Technical Specification Group Services and System Aspects
Meeting #10, Bangkok, Thailand, 11-14 December 2000

TSGS#10(00)0520

Source: **SA WG5**

Title: **CRs to Telecommunications Management; Fault Management; Part 2: Alarm Integration Reference Point: Information Service (32.111-2)**

Document for: **Approval**

Agenda Item: **7.5.3**

Doc-1st-Level	Doc-2nd-Level	Spec	CR	Rev	Phase	Cat	Subject	Version-Current	Version-New	Work item
SP-000520	S5-000551	32.111-2	003		R99	F	Incorrect modifiable attributes	3.2.0	3.3.0	OAM-FM
SP-000520	S5-000553	32.111-2	004		R99	F	Add acknowledgement information to getAlarmList result	3.2.0	3.3.0	OAM-FM
SP-000520	S5-000473	32.111-2	005		R99	F	Identification of valid Event Types and Extended Event Types within Notifications	3.2.0	3.3.0	OAM-FM
SP-000520	S5-000556	32.111-2	006		R99	F	A cleared Alarm shall be given perceived severity "Cleared" and nothing else	3.2.0	3.3.0	OAM-FM
SP-000520	S5-000557	32.111-2	007		R99	F	Inconsistent behaviour for cleared not yet acknowledged alarms	3.2.0	3.3.0	OAM-FM

3GPP TSG-SA5 (Telecom Management) **SA5#16(00)0551**
Meeting #16, Tokyo, JAPAN, 27 Nov - 1 Dec 2000 **Tdoc S5F000142**

CR-Form-v3

CHANGE REQUEST

⌘ **32.111-2** **CR** **003** ⌘ rev **-** ⌘ Current version: **3.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Incorrect modifiable attributes
Source:	⌘	**SA5#16**
Work item code:	⌘	OAM-FM
Date:	⌘	01/12/2000
Category:	⌘	**F**
Release:	⌘	**R99**

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	A qualifier indicates for each attribute of an Alarm Information whether a modification of the attribute would trigger a notification “notifyChangedAlarm” or “notifyAckStateChanged”. Most of these qualifiers are incorrect.
Summary of change:	⌘	Each notification can only be triggered by one attribute change, and this is already indicated in the definition of each notification in the present document. It is proposed to remove the qualifier from table 13, which becomes redundant, and to adapt 32.111-2.
Consequences if not approved:	⌘	32.111-2 will specify a wrong behaviour in case of some attribute value changes.

Clauses affected:	⌘	5.3.3, 5.4.1, 5.6.4
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	

5.3.3 Notification `notifyChangedAlarm` (O)

IRPAgent notifies subscribed IRPManager regarding changes in ~~e.g.~~ perceived severity level (except the change to the perceived severity "cleared" which is handled by the notifyClearedAlarm notification) in Alarm Information in Alarm List. The Alarm Information carried in the notification shall satisfy the current filter constraint of the subscription.

The information carried in this notification contains all attributes that are filterable and are present in the original notifyNewAlarm.

Table 8: Parameters of `notifyChangedAlarm`

Name	Qualifier	Purpose
`notificationHeader`	Input, M	See Table 6: Notification Header
`alarmInformationBody`	Input, M	It contains information of the changed Alarm Information. See subclause 5.4.6 Alarm Information.

...

5.4.1 Alarm List

IRPAgent maintains an Alarm List. It contains all currently active alarms (i.e. Alarm Information whose `perceivedSeverity` is not Cleared) and alarms that are Cleared but not yet acknowledged. When an alarm is Cleared and is acknowledged, its corresponding Alarm Information in this Alarm List is removed. The removed Alarm Information shall no longer be accessible via this IRP.

IRPAgent shall create a new Alarm Information in Alarm List whenever an alarm is emitted (internally within IRPAgent) that does not match with any alarm in the Alarm List. In this case, after the creation of the new Alarm Information, IRPAgent invokes `notifyNewAlarm` operation.

IRPAgent shall not create a new Alarm Information in Alarm List when an alarm is emitted (internally within IRPAgent) that matches with an alarm in the Alarm List. In this case, IRPAgent shall invoke either (1) `notifyChangedAlarm` or (2) `notifyClearedAlarm` followed by `notifyNewAlarm` operation.

See Annex D for specification of alarm matching criterion.

In the case of a matched Alarm Information ~~and the change is the perceived Severity value,~~ the following additional rule shall apply~~.~~ :

IRPAgent shall remove all information in Acknowledgement Information of the subject Alarm Information. The `Acknowledgement State` shall be "`unacknowledged`". IRPAgent updates the `eventTime` and `perceivedSeverity` of the matched Alarm Information. IRPAgent invokes `notifyChangedAlarm` notification to all subscribed IRPManagers.

...

5.4.6 Alarm Information

This subclause specifies the information contained in Alarm Information.

Alarm Information(s) are stored in Alarm List. They are carried in `notifyNewAlarm, notifyChangedAlarm, notifyAckStateChanged, notifyClearedAlarm.` They are also carried in the response to `getAlarmList` operation.

When it is carried in `notifyChangedAlarm` notification, it indicates that one or more parameter-attribute values of the Alarm Information have changed since the most recent `notifyNewAlarm` or `notifyChangedAlarm` notification on the subject alarm. ~~The following table identifies, using the symbol [Y] under "Qualifier" column, those parameters-attributes whose value changes would trigger IRPAgent to invoke `notifyChangedAlarm` or `notifyAckStateChanged` notification.~~

~~When the alarm is carried in `notifyChangedAlarm` or `notifyAckStateChanged` notification, the following rule shall apply:~~

~~□ At least the value of one parameter-attribute marked with [Y] shall be different than that carried in the most recent `notifyNewAlarm` or `notifyChangedAlarm` of the subject alarm.~~

Alarm Information, carried in notifications, always contain the AIR. In `notifyNewAlarm`, the AIR is used to identify the active Alarm Information carried in the notification. In `notifyChangedAlarm` and `notifyClearedAlarm`, the AIR is used to identify the active Alarm Information whose state has changed. In `notifyAckStateChangedAlarm`, the AIR is used to identify the Alarm Information (active or inactive) in the Alarm List whose acknowledgement state has changed.

Alarm Information contains the `notificationHeader` and `alarmInformationBody`. Table 6 defines parameter-attributes of `notificationHeader`. Table 13 defines the parameter-attributes of `alarmInformationBody`.

Letter M and O stands for Mandatory and Optional respectively. ~~Letter Y identifies the parameter-attribute whose value changes would trigger IRPAgent to invoke `notifyChangedAlarm` or `notifyAckStateChanged`.~~

Table 13: Parameter-Attributes of `alarmInformationBody`

Name	Qualifier	Comment
`probableCause`	M	It qualifies alarm and provides further information than `eventType`. See Annex B for a complete listing. This list is extensive. It is recommended that IRPAgent should use the list as is and not to extend it. It is noted that IRPAgent can privately (outside the scope of this IRP) define values for `specificProblem` that provides semantics not conveyed by `probableCause`. A special probable cause value (SS specific, e.g. –1) indicates that this alternative is valid. This parameter-attribute value shall be single-value and of simple type such as integer or string. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.1.
`perceivedSeverity`	M~~, Y~~	It indicates the relative level of urgency for operator attention. . Legal values are `Critical, Major, Minor, Warning, Indeterminate` and `Cleared`, according to ITU-T Recommendation X.733 [2]. This IRP does not recommend the use of indeterminate.
`specificProblem`	O	It provides further qualification on the alarm than `probableCause`. This parameter-attribute value shall be single-value and of simple type such as integer or string. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.2.
`correlatedNotifications`	O	It identifies a set of notifications to which this notification is considered to be correlated. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.9.
`backedUpStatus`	O~~, Y~~	It indicates if an object has a back up. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.4.
`backUpObject`	O~~, Y~~	It carries the DN of the back up object. It shall be absent if backUpStatus is absent or its value indicates false. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.5.
`trendIndication`	O~~, Y~~	It indicates if some observed condition is getting better, worse, or not changing. Legal values are “less severe”, “no change” and “more severe”. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.6.
`thresholdInfo`	O~~, Y~~	It indicates if the threshold crossed was in the up or down direction. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.7.
`stateChangeDefinition`	O~~, Y~~	It indicates MO attribute value changes. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.10.
`monitoredAttributes`	O~~, Y~~	It indicates MO attributes whose value changes are being monitored. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.11.
`proposedRepairActions`	O~~, Y~~	It indicates proposed repair actions. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.12.

Name	Qualifier	Comment
additional Text	O~~,~~	It provides 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 MOC representing the NE in the Basic CM IRP Information Model. It can contain further information on the alarm.
additional Information	(see next column)	It carries additional information related to the subject Alarm Information. It may contain the following parameter-attributes. AlarmId ~~[Y]~~: It identifies at most one Alarm Information in the Alarm List. See subclause 5.4.3.1. Use of this parameter-attribute is SS dependent. ackTime ~~[Y]~~: It identifies the time of last operation acknowledgeAlarms or unacknowledgeAlarms. It is mandatory for notifyAckStateChanged, it is optional for other notifications. ackUserId ~~[Y]~~: It identifies the last user who has change the Acknowledgement State via operation acknowledgeAlarms or unacknowledgeAlarms. It is mandatory for notifyAckStateChanged, it is optional for other notifications. ackSystemId ~~[Y]~~: It identifies the system in which IRPManager, that invokes the acknowledgeAlarms or unacknowledgeAlarms operation, runs. It is optional for all notifications. ackState ~~[Y]~~: It identifies the Acknowledgement State of the alarm. Its valid values are "acknowledged" and "unacknowledged". It is mandatory for notifyAckStateChanged, it is optional for other notifications.

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CHANGE REQUEST

⌘ **32.111-2** **CR** **004** ⌘ rev **-** ⌘ Current version: **3.2.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Add acknowledgement information to getAlarmList result
Source:	⌘	**SA5#16**
Work item code:	⌘	OAM-FM
Date:	⌘	01/12/2000
Category:	⌘	**F**
Release:	⌘	**R99**

Use one of the following categories:
F *(essential 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)

Reason for change:	⌘	In release 99, the use of getAlarmList operation is the only means to re-synchronize IRPManager with IRPAgent in case of alarm loss (due to loss of communication,...). The result of this operation must allow the IRPManager to have a correct and complete knowledge of the current alarms. However, in 32.111-2, the acknowledgement information (ackState, ackuserId, ackSystemId, ackTime) is not indicated as output parameter of getAlarmList operation. NOTE: The correlated 32.111-3/4 don't contain this error.
Summary of change:	⌘	It is proposed to qualify the acknowledgement information as "Mandatory" output parameter for the getAlarmList operation.
Consequences if not approved:	⌘	32.111-3/4 will not be in line with 32.111-2.

Clauses affected:	⌘	5.4.6 Table 13		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

5.4.6 Alarm Information

Table 13: Parameter-Attributes of `alarmInformationBody`

Name	Qualifier	Comment
`probable Cause`	M	It qualifies alarm and provides further information than `eventType`. See Annex B for a complete listing. This list is extensive. It is recommended that IRPAgent should use the list as is and not to extend it. It is noted that IRPAgent can privately (outside the scope of this IRP) define values for `specificProblem` that provides semantics not conveyed by `probableCause`. A special probable cause value (SS specific, e.g. –1) indicates that this alternative is valid. This parameter-attribute value shall be single-value and of simple type such as integer or string. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.1.
`perceived Severity`	M, Y	It indicates the relative level of urgency for operator attention. . Legal values are `Critical, Major, Minor, Warning, Indeterminate` and `Cleared,` according to ITU-T Recommendation X.733 [2]. This IRP does not recommend the use of indeterminate.
`specific Problem`	O	It provides further qualification on the alarm than `probableCause`. This parameter-attribute value shall be single-value and of simple type such as integer or string. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.2.
`correlated Notifications`	O	It identifies a set of notifications to which this notification is considered to be correlated. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.9.
`backedUpStatus`	O, Y	It indicates if an object has a back up. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.4.
`backUpObject`	O, Y	It carries the DN of the back up object. It shall be absent if backUpStatus is absent or its value indicates false. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.5.
`trend Indication`	O, Y	It indicates if some observed condition is getting better, worse, or not changing. Legal values are “less severe”, “no change” and “more severe”. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.6.
`threshold Info`	O, Y	It indicates if the threshold crossed was in the up or down direction. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.7.
`stateChange Definition`	O, Y	It indicates MO attribute value changes. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.10.
`monitored Attributes`	O, Y	It indicates MO attributes whose value changes are being monitored. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.11.
`proposed Repair Actions`	O, Y	It indicates proposed repair actions. See definition in ITU-T Recommendation X.733 [2] subclause 8.1.2.12.
`additional Text`	O,	It provides 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 MOC representing the NE in the Basic CM IRP Information Model. It can contain further information on the alarm.
`additional Information`	(see next column)	It carries additional information related to the subject Alarm Information. It may contain the following parameter-attributes. `AlarmId` [Y]: It identifies at most one Alarm Information in the Alarm List. See subclause 5.4.3.1. Use of this parameter-attribute is SS dependent. `ackTime` [Y]: It identifies the time of last operation `acknowledgeAlarms` or `unacknowledgeAlarms`. It is mandatory for `notifyAckStateChanged` notification and `getAlarmList` operation, it is optional for other notifications. `ackUserId` [Y]: It identifies the last user who has change the `Acknowledgement State` via operation `acknowledgeAlarms` or `unacknowledgeAlarms`. It is mandatory for `notifyAckStateChanged` notification and `getAlarmList` operation, it is optional for other notifications. `ackSystemId` [Y]: It identifies the system in which IRPManager, that invokes the `acknowledgeAlarms` or `unacknowledgeAlarms` operation, runs. It is mandatory for `getAlarmList` operation, optional for all notifications. `ackState` [Y]: It identifies the `Acknowledgement State` of the alarm. Its valid values are “`acknowledged`” and “`unacknowledged`”. It is mandatory for

Name	Qualifier	Comment
		`notifyAckStateChanged` notification and `getAlarmList` operation, it is optional for other notifications.

3GPP TSG-SA5 (Telecom Management)
Meeting #15, Girdwood, Alaska, USA, 16 - 20 October 2000

SA5#15(00)0473
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CHANGE REQUEST

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32.111-2	**CR**	**005**	Current Version:	V3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: **SA#10** *list expected approval meeting # here ↑*	for approval	X	strategic		*(for SMG use only)*
	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: **SA5#15** **Date:** **20/10/2000**

Subject: Identification of valid **Event Types** and **Extended Event Types** within Notifications

Work item: OAM-FM

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: Identification of the valid **Event Types** and **Extended Event Types** to be used by each Notification in the **Alarm IRP**.

IRP Integration Reference Point
CMIP Common Management Information Protocol
CORBA Common Object Request Broker Architecture
SS Solution Set

Clauses affected: Annex A

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

Annex A (normative): Event Types and Extended Event Types

This annex lists and explains event types and extended event types used by Alarm IRP and then lists the event types and extended event types valid for each notification in the Alarm IRP..

Event type is carried by a parameter called `eventType` defined in 3GPP TS 32.106-2 [11].

Extended event types is carried by a parameter called extendedEventType defined in 3GPP TS 32.106-2 [11].

Encoding of `eventType and extendedEventType` is SS dependent. For example, the value of `eventType` can be encoded as Object Identifier in CMIP SS and as numeric string in CORBA SS.

The tables below ~~14and table 15~~may be extended in the future.

Table A.1: Event Types

Event Types	Explanation
Communications Alarm	An alarm of this type is associated with the procedure and/or process required conveying information from one point to another (ITU-T Recommendation X.733 [2]).
Processing Error Alarm	An alarm of this type is associated with a software or processing fault (ITU-T Recommendation X.733 [2]).
Environmental Alarm	An alarm of this type is associated with a condition related to an enclosure in which the equipment resides (ITU-T Recommendation X.733 [2]).
Quality of Service Alarm	An alarm of this type is associated with degradation in the quality of a service (ITU-T Recommendation X.733 [2]).
Equipment Alarm	An alarm of this type is associated with an equipment fault (ITU-T Recommendation X.733 [2]).

Table A.2: Extended Event Types

Extended Event Types	Explanation
New Alarm	A notification of this type indicates that a new alarm has occurred.
Changed Alarm	A notification of this type indicates that one or more attributes, excepting those related to acknowledgement state, of an active alarm have changed.
Acknowledgement State Changed	A notification of this type indicates that the acknowledgement state of an alarm has changed.
Cleared Alarm	A notification of this type indicates that an alarm has been cleared and is no longer active.
Alarm List Rebuilt	A notification of this type indicates that the Alarm List has been successfully rebuilt.

Table A.3: Event types and Extended Event Types applicable to each Notification

Notification	Event Type	Extended Event type
notifyNewAlarm	Communications Alarm Processing Error Alarm Environmental Alarm Quality of Service Alarm Equipment Alarm	New Alarm
notifyChangedAlarm	same as for notifyNewAlarm	Changed Alarm
notifyAckStateChanged	same as for notifyNewAlarm	Acknowledgement State Changed
notifyClearedAlarm	same as for notifyNewAlarm	Cleared Alarm
notifyAlarmListRebuilt		Alarm List Rebuilt

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3GPP TSG-SA5 (Telecom Management) **SA5#16(00)0556**
Meeting #16, Tokyo, JAPAN, 27 Nov - 1 Dec 2000 **Tdoc S5F000146**

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CHANGE REQUEST

⌘ **32.111-2** **CR** **006** ⌘ rev **-** ⌘ Current version: **3.2.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	A cleared Alarm shall be given perceived severity “Cleared” and nothing else.
Source:	⌘	**SA5#16**
Work item code:	⌘	OAM-FM
Date:	⌘	01/12/2000
Category:	⌘	**F**
Release:	⌘	**R99**

Use one of the following categories:
F *(essential 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)*

Reason for change:	⌘	In the examples given in Annex C there are Notifications notifying the IRPManager about cleared alarms. In these Notifications the perceived severity must be set to ‘cleared’, but it is not in the present TS version.
Summary of change:	⌘	It is proposed to change the “perceived severity” to ‘cleared’.
Consequences if not approved:	⌘	The examples presently given in Annex C (informative) may confuse rather than help people.

Clauses affected:	⌘	Annex C (informative)
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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Annex C (informative): Examples of ~~U~~using~~e~~ ~~of~~ notifyChangedAlarm

This ~~appendix~~ annex describes a number of valid and invalid interactions governing the case when IRPAgent is reporting a specific fault of a particular network resource whose alarm severity level changes from, ~~say~~ e.g. "C~~c~~ritical" to ~~minor~~ "Minor" and then to "Cleared".

In the following examples:

__~~,~~ni__ is notificationId,

__moc__ is managedObjectClass,

__moi__ is managedObjectInstance,

__et__ is eventType,

__pc__ is probableCause,

__sp__ is specificProblem,

__ps__ is perceivedSeverity and

__ai__ is AlarmId.

EXAMPLE 1: Valid sequence 1 to support the hypothetical case:

(1) NotifyNewAlarm

(ni=1, ai=X, moc=A, moi=B, et=C, pc=D, sp=E, ps=Critical)

(2) NotifyChangedAlarm

(ni=2, ai=X, moc=A, moi=B, et=C, pc=D, sp=E, ps=Minor)

(3) NotifyClearedAlarm

(ni=3, ai=X, moc=A, moi=B, et=C, pc=D, sp=E, ps=~~Minor~~Cleared)

EXAMPLE 2: Valid sequence 2 to support the hypothetical case:

(1)NotifyNewAlarm

(ni=1, ai=X, moc=A, moi=B, et=C, pc=D, sp=E, ps=Critical)

(2)NotifyClearedAlarm

(ni=2, ai=X, moc=A, moi=B, et=C, pc=D, sp=E, ps=Cleared~~Critical~~)

(3)NotifyNewAlarm

(ni=3, ai=Y, moc=A, moi=B, et=C, pc=D, sp=E, ps=Minor)

(4)NotifyClearedAlarm

(ni=4, ai=Y, moc=A, moi=B, et=C, pc=D, sp=E, ps=Cleared~~Minor~~)

EXAMPLE 3: Invalid sequence 1 to support the hypothetical case:

(1) NotifyNewAlarm

document.

(ni=1, ai=X, moc=A, moi=B, et=C, pc=D, sp=E, ps=Critical)

(2) NotifyChangedAlarm

(ni=2, ai=Y, moc=A, moi=B, et=C, pc=D, sp=E, ps=Minor)

(3) NotifyClearedAlarm

(ni=3, ai=Y, moc=A, moi=B, et=C, pc=D, sp=E, ps=ClearedMinor)

Interaction (2) is illegal since it uses a different ai for the same alarm. It should use ai=X as in interaction (1).

EXAMPLE 4: Invalid sequence 2 to support the hypothetical case:

(1)NotifyNewAlarm

(ni=1, ai=X, moc=A, moi=B, et=C, pc=D, sp=E, ps=Critical)

(2)NotifyNewAlarm

(ni=2, ai=X, moc=A, moi=B, et=C, pc=D, sp=E, ps=Minor)

Interaction (2) is illegal since it invokes notifyNewAlarm using same ai value. It should use notifyChangedAlarm with the same ai value.

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3GPP TSG-SA5 (Telecom Management) **SA5#16(00)0557**
Meeting #16, Tokyo, JAPAN, 27 Nov - 1 Dec 2000 **Tdoc S5F000147**

CR-Form-v3

CHANGE REQUEST

⌘ **32.111-2** **CR** **007** ⌘ rev **-** ⌘ Current version: **3.2.0** ⌘

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Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network **X** Core Network **X**

Title:	⌘	Inconsistent behaviour for cleared not yet acknowledged alarms.
Source:	⌘	**SA5#16**
Work item code:	⌘	OAM-FM
Date:	⌘	01/12/2000
Category:	⌘	**F**
Release:	⌘	**R99**

Use one of the following categories:
F *(essential correction)*
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REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ⌘ In clause 6.1 it is stated that a 'cleared but not yet acknowledged' alarm could only change state to 'cleared and acknowledged' state.

Clause 5.4.1 states the following:

> *IRPAgent shall not create a new Alarm Information in Alarm List when an alarm is emitted that matches with an alarm in the Alarm List. In this case, IRPAgent shall invoke either (1) notifyChangedAlarm or (2) notifyClearedAlarm followed by notifyNewAlarm operation.*

When the IRPAgent checks if a new alarm matches an old alarm it shall use the well-defined matching criteria in annex D. This means that clause 5.4.1 states that a 'cleared but not yet acknowledged' alarm can change state to 'unacknowledged and un-cleared'. This contradicts clause 6.1.

Summary of change: ⌘ It is proposed to add an arrow stating 'MO emits alarm changed' going from 'unack&clear' state to 'unack&unclear'.

Consequences if not approved: ⌘ The IRPAgent cannot guarantee that all alarms are uniquely identifiable/addressable. This means that an IRPManager cannot perform acknowledgement in a reliable way.

Clauses affected: ⌘ 6.1 Figure 4

Other specs affected: ⌘
☐ Other core specifications ⌘
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘

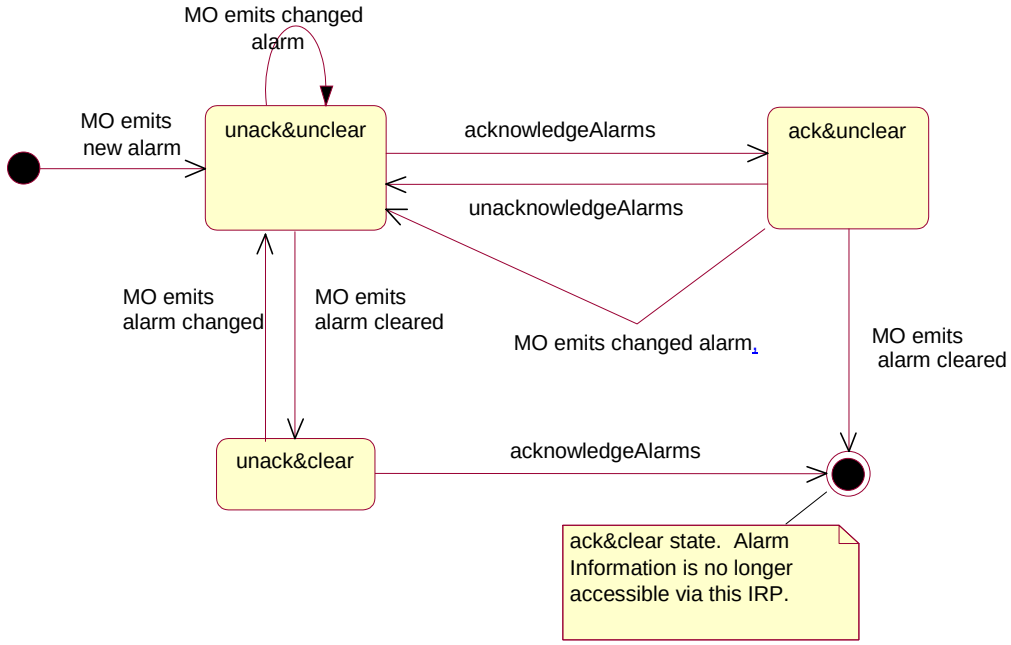
document.

6.1 Alarm states

Alarms have states. Figure 4 illustrates the alarm states.

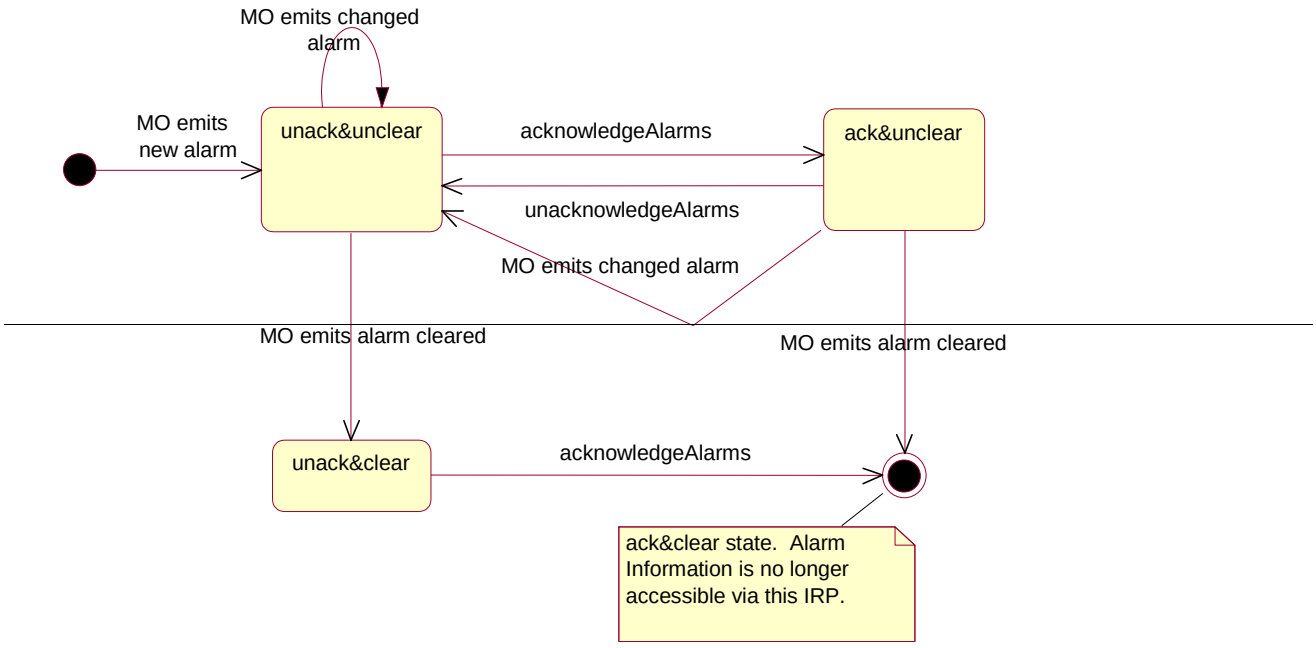
The triggers “MO emits…” are internal within IRPAgent and are not observable via the Alarm IRP. Other triggers, e.g. “`acknowledgeAlarms`”, are observable via the Alarm IRP.

The solid circle icon represents the `Start State`. The double circle icon represents the `End State`. In this state, the alarm is cleared and acknowledged. The alarm shall not be accessible via the IRP and is removed from the Alarm List.



document.

Figure 4: Alarm States



~~**Figure 4: Alarm States**~~