.	All values indicating valid time.
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 IRPManager would not change this date and time.	All values indicating valid time.
alarmClearedTime	It indicates the date and time when the alarm is Cleared.	All values indicating valid time.
eventType	It indicates the type of event. See Annex A for information on event type.	See Annex A.
vendorSpecificAlarmType	It indicates the vendor specific alarm that identifies the NE alarm type or NE related alarm type. It is a vendor specific expression of eventType.	Vendor defined
probableCause	It qualifies alarm and provides further information than eventType. See Annex B for a complete listing.	See Annex B.
perceivedSeverity	It indicates the relative level of urgency for operator attention.	Critical, Major, Minor, Warning, Indeterminate, Cleared: see ITU-T Recommendation X.733 [2]. This IRP does not recommend the use of indeterminate.
specificProblem	It provides further qualification on the alarm than probableCause. This attribute value shall be single-value and of simple type such as integer or string. See definition in ITU-T Recommendation X.733 [2] clause 8.1.2.2.	Provided by vendor.
backedUpStatus	It indicates if an object (the MonitoredEntity) has a back up. See definition in ITU-T Recommendation X.733 [2] clause 8.1.2.4.	All values that carry the semantics of backedUpStatus defined by ITU-T X.733 [2] clause 8.1.2.4.
trendIndication	It indicates if some observed condition is getting better, worse, or not changing.	"Less severe", "no change", "more severe": see definition in ITU-T Recommendation X.733 [2] clause 8.1.2.6.
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 [2] clause 8.1.2.7. See also for information in TS 32.401 [4] subclause 5.6.	
stateChangeDefinition	It indicates MO attribute value changes. See definition in ITU-T Recommendation X.733 [2] clause 8.1.2.10.	
monitoredAttributes	It indicates MO attributes whose value changes are being monitored. See definition in ITU-T Recommendation X.733 [2] clause 8.1.2.11.	
proposedRepairActions	It indicates proposed repair actions. See definition in ITU-T Recommendation X.733 [2] clause 8.1.2.12.	
additionalText	It carries semantics that is outside the scope of this IRP specification. It may provide the identity of the NE (e.g. RNC, Node-B) from which the alarm has been originated. It corresponds to the "user label" attribute of the object class representing the NE in the Generic Network Resource Model [10]. It can contain further information on the alarm.	N/A
additionalInformation	It contains information on the alarm and its semantics is outside the scope of this IRP.	N/A

Name	Definition	Legal Values
ackTime	It identifies the time when the alarm has been acknowledged or unacknowledged the last time.	All values that indicate valid time that are later than that carried in alarmRaisedTime.
ackUserId	It identifies the last user who has changed the Acknowledgement State.	It can be used to identify the human operator such as "John Smith" or it can identify a group, such as "Team Six", or it can contain no information such as "".
ackSystemId	It identifies the system (EM or NM) from which the alarm has been acknowledged or unacknowledged the last time.	It can be used to identify the system, such as "system 6" or it can contain no information such as "".
ackState	It identifies the Acknowledgement State of the alarm.	Acknowledged: the alarm has been acknowledged. Unacknowledged: the alarm has been unacknowledged or the alarm has never been acknowledged.
commentTime	It carries the time when the comment has been added to the alarm.	
commentText	It carries the textual comment.	
commentUserId	It carries the identification of the user who made the comment.	
commentSystemId	It carries the identification of the system (EM or NM) from which the comment is made. That system supports the user that made the comment.	
source	It identifies one MonitoredEntity.	All values that carry the semantics of DN.
notificationIdSet	It carries one or more notification identifiers.	
clearUserId	It carries the identity of the user who invokes the clearAlarms operation.	It can be used to identify the human operator such as "John Smith" or it can identify a group, such as "Team Six", or it can contain no information such as "".
clearSystemId	It carries the identity of the system in which the IRPManager runs. That IRPManager supports the user who invokes the clearAlarms().	It can be used to identify the system, such as "system 6" or it can contain no information such as "".
serviceUser	It identifies the service-user whose request for service provided by the serviceProvider led to the generation of the security alarm.	This attribute may carry no information if the server user is not identifiable.
serviceProvider	It identifies the service-provider whose service is requested by the serviceUser and the service request provokes the generation of the security alarm.	
securityAlarmDetector	It carries the identity of the detector of the security alarm.	This attribute may carry no information if the security alarm detector is not identifiable.

End of Change in Clause 5.5.1

Change in Clause 6.8.1

6.8.1 notifyNewAlarm (M)

6.8.1.1 Definition

A new `AlarmInformation` has been added in the `AlarmList`. The subscribed `IRPManager` instances are notified of this fact if the added `AlarmInformation` satisfies the current filter constraint of their subscription.

There are two tables for Input Parameters. If alarmType parameter indicates "Communications Alarm", "Processing Error Alarm", "Environmental Alarm". "Quality Of Service Alarm" or "Equipment Alarm", the first table (see clause 6.8.1.2) shall be applicable for this notifyNewAlarm. If alarmType parameter indicates "Integrity Violation", "Operational Violation", "Physical Violation", "Security Violation" or "Time Domain Violation", the second table (see clause 6.8.1.2a) shall be applicable.

6.8.1.2 Input Parameters

Parameter Name	Qualifier	Matching Information	Comment
objectClass	M,F	MonitoredEntity.objectClass where the MonitoredEntity is identified by the relation-AlarmedObject-AlarmInformation of the new AlarmInformation.	
objectInstance	M,F	MonitoredEntity.objectInstance where the MonitoredEntity is identified by the relation-AlarmedObject-AlarmInformation of the new AlarmInformation.	
notificationId	M	This carries the semantics of notification identifier.	
eventTime	M,F	AlarmInformation.alarmRaisedTime	
systemDN	C,F	IRPAgent.systemDN where the IRPAgent is related to the AlarmIRP that is related to this AlarmList.	It carries the DN of the IRPAgent.
notificationType	M,F	"notifyNewAlarm".	
probableCause	M,F	AlarmInformation.probableCause	
perceivedSeverity	M,F	AlarmInformation.perceivedSeverity	
alarmType	M, F	AlarmInformation.eventType	The notification structure defined by this table is applicable if this parameter indicates "Communications Alarm", "Processing Error Alarm", "Environmental Alarm". "Quality Of Service Alarm" or "Equipment Alarm".
vendorSpecificAlarmType	O, F	AlarmInfomation.vendorSpecificAlarmType	
specificProblem	O	AlarmInformation.specificProblem	
correlatedNotifications	O	The set of CorrelatedNotification related to this AlarmInformation.	
backedUpStatus	O	AlarmInformation.backedUpStatus	
backUpObject	O	MonitoredEntity.objectInstance where the MonitoredEntity is identified by relation-BackUpObject-AlarmInformation of the new AlarmInformation.	It carries the DN of the back up object.
trendIndication	O	AlarmInformation.trendIndication	
thresholdInfo	O	AlarmInformation.thresholdInfo	
stateChangeDefinition	O	AlarmInformation.stateChange	
monitoredAttributes	O	AlarmInformation.monitoredAttributes	
proposedRepairActions	O	AlarmInformaton.proposedRepairActions	
additionalText	O	AlarmInformation.additionalText	
additionalInformation	O	AlarmInformation.additionalInformation	
alarmId	M	AlarmInformation.alarmId	

6.8.1.2a Input Parameters for notification related to security alarm

Parameter Name	Qualifier	Matching Information	Comment
objectClass	M,F	MonitoredEntity.objectClass where the MonitoredEntity is identified by the relation-AlarmedObject-AlarmInformation of the new AlarmInformation.	
objectInstance	M,F	MonitoredEntity.objectInstance where the MonitoredEntity is identified by the relation-AlarmedObject-AlarmInformation of the new AlarmInformation.	
notificationId	M	This carries the semantics of notification identifier.	
eventTime	M,F	AlarmInformation.alarmRaisedTime	
SystemDN	C,F	IRPAgent.systemDN where the IRPAgent is related to the AlarmIRP that is related to this AlarmList.	It carries the DN of the IRPAgent.
notificationType	M,F	"notifyNewAlarm".	
probableCause	M,F	AlarmInformation.probableCause	
perceivedSeverity	M,F	AlarmInformation.perceivedSeverity	
alarmType	M, F	AlarmInformation.eventType	The notification structure of this table is applicable if this parameter indicates "Integrity Violation", "Operational Violation", "Physical Violation", "Security Violation", "Time Domain Violation".
vendorSpecificlAlarmType	O, F	Alarminformation.vendorSpecificAlarmType	
correlatedNotifications	O	The set of CorrelatedNotification related to this AlarmInformation.	
additionalText	O	AlarmInformation.additionalText	
additionalInformation	O	AlarmInformation.additionalInformation	
serviceUser	M	AlarmInformation.serviceUser	This may contain no information if the identify of the service-user (requesting the service) is not known.
serviceProvider	M	AlarmInformation.serviceProvider	This shall always identify the service-provider receiving a service request, from serviceUser, that provokes the security alarm.
securityAlarmDetector	M	AlarmInformation.securityAlarmDetector	This may contain no information if the detector of the security alarm is the serviceProvider.
alarmId	M	AlarmInformation.alarmId	

End of Change in Clause 6.8.1
End of Document

Annex D (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Dec 2004	S_26	SP-040791	037	--	Correction of probable cause for alarms.	6.2.0	6.3.0

CR-Form-v7

CHANGE REQUEST

⌘ 32.111-3 CR 040 ⌘rev - ⌘ Current version: 6.1.0 ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [ ] Radio Access Network [X] Core Network [X]

Title:	⌘	Add vendor specific AlarmType attribute in alarm IRP CORBA Solution Set - Align with the IS (TS 32.111-2)
Source:	⌘	**SA5** (liyewen@chinamobile.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	28/01/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction 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.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	IRPManager can't estimate the alarm importance only base on the unified alarm type. Vendor specific alarm type is helpful for IRPManager to take right action.
Summary of change:	⌘	Add vendor specific AlarmType attributes in alarmIRP CORBA Solution Set.
Consequences if not approved:	⌘	IRPManager can't estimate the real alarm importance correctly.

Clauses affected:	⌘	5.2.1, 5.3.1.2, 5.5.1, 6.8.1

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	Parent CR 32.111-2 in S5-056099

Change in Clause 5.3

5.3 Notification parameter mapping

Table 11: Mapping for `notifyNewAlarm` (to carry non-security-related alarms)

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding SS attribute.	domain_name		It carries the IRP document version number string. See sub-clause 3.3. It indicates the syntax and semantics of the Structured Event as defined by this specification.
notificationType	type_name	M	This is the NOTIFY_FM_NEW_ALARM of interface NotificationType of module AlarmIRPConstDefs.
alarmType	event_name	M	It identifies one of the following: communications alarm, processing error alarm, environmental alarm, quality of service alarm and equipment alarm. It is a string defined by interface AlarmType of module AlarmIRPConstDefs.
There is no corresponding SS attribute.	variable Header		
objectClass, objectInstance	One NV pair of filterable_ body_fields	M	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string. Name of NV pair is the MANAGED_OBJECT_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string.
notificationId	One NV pair of remaining_body	M	Name of NV pair is the NOTIFICATION_ID of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a long.
eventTime	One NV pair of filterable_ body_fields	M	Name of NV pair is the EVENT_TIME of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a IRPTime of module ManagedGenericIRPConstDefs.
systemDN	One NV pair of filterable_ body_fields	M	Name of NV pair is the SYSTEM_DN of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string.
probableCause	One NV pair of filterable_ body_fields	M	Name of NV pair is the PROBABLE_CAUSE of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a short defined by interface ProbableCause of module AlarmIRPConstDefs.
perceivedSeverity	One NV pair of filterable_ body_fields	M	Name of NV pair is the PERCEIVED_SEVERITY of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a short defined by interface PerceivedSeverity of module AlarmIRPConstDefs.
vendorSpecificAlarmType	One NV pair of filterable_ body_fields	O	Name of NV pair is the VENDER_SPECIFIC_ALARM_TYPE of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
specificProblem	One NV pair of remaining_body	O	Name of NV pair is the SPECIFIC_PROBLEM of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
correlatedNotifications	One NV pair of remaining_body	O	Name of NV pair is the CORRELATED_NOTIFICATIONS of interface AttributeNameValue. Value of NV pair is a CorrelatedNotificationSetType of module AlarmIRPConstDefs.
backedUpStatus	One NV pair of remaining_body	O	Name of NV pair is the BACKED_UP_STATUS of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a boolean BackedUpStatusType of module AlarmIRPConstDefs.
backUpObject	One NV pair of remaining_body	O	Name of NV pair is the BACK_UP_OBJECT of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string carrying of DN of the back-up object. See 3G TS 32.300 [3] for the DN string representation.
trendIndication	One NV pair of remaining_body	O	Name of NV pair is the TREND_INDICATION of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is an enum TrendIndicationType of module AlarmIRPConstDefs.
thresholdInfo	One NV pair of remaining_body	O	Name of NV pair is the THRESHOLD_INFO of interface ParameterNameValue of module AlarmIRPConstDefs. Value of NV pair is a ThresholdInfoType of module AlarmIRPConstDefs.
stateChangeDefinition	One NV pair of remaining_body	O	Name of NV pair is the STATE_CHANGE_DEFINITION of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is an AttributeChangeSetType of module AlarmIRPConstDefs.
monitoredAttributes	One NV pair of remaining_body	O	Name of NV pair is the MONITORED_ATTRIBUTES of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is an AttributeSetType of module AlarmIRPConstDefs.
proposedRepairActions	One NV pair of remaining_body	O	Name of NV pair is the PROPOSED_REPAIR_ACTIONS of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
additionalText	One NV pair of remaining_body	O	Name of NV pair is the ADDITIONAL_TEXT of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
additionalInformation	One or more NV pairs of remaining_body	O	Name and value of all NV pairs are vendor-specific.
alarmId	One NV pair of remaining_body	M	Name of NV pair is the ALARM_ID of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string. If the string is a zero-length string or if this NV pair is absent, the default semantics is that alarmId is a concatenation of managedObjectInstance, eventType, probableCause and specificProblem, if present, of this Structured Event. Since probableCause is encoded as a short, it shall be converted into string before concatenation. The resultant string shall not contain spaces.

Table 12: Mapping for `notifyNewAlarm` (to carry security alarm)

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
There is no corresponding SS attribute.	domain_name		It carries the IRP document version number string. See sub-clause 3.3. It indicates the syntax and semantics of the Structured Event as defined by this specification.
notificationType	type_name	M	This is the NOTIFY_FM_NEW_ALARM of interface NotificationType of module AlarmIRPConstDefs.
alarmType	event_name	M	It identifies one of the following: Integrity violation, operational violation, physical violation, security violation and time domain violation. It is a string defined by interface AlarmType of module AlarmIRPConstDefs.
There is no corresponding SS attribute.	variable Header		
objectClass, objectInstance	One NV pair of filterable_ body_fields	M	NV stands for name-value pair. Order arrangement of NV pairs is not significant. The name of NV-pair is always encoded in string. Name of NV pair is the MANAGED_OBJECT_INSTANCE of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string.
notificationId	One NV pair of remaining_body	M	Name of NV pair is the NOTIFICATION_ID of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a long.
eventTime	One NV pair of filterable_ body_fields	M	Name of NV pair is the EVENT_TIME of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a IRPTime of module ManagedGenericIRPConstDefs.
systemDN	One NV pair of filterable_ body_fields	M	Name of NV pair is the SYSTEM_DN of interface AttributeNameValue of module NotificationIRPConstDefs. Value of NV pair is a string.
probableCause	One NV pair of filterable_ body_fields	M	Name of NV pair is the PROBABLE_CAUSE of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a short defined by interface ProbableCause of module AlarmIRPConstDefs.
perceivedSeverity	One NV pair of filterable_ body_fields	M	Name of NV pair is the PERCEIVED_SEVERITY of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a short defined by interface PerceivedSeverity of module AlarmIRPConstDefs.
vendorSpecificAlarmType	One NV pair of filterable_ body_fields	O	Name of NV pair is the VENDER_SPECIFIC_ALARM_TYPE of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
correlatedNotifications	One NV pair of remaining_body	O	Name of NV pair is the CORRELATED_NOTIFICATIONS of interface AttributeNameValue. Value of NV pair is a CorrelatedNotificationSetType of module AlarmIRPConstDefs.
additionalText	One NV pair of remaining_body	O	Name of NV pair is the ADDITIONAL_TEXT of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
additionalInformation	One or more NV pairs of remaining_body	O	Name and value of all NV pairs are vendor-specific.

IS Parameters	OMG CORBA Structured Event attribute	Qualifier	Comment
alarmId	One NV pair of remaining_body	M	Name of NV pair is the ALARM_ID of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string. If the string is a zero-length string or if this NV pair is absent, the default semantics is that alarmId is a concatenation of managedObjectInstance, eventType, probableCause and specificProblem, if present, of this Structured Event. Since probableCause is encoded as a short, it shall be converted into string before concatenation. The resultant string shall not contain spaces.
serviceUser	One NV pair of remaining_body	M	Name of NV pair is the SERVICE_USER of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
serviceProvider	One NV pair of remaining_body	M	Name of NV pair is the SERVICE_PROVIDER of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.
securityAlarmDetector	One NV pair of remaining_body	M	Name of NV pair is the SECURITY_ALARM_DETECTOR of interface AttributeNameValue of module AlarmIRPConstDefs. Value of NV pair is a string.

End of Change in Clause 5.3

Change in Clause A.1

A.1 IDL specification (file name "AlarmIRPConstDefs.idl")

...

```
interface AttributeNameValue
{
   const string ALARM_ID = "f";
   const string PROBABLE_CAUSE = "g";
   const string PERCEIVED_SEVERITY = "h";
   const string SPECIFIC_PROBLEM = "i";
   const string ADDITIONAL_TEXT = "j";
   const string ACK_TIME = "k";
   const string ACK_USER_ID = "l";
   const string ACK_SYSTEM_ID = "m";
   const string ACK_STATE = "n";
   const string COMMENTS = "o";
   const string BACKED_UP_STATUS = "p";
   const string BACK_UP_OBJECT = "q";
   const string THRESHOLD_INFO = "r";
   const string TREND_INDICATION = "s";
   const string STATE_CHANGE_DEFINITION = "t";
   const string MONITORED_ATTRIBUTES = "u";
   const string PROPOSED_REPAIR_ACTIONS = "v";
   const string CORRELATED_NOTIFICATIONS = "w";
   const string REASON = "x";
   const string CLEAR_USER_ID = "y";
```

```
      const string CLEAR_SYSTEM_ID = "z";
      const string ALARM_LIST_ALIGNMENT_REQUIREMENT = "ff";
      const string SERVICE_USER = "gg";
      const string SERVICE_PROVIDER = "hh";
      const string SECURITY_ALARM_DETECTOR = "ii";
      const string VENDOR SPECIFIC ALARM TYPE = "JJ";
};
```

End of Change in Clause A.1

Change in Clause A.3

A.3 IDL specification (file name "AlarmIRPNotifications.idl")

•••

```
module AlarmIRPNotifications
{

   interface NotifyNewAlarm: NotificationIRPNotifications::Notify
   {
      const string EVENT_TYPE = "notifyNewAlarm";

      /**
       * This constant defines the name of the probableCause property.
       * The data type for the value of this property
       * is short.
       */
      const string PROBABLE_CAUSE =
         AlarmIRPConstDefs::AttributeNameValue::PROBABLE_CAUSE;

      /**
       * This constant defines the name of the
       * perceivedSeverity property.
       * The data type for the value of this property
       * is short.
       */
      const string PERCEIVED_SEVERITY =
         AlarmIRPConstDefs::AttributeNameValue::PERCEIVED_SEVERITY;

      /**
       * This constant defines the name of the specificProblem
       * property.  The data type for the value of this property
       * is string.
       */

      const string_VENDOR_SPECIFIC_ALARM_TYPE =
         AlarmIRPConstDefs::AttributeNameValue::VENDOR_SPECIFIC_ALARM_TYPE;

      /**
       This constant identifies the NE alarm type or NE related alarm type.
       The data type for the value of this property is string.
       */
```

```
const string SPECIFIC_PROBLEM =
   AlarmIRPConstDefs::AttributeNameValue::SPECIFIC_PROBLEM;

/**
 * This constant defines the name of the
 * correlatedNotifications property.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::CorrelatedNotificationSetType.
 */
const string CORRELATED_NOTIFICATIONS =
  AlarmIRPConstDefs::AttributeNameValue::
    CORRELATED_NOTIFICATIONS;

/**
 * This constant defines the name of the
 * backedUpStatus property.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::BackedUpStatusType.
 */
const string BACKED_UP_STATUS =
   AlarmIRPConstDefs::AttributeNameValue::BACKED_UP_STATUS;

/**
 * This constant defines the name of the backUpObject property.
 * The data type for the value of this property
 * is a string carrying of DN of the back-up object.
 */
const string BACK_UP_OBJECT =
   AlarmIRPConstDefs::AttributeNameValue::BACK_UP_OBJECT;

/**
 * This constant defines the name of the
 * trendIndication property.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::TrendIndicationType.
 */
const string TREND_INDICATION =
   AlarmIRPConstDefs::AttributeNameValue::TREND_INDICATION;

/**
 * This constant defines the name of the thresholdInfo property.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::ThresholdInfoType.
 */
const string THRESHOLD_INFO =
   AlarmIRPConstDefs::AttributeNameValue::THRESHOLD_INFO;

/**
 * This constant defines the name of the
 * stateChangeDefinition property.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::AttributeChangeSetType.
 */
const string STATE_CHANGE_DEFINITION =
  AlarmIRPConstDefs::AttributeNameValue::STATE_CHANGE_DEFINITION;

/**
 * This constant defines the name of the
 * monitoredAttributes property.
 * The data type for the value of this property
 * is AlarmIRPConstDefs::AttributeSetType.
 */
```

```
   const string MONITORED_ATTRIBUTES =
      AlarmIRPConstDefs::AttributeNameValue::MONITORED_ATTRIBUTES;

   /**
    * This constant defines the name of the
    * proposedRepairActions property.
    * The data type for the value of this property
    * is string.
    */
   const string PROPOSED_REPAIR_ACTIONS =
     AlarmIRPConstDefs::AttributeNameValue::PROPOSED_REPAIR_ACTIONS;

   /**
    * This constant defines the name of the additiionalText
    * property.
    * The data type for the value of this property
    * is string.
    */
   const string ADDITIONAL_TEXT =
      AlarmIRPConstDefs::AttributeNameValue::ADDITIONAL_TEXT;

   /**
    * This constant defines the name of the alarmId property.
    * The data type for the value of this property
    * is string.  If the string is a zero-length string or if
    •         * this NV pair is absent, the default semantics is that
    * alarmId is a concatenation of
    * managedObjectInstance, eventType, probableCause and
    •         * specificProblem, if present, of this Structured Event.
    •         * Since probableCause is encoded as a short, it shall be
    * converted into string before concatenation.
    * The resultant string shall not contain spaces.
    */
   const string ALARM_ID =
     AlarmIRPConstDefs::AttributeNameValue::ALARM_ID;

   /**
    * This constant defines the name of the serviceUser property.
    * The data type for the value of this property
    * is string.
    */
   const string SERVICE_USER =
      AlarmIRPConstDefs::AttributeNameValue::SERVICE_USER;

   /**
    * This constant defines the name of the serviceProvider
    * property.
    * The data type for the value of this property
    * is string.
    */
   const string SERVICE_PROVIDER =
      AlarmIRPConstDefs::AttributeNameValue::SERVICE_PROVIDER;

   /**
    * This constant defines the name of the
    * securityAlarmDetector property.
    * The data type for the value of this property
    * is string.
    */
   const string SECURITY_ALARM_DETECTOR =
     AlarmIRPConstDefs::AttributeNameValue::SECURITY_ALARM_DETECTOR;
};
```

End of Change in Clause A.3
End of Document

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Dec 2004	S_26	SP-040791	035	--	Correction of probable cause definition for AlarmIRP IDL file.	6.0.0	6.1.0
Dec 2004	S_26	SP-040791	036	--	Add mandatory exception operationNotSupported for optional operations in AlarmIRP - Align IDL style with IDL Style Guide in 32.150	6.0.0	6.1.0
Dec 2004	S_26	SP-040791	037	--	Correction of filterable parameters - Align with the IS in 32.111-2	6.0.0	6.1.0

Tdoc ⌘S5-056101

CR-Form-v7.1

CHANGE REQUEST

⌘	32.111-3	CR	041	⌘rev	-	⌘	Current version:	6.1.0	⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [ ] Radio Access Network [X] Core Network [X]

Title:	⌘	Add definitions in IDLs - Align with the IS (TS 32.111-2)
Source:	⌘	**SA5** (huangsq@zte.com.cn)
Work item code:	⌘	OAM-NIM
Date:	⌘	28/01/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
- ***F*** *(correction)*
- ***A*** *(corresponds to a correction 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.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	There are some cause values in notifyPotentialFaultyAlarmList and notifyAlarmListRebuilt which are not defined in AlarmIRPConstDefs.idl, and the operation clear_alarms is optional in AlarmIRP, but the exception OperationNotSupported is not defined in AlarmIRPSystem.idl, correct some syntactic errors which may lead to idl compiles failures
Summary of change:	⌘	Add the cause definitions of notifyPotentialFaultyAlarmList and notifyAlarmListRebuilt in AlarmIRPConstDefs, add an exception in AlarmIRPSystem, correct some syntactic errors
Consequences if not approved:	⌘	The cause values in notifyPotentialFaultyAlarmList and notifyAlarmListRebuilt will not be standardized. AlarmIRP that does not support the optional operations have no standard way of responding.

Clauses affected:	⌘	Annex A

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

Annex A (normative):
IDL specifications

A.1 IDL specification (file name "AlarmIRPConstDefs.idl")

…

```
      // Values 10 correspond to a duplicated probable cause
      const short REMOTE_ALARM_INTERFACE = 11;
      const short EXCESSIVE_BIT_ERROR_RATE = 12;
      const short PATH_TRACE_MISMATCH = 13;
      const short UNAVAILABLE = 14;
      const short SIGNAL_LABEL_MISMATCH = 15;
      const short LOSS_OF_MULTI_FRAME = 16;
      const short COMMUNICATIONS_RECEIVE_FAILURE = 17;
      const short COMMUNICATIONS_TRANSMIT_FAILURE = 18;
      const short MODULATION_FAILURE = 19;
      const short DEMODULATION_FAILURE = 20;
      // Values 21-26 correspond to duplicated probable causes
      // Values 27-50 are reserved for M.3100 potential future extensions
…

   typedef sequence <BadAlarmInformationId> BadAlarmInformationIdSeq;
   typedef sequence <BadAcknowledgeAlarmInfo> BadAcknowledgeAlarmInfoSeq;
   typedef sequence <string> AlarmInformationIdSeq;
   typedef CosNotification::EventBatch AlarmInformationSeq;

   /*
   Define the cause values of notifyPotentialFaultyAlarmList and
   notifyAlarmListRebuilt,which have been defined in 32111-2.
   */
   const string AGENTNE_COMMUNICATION_ERROR = "Agent-NE communication error";
   const string AGENT_RESTARTS = "Agent restarts";
   const string INDETERMINATE = "Indeterminate";

};
#endif _ALARMIRPCONSTDEFS_IDL_
```

A.2 IDL specification (file name “AlarmIRPSystem.idl”)

…

```
      /*
      Request to clear one or more alarms.
      */
      ManagedGenericIRPConstDefs::Signal clear_alarms (
         in AlarmIRPConstDefs::AlarmInformationIdSeq alarm_information_id_list,
         in string clear_user_id,
         in ManagedGenericIRPConstDefs::StringTypeOpt clear_system_id,
         out AlarmIRPConstDefs::BadAlarmInformationIdSeq
            bad_alarm_information_id_list
      )
      raises (ClearAlarms, ManagedGenericIRPSystem::OperationNotSupported,
         ManagedGenericIRPSystem::ParameterNotSupported,
         ManagedGenericIRPSystem::InvalidParameter);

      /*
      This method returns Alarm Informations.
```

```
      If flag is TRUE, all returned Alarm Informations shall be
      in AlarmInformationSeq that contains 0 or more Alarm Informations.
      Output parameter iter shall be useless.
      If flag is FALSE, no Alarm Informations shall be in AlarmInformationSeq.
      IRPAgent needs to use iter to retrieve them.
      */
      AlarmIRPConstDefs::AlarmInformationSeq get_alarm_list (
         in ManagedGenericIRPConstDefs::StringTypeOpt filter,
         in AlarmIRPConstDefs::DNTypeOpt base_object,
         out boolean flag,
         out AlarmInformationIterator iter
      )
      raises (GetAlarmList, ManagedGenericIRPSystem::ParameterNotSupported,
              ManagedGenericIRPSystem::InvalidParameter);
```

…

A.3 IDL specification (file name "AlarmIRPNotifications.idl")

```
//File: AlarmIRPNotifications.idl

#ifndef _ALARMIRPNOTIFICATIONS_IDL_
#define _ALARMIRPNOTIFICATIONS_IDL_

#include "AlarmIRPConstDefs.idl"
#include "NotificationIRPConstDefs.idl"
#include ""NotificationIRPNotifications.idl""

// This statement must appear after all include statements
#pragma prefix "3gppsa5.org"

/* ## Module: AlarmIRPNotifications
This module contains notifications for Alarm IRP
================================================================
```

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Dec 2004	S_26	SP-040791	037	--	Correction of filterable parameters - Align with the IS in 32.111-2	6.0.0	6.1.0

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-056103***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **32.111-3** **CR** **042** ⌘ **rev** **-** ⌘ Current version: **5.5.1** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☒

Title:	⌘	Update the IS-SS relatioship in the Alarm IRP CORBA SS
Source:	⌘	SA5 (mohanr@lucent.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	18/02/2005
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	An update in the IS necessitates the need to update the IS-reference in the SS document.
Summary of change:	⌘	Updated the reference number for the IS.
Consequences if not approved:	⌘	The Solution Set will not be synchronised with the IS.

Clauses affected:	⌘	1

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments:	⌘	Parent CR in S5-056059.

1 Scope

The present document specifies the CORBA Solution Set (SS) for the IRP whose semantics is specified in Alarm IRP: Information Service (IS) (TS 32.111-2 [6]).

Clause 1 to 3 provides background information. Clause 4 provides key architectural features supporting the SS. Clause 5 defines the mapping of operations, notification, parameters and attributes defined in IS to their SS equivalents. Clause 6 describes the notification interface containing the push method. Annex A contains the IDL specification.

This Solution Set specification is related to TS 32.111-2 V5.64.X.

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2003	S_19	SP-030138	029	--	Correction of CORBA IDL Optional clearSystemId	5.2.0	5.3.0
Jun 2003	S_20	SP-030276	030	--	Correction of CORBA type definition in struct "AlarmInformationIdAndSev"	5.3.0	5.4.0
Dec 2003	S_22	SP-030626	031	--	Add missing IDL definitions to support Security Alarms	5.4.0	5.5.0
Jan 2004	--	--	--	--	Editorial: 1 Scope (This SS specification is related to TS 32.111-2 V5.0.X => V5.4.X.)	5.5.0	5.5.1

3GPP TSG-SA5 (Telecom Management) ***Tdoc ⌘S5-056104***
Meeting #41, Lisbon, PORTUGAL, 24 - 28 January 2005

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CHANGE REQUEST

⌘ **32.111-3** **CR** **043** ⌘ **rev** **-** ⌘ Current version: **6.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☒

Title:	⌘	Update the IS-SS relatioship in the Alarm IRP CORBA SS
Source:	⌘	SA5 (mohanr@lucent.com)
Work item code:	⌘	OAM-NIM
Date:	⌘	18/02/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	An update in the IS necessitates the need to update the IS-reference in the SS document.
Summary of change:	⌘	Updated the reference number for the IS.
Consequences if not approved:	⌘	The Solution Set will not be synchronised with the IS.

Clauses affected:	⌘	1

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments:	⌘	Parent CR in S5-056060

1 Scope

The present document specifies the CORBA Solution Set (SS) for the IRP whose semantics is specified in Alarm IRP: Information Service (IS) (TS 32.111-2 [6]).

Clause 1 to 3 provides background information. Clause 4 provides key architectural features supporting the SS. Clause 5 defines the mapping of operations, notification, parameters and attributes defined in IS to their SS equivalents. Clause 6 describes the notification interface containing the push method. Annex A contains the IDL specification.

This Solution Set specification is related to TS 32.111-2 V6.~~3~~4.X.

Annex B (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Dec 2004	S_26	SP-040791	037	--	Correction of filterable parameters - Align with the IS in 32.111-2	6.0.0	6.1.0