

Oracle® Communications

IDIH Alarm Forwarding



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Revision History

Date	Description
March 2024	No changes in this release.
April 2023	No changes in this release.
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June 2016	Updated to include accessibility changes
August 2011	Initial Release

1

Introduction

This section contains an overview of the available information for the Integrated Diameter Intelligence Hub.

The contents include sections on the organization, scope, and audience of the documentation, as well how to receive customer support assistance.

1.1 Overview

This documentation provides information about the functions of the Alarm Forwarding application of the Integrated Diameter Intelligence Hub (IDIH).



Note:

The Alarm Forwarding application is only available to users logging into IDIH as **idihadmin**.

1.2 Scope and Audience

This user's guide provides information about the Alarm Forwarding application. This guide provides definitions and instructions to help the user efficiently and effectively define conditions and destinations for forwarding Alarms.

1.3 Manual Organization

[Introduction](#) contains general information about this document.

[Introduction to Alarm Forwarding](#) provides an introduction to the Alarm Forwarding application.

[Working in Alarm Forwarding](#) contains information about procedures used while using the Alarm Forwarding application.

[SNMP Agent](#) contains information about the SNMP Agent of the Alarm Forwarding application.

2

Introduction to Alarm Forwarding

This chapter provides basic information about the Alarm Forwarding application.

2.1 Overview

Alarm Forwarding enables the user to forward alarms to specified destinations. The user can create alarm forwarding rules using Filters.

This application handles several types of alarms, including those pertaining to

- Traffic supervision
- Quality of service
- System errors

2.1.1 Setting User Preferences on IDIH Dashboard

Once inside IDIH, a user can set user preferences. These include:

- Time specifications (such as date format, time zone)
- Enumeration values (numerals vs. text)

2.1.1.1 Setting Time Format

Follow these steps to set the time format:

1. Click **User Preferences** on the Application board.
The User Preferences screen is displayed.
2. Click the **Date/Time** tab.
The Date/Time screen is displayed. The red asterisk denotes a required field.

Note:

Use the tips on the screen to help configure the time format.

3. Enter the format for these time-related displays.
 - **Date format**
 - **Time format**
 - **Date and time fields**
4. Select the formats for these time-related displays by using the drop-down arrow.
 - **Duration fields** - how the hours, minutes, seconds, and milliseconds of the Time format is displayed

- **Time zone**

 Note:

The local time zone must be chosen to get local time.

5. To reset the time-related displays to default settings, click **Reset**.
6. Click **Apply** to save settings.

2.1.1.2 Setting Mapping Preferences

The user can set the Mapping settings using the User Preferences feature.

Follow these steps to set Mapping preferences.

1. Click **User Preferences** in the Application board.
The User Preferences screen is displayed.
2. Click the **Mapping** tab.
The Mapping screen is displayed.
3. Check **Translate ENUM values** to display text instead of numerals.
Enumeration is used by TDRs to display text values instead of numeric. Rather than showing the numeral for Alarm Severity, the user interface will show the actual word, such as Major or Critical.
4. Check **IP Address to Node Name** to translate an IP Address to a textual Node Name.
5. To reset the Mapping values to the default, click **Reset**.
6. Click **Apply** to save the changes.

2.2 Alarm Forwarding Key Features

The key features of Alarm Forwarding include

- A Simple Network Management Protocol (**SNMP**) agent compliant with **ITU x721, X733**.
- Acknowledge/Terminate capability from SNMP.
- For an alarm event, only one email is sent to a selective list of email addresses. Alarm Forwarding allows a list of email addresses to be attached to a filter. It is possible to send a particular type of alarm to a list of email addresses and another type of alarm to a different list of email addresses. These multiple email address are set when creating a filter and editing a filter.

Each alarm is evaluated against each filter. The same alarm can pass different filter conditions and be sent to different destinations. If the same alarm passes different filters and is forwarded using SNMP in each of those filters, the alarm is sent only once since Alarm Forwarding detects this condition and SNMP has only one destination.

Refer to [Alarm Forwarding MIB](#) for additional information.

2.3 Alarm Forwarding Architecture

Alarm Forwarding supports the forwarding of alarms to applications in an external system. It supports two protocols for alarm forwarding:

- Traps (**SNMP**)
- Mails (**SMTP**)

Alarm Forwarding supports the use of Filters. You can create, edit, and delete a **Filter** and a forwarding destination. A Filter List provides information for a Filter:

- Rec No - record number; a number given for indexing alarms in the Filter alarm list
- Rule - unique system-generated number that identifies the Filter
- Filter Name - name of the Filter
- Description - description of the Filter
- Destination Name - destination of the filtered alarm. It can be SNMP or SMTP or both.

You can set the forwarding criteria based on the Filters defined for fields such as:

- Ack State
- Alarm Cleared User
- Alarm **ID**
- Alarm Type
- Managed Object Class
- Managed Object ID
- Perceived Severity ID
- Probable Cause
- Specific Problem
- User Name



Note:

Destination configuration is part of platform configuration. These steps (SMTP server, SNMP version, and target IP) are described in *Oracle Communications IDIH Operation, Administration, and Maintenance*.

3

Working in Alarm Forwarding

This chapter provides information about procedures used when working in the Alarm Forwarding application.

3.1 Accessing Alarm Forwarding

To open Alarm Forwarding, follow these steps:

1. Log in to **IDIH** .
The IDIH Application board is displayed.
2. Click **Alarm Forwarding**.
The Alarm Forwarding home page is displayed.

3.2 Alarm Forwarding Toolbar

Figure 3-1 Alarm Forwarding Toolbar



Table 3-1 Alarm Forwarding Toolbar Icons

Button	Explanation
Select Columns	Allows the user to select which columns are displayed
Navigation Arrows	Moves back and forth among the records.
Filters	Number of records to display on a page
Set Size	Sets the number of records to display per page
Refresh	Resets display to include the most current data
Add Filter	Adds a Filter, defining the types of alarms to be forwarded and their destination
Modify Filter	Edits an existing filter's definition
Delete Filter	Deletes a selected filter
Test Connection	Sends a test message to the destination SNMP and/or SMTP

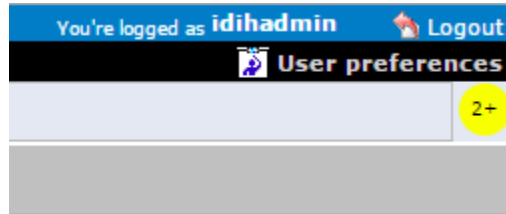
3.3 Alarm Status Indicator

When logged in to IDIH, either directly or from **DSR** launch, the portal header displays a count of current alarms, as shown in the following [image 3-1](#). The alarm status indicator is a count of the highest severity of all open alarms and the alarm status indicator (circle) is the color (user defined, idihadmin) of the highest severity. For example, if there are zero critical,

two major, one minor, and three warnings, then the alarm status indicator contains 2+ and the color is the user-defined color for major severity. The + is used to indicate that there are additional alarms at a lesser severity. The + does not appear if, for example, there are zero critical, two major, zero minor, and zero warnings.

Initially, the alarm status is empty (non-visible). Then, after a short interval, the system queries for open alarms and updates the alarm status indicator. After the first update, the system updates the alarm status indicator every 30 seconds.

Figure 3-2 Alarm Status Indicator



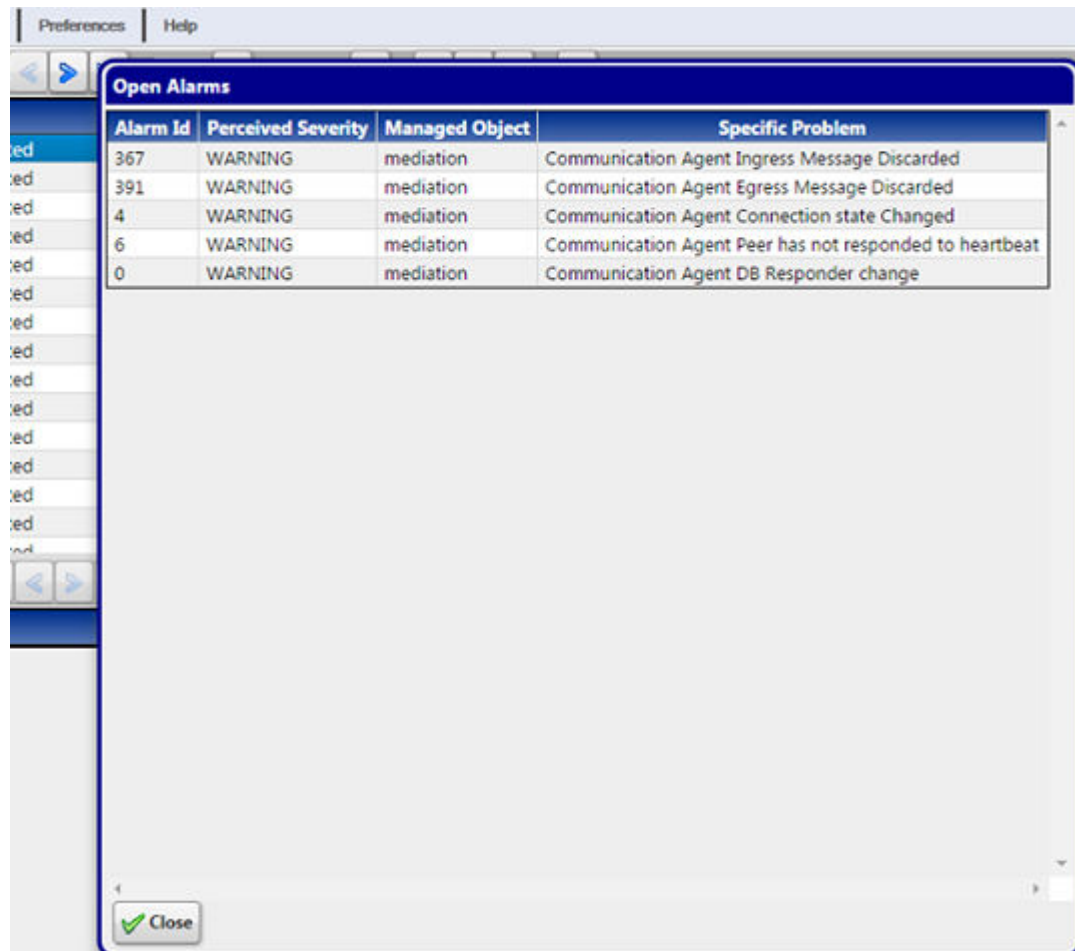
Selecting the alarm status indicator shows a brief description of the open alarms. The system displays the list of open alarms in tabular form, as shown in [Figure 3-3](#). This list can be dismissed by clicking **Close** on the Open Alarm screen.



Note:

Only open alarms may be viewed. No other actions are provided such as clear or acknowledge.

Figure 3-3 Alarm List



Alarm Id	Perceived Severity	Managed Object	Specific Problem
367	WARNING	mediation	Communication Agent Ingress Message Discarded
391	WARNING	mediation	Communication Agent Egress Message Discarded
4	WARNING	mediation	Communication Agent Connection state Changed
6	WARNING	mediation	Communication Agent Peer has not responded to heartbeat
0	WARNING	mediation	Communication Agent DB Responder change

3.4 Using Alarm Forwarding

This section explains how to set conditions and destinations for forwarding alarms.

3.4.1 Creating a Filter

Filters define the types of alarms to be forwarded and their destination. Filters return True or False results depending upon whether the alarm should be forwarded or not. Each Filter that returns True is forwarded to its specified destination.

Figure 3-4 Filter Creation Dialog

The screenshot shows the 'Filter Creation Dialog' window. It has a title bar with the text 'Filter Creation Dialog' and three window control buttons (minimize, maximize, close). Below the title bar is a 'General' tab. The main area contains a 'Filter Name' field and a 'Description' field. Below these is a 'Filter Configuration' section. This section has a table with three columns: 'Field', 'Operator', and 'Value'. The table is currently empty. Below the table are 'Add' and 'Delete' buttons. To the right of these buttons is an 'Expression' field. Below the 'Expression' field are three radio buttons labeled 'AND', 'OR', and 'Use parentheses'. The 'AND' radio button is selected.

To create a Filter,

1. Click the **Add Filter** icon on the toolbar.
The Create New Filter dialog is displayed.
2. Type in a **Filter Name** and **Description**.
3. Select Filter and click the **Add** icon.
4. Select a Field, Operator, and Value from the drop-down menus.
5. Enter an Expression.
6. Select **Next** to advance to the Destination display.
7. Select SNMP and/or SMTP.
8. Enter Email list (addresses) information.

 Note:

Email list is only used when SMTP is selected.

9. To advance to the Filter Creation Dialog Summary display, select **Next**.
10. If this information on the Summary display is correct, select finish create this filter. If there are errors in this summary information, select the previous to return to the display to correct the errors.
11. To add another filter, repeat from 1.

3.4.2 Editing a Filter

To edit an existing **Filter**:

1. Select a Filter from the Filter table.

2. Click the **Modify Filter** icon on the toolbar.
3. Modify the appropriate field(s) as needed.
For specific information on fields and options, see [Creating a Filter](#).
4. Click **Next**.
5. Update Destination information as necessary.

 Note:

For **SNMP**, only one trap destination can be defined. For SMTP, multiple email destinations are permitted.

6. Click **Finish** to save the record changes.

3.5 Alarm Forwarding Test Connection

The user can send a test message to the destination SNMP and/or SMTP using the Connection Test Dialog screen after clicking **Test Connection**.

Figure 3-5 Connection Test Dialog



3.5.1 Test Connection for SMTP

The configuring user should verify the SMTP address, SMTP availability through firewalls, and SMTP access mode. Secured destinations require additional parameters be defined and are described in *Oracle Communications IDIH Operation, Administration, and Maintenance*.

1. If the message was received in the targeted mail box, the test was successful. This procedure is complete.
If the message is not in the targeted mail box, continue with this procedure.
2. Use the **Audit Viewer** application to verify if a mail sending error is logged.
3. Contact the [My Oracle Support](#) to investigate and help determine the correct SMTP configuration.

3.5.2 Test Connection for SNMP

The configuring user should verify the SNMP address and the SNMP availability thru firewalls. Secured destinations require additional parameters be defined and are described in *Oracle Communications IDIH Operation, Administration, and Maintenance*.

1. Verify the test trap was received by the management system. If the test trap was received by the management system, the test was successful. This procedure is complete.

If the test trap was not received by the management system, continue with this procedure.

2. Contact the [My Oracle Support](#) to investigate and help determine the correct SNMP configuration.

4

SNMP Agent

This chapter provides information about how the SNMP Agent functions in the Alarm Forwarding application.

4.1 SNMP Overview

The main features of the Simple Network Management Protocol (**SNMP**) agent of Alarm Forwarding are:

Overview

- The Management Information Base (**MIB**) contains Managed Object types, Managed Objects, and opened alarms in specific tables.
- The MIB is loaded at SNMP agent startup with metadata and opened alarms already forwarded.

Validation of Traps Sent

- Traps contain a sequence number (since agent startup) that permits Telecommunications Management Network (TMN) to check that none were lost.
- In case of a gap (lost trap) or if the number is lower, the process is restarted and TNM can re-synchronize its database by querying the opened alarms table.

Acknowledgment or Termination from SNMP

A dedicated Access Module for TeMIP is available to integrate easily with the NSP Forwarding SNMP agent.



Note:

SNMP trap forwarding requires the system administrator to configure the destination address, please refer to *Configure SNMP Management Server* in *Oracle Communications IDIH Operation, Administration, and Maintenance*.

4.2 Alarm Forwarding MIB

Shown here is the Alarm Forwarding **MIB**, which is located on the NSP server at /usr/TKLC/xIH/apps/forwarding/target/misc/NSP-FORWARDING-MIB

```
-- File Name : NSP-FORWARDING-MIB
-- Date      : Mon Nov 21 10:18:28 CET 2006
-- Author    : AdventNet Agent Toolkit Java Edition - MIB Editor 6
```

```
NSP-FORWARDING-MIB DEFINITIONS ::= BEGIN
    IMPORTS
```

```

        RowStatus, DisplayString
        FROM SNMPv2-TC
    NOTIFICATION-GROUP, OBJECT-GROUP
        FROM SNMPv2-CONF
    enterprises, MODULE-IDENTITY, OBJECT-TYPE, Integer32,
NOTIFICATION-TYPE
        FROM SNMPv2-SMI;

steleus MODULE-IDENTITY
    LAST-UPDATED      200602131148Z
    ORGANIZATION      Tekelec
    CONTACT-INFO      ttprocessing@tekelec.com
    DESCRIPTION       Description
    REVISION           200602131148Z
    DESCRIPTION       NSP module
    ::= { enterprises 4404 }

nsp      OBJECT IDENTIFIER
    ::= { steleus 8 }

forwarding      OBJECT IDENTIFIER
    ::= { nsp 6 }

nspManagedObjectClassTable      OBJECT-TYPE
    SYNTAX          SEQUENCE OF
NspManagedObjectClassEntry
    MAX-ACCESS      not-accessible
    STATUS           current
    DESCRIPTION     NSP managed object class table
    ::= { forwarding 1 }

nspManagedObjectClassEntry      OBJECT-TYPE
    SYNTAX          NspManagedObjectClassEntry
    MAX-ACCESS      not-accessible
    STATUS           current
    DESCRIPTION     NSP managed object class entry
    INDEX           { nspManagedObjectClassId }
    ::= { nspManagedObjectClassTable 1 }

NspManagedObjectClassEntry ::= SEQUENCE {
    nspManagedObjectClassId Integer32,
    nspManagedObjectClassName DisplayString,
    nspManagedObjectClassDescription DisplayString,
    nspManagedObjectClassRowStatus RowStatus
}

nspManagedObjectClassId OBJECT-TYPE
    SYNTAX          Integer32 ( -2147483648 ..
2147483647 )
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION     Value that defines an instance
of managed object class in the table
    ::= { nspManagedObjectClassEntry 1 }

```

```

nspManagedObjectClassName OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION  NSP managed object class instance
name
    ::= { nspManagedObjectClassEntry 2 }

nspManagedObjectClassDescription OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION  NSP managed object class instance
description
    ::= { nspManagedObjectClassEntry 3 }

nspManagedObjectClassRowStatus OBJECT-TYPE
    SYNTAX      RowStatus { active ( 1 ) ,
notInService ( 2 ) , notReady ( 3 ) , createAndGo ( 4 ) , createAndWait
( 5 ) , destroy ( 6 ) }
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION  SMI v2 required attribute
    ::= { nspManagedObjectClassEntry 50 }

nspManagedObjectTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF NspManagedObjectEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION  Description
    ::= { forwarding 2 }

nspManagedObjectEntry OBJECT-TYPE
    SYNTAX      NspManagedObjectEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION  Row Description
    INDEX       { nspManagedObjectId }
    ::= { nspManagedObjectTable 1 }

NspManagedObjectEntry ::= SEQUENCE {
    nspManagedObjectId Integer32,
    nspManagedObjectName DisplayString,
    nspManagedObjectClassIdRef Integer32,
    nspManagedObjectParent Integer32,
    nspManagedObjectRowStatus RowStatus
}

nspManagedObjectId OBJECT-TYPE
    SYNTAX      Integer32 ( -2147483648 ..
2147483647 )
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION  Value that defines an instance of

```

```

managed object in the table
 ::= { nspManagedObjectEntry 1 }

nspManagedObjectName OBJECT-TYPE
    SYNTAX      DisplayString
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION   Column Description
 ::= { nspManagedObjectEntry 2 }

nspManagedObjectClassIdRef OBJECT-TYPE
    SYNTAX      Integer32 ( -2147483648 ..
2147483647 )
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION   Value that defines an instance
of managed object class
 ::= { nspManagedObjectEntry 10 }

nspManagedObjectParent OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION   Value that defines an instance
of parent managed object
 ::= { nspManagedObjectEntry 20 }

nspManagedObjectRowStatus OBJECT-TYPE
    SYNTAX      RowStatus
    MAX-ACCESS   read-create
    STATUS       current
    DESCRIPTION   SMI v2 required attribute
 ::= { nspManagedObjectEntry 50 }

nspAlarmsTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF NspAlarmsEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION   NSP forwarded opened alarms table
 ::= { forwarding 3 }

nspAlarmsEntry OBJECT-TYPE
    SYNTAX      NspAlarmsEntry
    MAX-ACCESS   not-accessible
    STATUS       current
    DESCRIPTION   NSP forwarded opened alarms entry
    INDEX       { nspAlarmId }
 ::= { nspAlarmsTable 1 }

NspAlarmsEntry ::= SEQUENCE {
    nspManagedObjectIdRef Integer32,
    nspAlarmId Integer32,
    nspAlarmRowStatus RowStatus,
    nspManagedObjectDN DisplayString,
    nspAlarmLastEventTime DisplayString,

```

```

nspAlarmEventType INTEGER,
nspAlarmProbableCause INTEGER,
nspAlarmPerceivedSeverity INTEGER,
nspAlarmTrendIndication INTEGER,
nspAlarmThresholdLevel DisplayString,
nspAlarmObservedValue DisplayString,
nspAlarmAdditionalText DisplayString,
nspAlarmSpecificProblem DisplayString,
nspAlarmFirstDate OCTET STRING,
nspAlarmClearDate OCTET STRING,
nspAlarmCriticalCount Integer32,
nspAlarmMajorCount Integer32,
nspAlarmMinorCount Integer32,
nspAlarmWarningCount Integer32,
nspAlarmAcknowledged INTEGER
}

nspManagedObjectIdRef OBJECT-TYPE
    SYNTAX Integer32 ( -2147483648 ..
2147483647 )
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION Value that refers to managed object
involved in the forwarded alarm
    ::= { nspAlarmsEntry 1 }

nspAlarmId OBJECT-TYPE
    SYNTAX Integer32 ( -2147483648 ..
2147483647 )
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION Value that defines an instance of
forwarded alarm
    ::= { nspAlarmsEntry 2 }

nspAlarmRowStatus OBJECT-TYPE
    SYNTAX RowStatus { active ( 1 ) ,
notInService ( 2 ) , notReady ( 3 ) , createAndGo ( 4 ) , createAndWait
( 5 ) , destroy ( 6 ) }
    MAX-ACCESS read-create
    STATUS current
    DESCRIPTION SMI v2 required attribute
    ::= { nspAlarmsEntry 50 }

nspManagedObjectDN OBJECT-TYPE
    SYNTAX DisplayString
    MAX-ACCESS read-only
    STATUS current
    DESCRIPTION Distinguished name that refers to
managed object involved in the forwarded alarm
    ::= { nspAlarmsEntry 100 }

nspAlarmLastEventTime OBJECT-TYPE

```

```

SYNTAX                                DisplayString
MAX-ACCESS                            read-only
STATUS                                current
DESCRIPTION                            Last event time in ASN.1

format

                                for the last event of the NSP
forwarded alarm on the managed object
 ::= { nspAlarmsEntry 1000 }

nspAlarmProbableCause OBJECT-TYPE
    SYNTAX                            INTEGER { adapterError
( 1 ) , applicationSubsystemFailure ( 2 ) , bandwidthReduced ( 3 ) ,
callEstablishmentError ( 4 ) , communicationsprotocolError ( 5 ) ,
communicationsSubsystemFailure ( 6 ) ,
configurationOrCustomizationError ( 7 ) , congestion ( 8 ) ,
corruptData ( 9 ) , cpuCyclesLimitExceeded ( 10 ) ,
dataSetOrModemError ( 11 ) , degradedSignal ( 12 ) ,
dteDceInterfaceError ( 13 ) , enclosureDoorOpen ( 14 ) ,
equipmentMalfunction ( 15 ) , excessiveVibration ( 16 ) , fileError
( 17 ) , fireDetected ( 18 ) , floodDetected ( 19 ) , framingError
( 20 ) , heatingVentCoolingSystemnsplm ( 21 ) , humidityUnacceptable
( 22 ) , inputOutputDeviceError ( 23 ) , inputDeviceError ( 24 ) ,
lanError ( 25 ) , leakDetected ( 26 ) , localNodeTransmissionError
( 27 ) , lossOfFrame ( 28 ) , lossOfSignal ( 29 ) ,
materialSupplyExhausted ( 30 ) , multiplexerproblem ( 31 ) ,
outOfMemory ( 32 ) , ouputDeviceError ( 33 ) , performanceDegraded
( 34 ) , powerproblem ( 35 ) , pressureUnacceptable ( 36 ) ,
processorproblem ( 37 ) , pumpFailure ( 38 ) , queueSizeExceeded
( 39 ) , receiveFailure ( 40 ) , receiverFailure ( 41 ) ,
remoteNodeTransmissionError ( 42 ) , resourceAtOrNearingCapacity
( 43 ) , responseTimeExcessive ( 44 ) , retransmissionRateExcessive
( 45 ) , softwareError ( 46 ) , softwareprogramAbnormallyTerminated
( 47 ) , softwareprogramError ( 48 ) , storageCapacityproblem ( 49 ) ,
temperatureUnacceptable ( 50 ) , thresholdCrossed ( 51 ) ,
timingproblem ( 52 ) , toxicLeakDetected ( 53 ) , transmitFailure
( 54 ) , transmitterFailure ( 55 ) , underlyingResourceUnavailable
( 56 ) , versionMismatch ( 57 ) , authenticationFailure ( 58 ) ,
breachOfConfidentiality ( 59 ) , cableTamper ( 60 ) ,
delayedInformation ( 61 ) , denialOfService ( 62 ) ,
duplicateInformation ( 63 ) , informationMissing ( 64 ) ,
informationModificationDetected ( 65 ) , informationOutOfSequence
( 66 ) , intrusionDetection ( 67 ) , keyExpired ( 68 ) ,
nonRepudiationFailure ( 69 ) , outOfHoursActivity ( 70 ) ,
outOfService ( 71 ) , proceduralError ( 72 ) ,
unauthorizedAccessAttempt ( 73 ) , unexpectedInformation ( 74 ) }

    MAX-ACCESS                            read-only
    STATUS                                current
    DESCRIPTION                            Represents the probable cause
values for the alarms as per [X.721], [X.733] and [X.736]

                                for the NSP forwarded alarm on the
managed object
 ::= { nspAlarmsEntry 1001 }

```

```

nspAlarmPerceivedSeverity OBJECT-TYPE
    SYNTAX          INTEGER { indeterminate ( 0 ) ,
critical ( 1 ) , major ( 2 ) , minor ( 3 ) , warning ( 4 ) , cleared ( 5 ) }

```

```

    MAX-ACCESS      read-write
    STATUS           current
    DESCRIPTION      Represents the perceived severity
values for the alarms as per [X.733] and [X.721]

```

```

for the NSP forwarded alarm on the managed
object

```

```

 ::= { nspAlarmsEntry 1002 }

```

```

nspAlarmTrendIndication OBJECT-TYPE
    SYNTAX          INTEGER { lessSevere ( 0 ) ,
noChange ( 1 ) , moreSevere ( 2 ) }
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION      Represents the trend indication
values for the alarms as per [X.733]

```

```

for the NSP forwarded alarm on the managed
object

```

```

 ::= { nspAlarmsEntry 1003 }

```

```

nspAlarmThresholdLevel OBJECT-TYPE
    SYNTAX          DisplayString
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION      Represents the threshold level
indication values (real) for the alarms as per [X.733]

```

```

for the last event of the NSP forwarded
alarm on the managed object

```

```

 ::= { nspAlarmsEntry 1004 }

```

```

nspAlarmObservedValue OBJECT-TYPE
    SYNTAX          DisplayString
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION      Represents the threshold observed
values (real) for the alarms as per [X.733]

```

```

for the last event of the NSP forwarded
alarm on the managed object

```

```

 ::= { nspAlarmsEntry 1005 }

```

```

nspAlarmAdditionalText OBJECT-TYPE
    SYNTAX          DisplayString
    MAX-ACCESS      read-only
    STATUS           current
    DESCRIPTION      Represents the additional text field
for the alarm as per [X.733]

```

```

for the last event of the NSP forwarded
alarm on the managed object

```

```

 ::= { nspAlarmsEntry 1006 }

```

```

nspAlarmEventType OBJECT-TYPE
    SYNTAX          INTEGER { otherAlarm ( 1 ) ,
communicationAlarm ( 2 ) , environmentalAlarm ( 3 ) , equipmentAlarm
( 4 ) , integrityViolation ( 5 ) , processingErrorAlarm ( 10 ) ,
qualityOfServiceAlarm ( 11 ) }

```

```

        MAX-ACCESS      read-only
        STATUS          current
        DESCRIPTION     Represents the ITU event type
value for the alarms as per [X.721], [X.733] and [X.736]

```

```

                                for the NSP forwarded alarm on the
managed object

```

```

::= { nspAlarmsEntry 1007 }

```

```

nspAlarmSpecificProblem OBJECT-TYPE

```

```

    SYNTAX          DisplayString
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION     Represents the specific

```

```

problem name

```

```

                                for the NSP forwarded alarm on the
managed object

```

```

::= { nspAlarmsEntry 1008 }

```

```

nspAlarmFirstDate OBJECT-TYPE

```

```

    SYNTAX          OCTET STRING
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION     Represents the raised date in

```

```

ASN.1 format

```

```

                                for the NSP forwarded alarm on the
managed object

```

```

::= { nspAlarmsEntry 1010 }

```

```

nspAlarmClearDate OBJECT-TYPE

```

```

    SYNTAX          OCTET STRING
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION     Represents the clear date in

```

```

ASN.1 format

```

```

                                for the NSP forwarded alarm on the
managed object

```

```

::= { nspAlarmsEntry 1011 }

```

```

nspAlarmCriticalCount OBJECT-TYPE

```

```

    SYNTAX          Integer32
    MAX-ACCESS      read-only
    STATUS          current
    DESCRIPTION     Represents the number of

```

```

critical events

```

```

                                for the NSP forwarded alarm on the
managed object

```

```

::= { nspAlarmsEntry 1012 }

```

```

nspAlarmMajorCount      OBJECT-TYPE
    SYNTAX                Integer32
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION            Represents the number of major
events
                           for the NSP forwarded alarm on the managed
object
                           ::= { nspAlarmsEntry 1013 }

nspAlarmMinorCount      OBJECT-TYPE
    SYNTAX                Integer32
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION            Represents the number of minor
events
                           for the NSP forwarded alarm on the managed
object
                           ::= { nspAlarmsEntry 1014 }

nspAlarmWarningCount    OBJECT-TYPE
    SYNTAX                Integer32
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION            Represents the number of warning
events
                           for the NSP forwarded alarm on the managed
object
                           ::= { nspAlarmsEntry 1015 }

nspAlarmAcknowledged     OBJECT-TYPE
    SYNTAX                INTEGER { false ( 0 ) , true
( 1 ) }
    MAX-ACCESS             read-write
    STATUS                 current
    DESCRIPTION            Represents the acknowledged status
                           for the NSP forwarded alarm of the managed
object
                           ::= { nspAlarmsEntry 1016 }

fwdVersion              OBJECT-TYPE
    SYNTAX                OCTET STRING
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION            Current version of the NSP
Forwarding SNMP sub-agent
                           ::= { forwarding 10 }

fwdStatus               OBJECT-TYPE
    SYNTAX                INTEGER { allGood ( 0 ) , failure
( 1 ) }
    MAX-ACCESS             read-only
    STATUS                 current
    DESCRIPTION            Global state of the NSP Forwarding
SNMP sub-agent

```

```

 ::= { forwarding 11 }

ituAlarmEvent OBJECT IDENTIFIER
 ::= { forwarding 733 }

otherAlarm NOTIFICATION-TYPE
    OBJECTS { nspAlarmId,
nspManagedObjectId, nspAlarmLastEventTime, nspAlarmProbableCause,
nspAlarmPerceivedSeverity, nspAlarmTrendIndication,
nspAlarmThresholdLevel, nspAlarmObservedValue, nspAlarmAdditionalText,
nspAlarmSpecificProblem, nspAlarmFirstDate, nspAlarmClearDate,
nspAlarmCriticalCount, nspAlarmMajorCount, nspAlarmMinorCount,
nspAlarmWarningCount, nspAlarmAcknowledged, nspManagedObjectName,
nspManagedObjectDN }

    STATUS current
    DESCRIPTION Represents the event type for
other alarms as per [X.721],[X.733] and [X.736]
 ::= { ituAlarmEvent 1 }

communicationAlarm NOTIFICATION-TYPE
    OBJECTS { nspAlarmId,
nspManagedObjectId, nspAlarmLastEventTime, nspAlarmProbableCause,
nspAlarmPerceivedSeverity, nspAlarmTrendIndication,
nspAlarmThresholdLevel, nspAlarmObservedValue, nspAlarmAdditionalText,
nspAlarmSpecificProblem, nspAlarmFirstDate, nspAlarmClearDate,
nspAlarmCriticalCount, nspAlarmMajorCount, nspAlarmMinorCount,
nspAlarmWarningCount, nspAlarmAcknowledged, nspManagedObjectName,
nspManagedObjectDN }

    STATUS current
    DESCRIPTION Represents the event type for
the communication alarms as per [X.721],[X.733] and [X.736]

 ::= { ituAlarmEvent 2 }

environmentalAlarm NOTIFICATION-TYPE
    OBJECTS { nspAlarmId,
nspManagedObjectId, nspAlarmLastEventTime, nspAlarmProbableCause,
nspAlarmPerceivedSeverity, nspAlarmTrendIndication,
nspAlarmThresholdLevel, nspAlarmObservedValue, nspAlarmAdditionalText,
nspAlarmSpecificProblem, nspAlarmFirstDate, nspAlarmClearDate,
nspAlarmCriticalCount, nspAlarmMajorCount, nspAlarmMinorCount,
nspAlarmWarningCount, nspAlarmAcknowledged, nspManagedObjectName,
nspManagedObjectDN }

    STATUS current
    DESCRIPTION Represents the event type for
the environment alarms as per [X.721],[X.733] and [X.736]

 ::= { ituAlarmEvent 3 }

equipmentAlarm NOTIFICATION-TYPE
    OBJECTS { nspAlarmId,
nspManagedObjectId, nspAlarmLastEventTime, nspAlarmProbableCause,

```

```
nspAlarmPerceivedSeverity, nspAlarmTrendIndication, nspAlarmThresholdLevel,
nspAlarmObservedValue, nspAlarmAdditionalText, nspAlarmSpecificProblem,
nspAlarmFirstDate, nspAlarmCriticalCount, nspAlarmMajorCount,
nspAlarmMinorCount, nspAlarmWarningCount, nspAlarmAcknowledged,
nspManagedObjectName, nspManagedObjectDN }
```

```
STATUS current
DESCRIPTION Represents the event type for the
equipment alarms as per [X.721],[X.733] and [X.736]
```

```
::= { ituAlarmEvent 4 }
```

```
integrityViolation NOTIFICATION-TYPE
OBJECTS { nspAlarmId, nspManagedObjectId,
nspAlarmLastEventTime, nspAlarmProbableCause, nspAlarmPerceivedSeverity,
nspAlarmTrendIndication, nspAlarmThresholdLevel, nspAlarmObservedValue,
nspAlarmAdditionalText, nspAlarmSpecificProblem, nspAlarmFirstDate,
nspAlarmCriticalCount, nspAlarmMajorCount, nspAlarmMinorCount,
nspAlarmWarningCount, nspAlarmAcknowledged, nspManagedObjectName,
nspManagedObjectDN }
```

```
STATUS current
DESCRIPTION Represents the event type for the
integrity violation as per [X.721],[X.733] and [X.736]
```

```
::= { ituAlarmEvent 5 }
```

```
processingErrorAlarm NOTIFICATION-TYPE
OBJECTS { nspAlarmId, nspManagedObjectId,
nspAlarmLastEventTime, nspAlarmProbableCause, nspAlarmPerceivedSeverity,
nspAlarmTrendIndication, nspAlarmThresholdLevel, nspAlarmObservedValue,
nspAlarmAdditionalText, nspAlarmSpecificProblem, nspAlarmFirstDate,
nspAlarmCriticalCount, nspAlarmMajorCount, nspAlarmMinorCount,
nspAlarmWarningCount, nspAlarmAcknowledged, nspManagedObjectName,
nspManagedObjectDN }
```

```
STATUS current
DESCRIPTION Represents the event type for the
processing error alarms as per [X.721],[X.733] and [X.736]
```

```
::= { ituAlarmEvent 10 }
```

```
qualityOfServiceAlarm NOTIFICATION-TYPE
OBJECTS { nspAlarmId, nspManagedObjectId,
nspAlarmLastEventTime, nspAlarmProbableCause, nspAlarmPerceivedSeverity,
nspAlarmTrendIndication, nspAlarmThresholdLevel, nspAlarmObservedValue,
nspAlarmAdditionalText, nspAlarmSpecificProblem, nspAlarmFirstDate,
nspAlarmCriticalCount, nspAlarmMajorCount, nspAlarmMinorCount,
nspAlarmWarningCount, nspAlarmAcknowledged, nspManagedObjectName,
nspManagedObjectDN }
```

```
STATUS current
DESCRIPTION Represents the event type for the
quality of service alarms as per [X.721],[X.733] and [X.736]
```

```

::= { ituAlarmEvent 11 }

ituAlarmEventGroup      NOTIFICATION-GROUP
    NOTIFICATIONS { communicationAlarm,
environmentalAlarm, equipmentAlarm, integrityViolation, otherAlarm,
processingErrorAlarm, qualityOfServiceAlarm }

    STATUS              current
    DESCRIPTION         ITU alarm Event notifications
::= { forwarding 500 }

managedObject OBJECT-GROUP
    OBJECTS
{ nspManagedObjectClassDescription, nspManagedObjectClassId,
nspManagedObjectClassIdRef, nspManagedObjectClassName,
nspManagedObjectClassRowStatus, nspManagedObjectId,
nspManagedObjectIdRef, nspManagedObjectName, nspManagedObjectParent,
nspManagedObjectRowStatus, nspManagedObjectDN }

    STATUS              current
    DESCRIPTION         Data related to NSP managed
objects
::= { forwarding 200 }

alarm OBJECT-GROUP
    OBJECTS              { nspAlarmAcknowledged,
nspAlarmAdditionalText, nspAlarmClearDate, nspAlarmCriticalCount,
nspAlarmFirstDate, nspAlarmId, nspAlarmLastEventTime,
nspAlarmMajorCount, nspAlarmMinorCount, nspAlarmObservedValue,
nspAlarmPerceivedSeverity, nspAlarmProbableCause, nspAlarmEventType,
nspAlarmRowStatus, nspAlarmSpecificProblem, nspAlarmThresholdLevel,
nspAlarmTrendIndication, nspAlarmWarningCount }

    STATUS              current
    DESCRIPTION         Data related to NSP alarms
::= { forwarding 300 }

forward OBJECT-GROUP
    OBJECTS              {fwdVersion, fwdStatus}
    STATUS              current
    DESCRIPTION         Data related to NSP forwarding
module
::= { forwarding 100 }

END

```