NWD-102891-19E

NEC

PASOLINK

NETWORK

MANAGEMENT

SYSTEM

SNMP Interface Specification for Common

(for PNMSj+)

NEC Corporation

CONTENTS

1. Introduction

This document provides a detailed description of the interface between the PNMSj+ and the upper (higher-level) manager. The PNMSj+ manages all PASOLINK (including 5000S) radio equipments under it and reports summary status (Group (cluster) status and NE status) occurring in the PASOLINK (including 5000S) radio networks to the upper (higher-level) manager. Simple Network Management Protocol (SNMP) Ver.1 is used in the interface.

NEC solely provides MIB information. The actual upper (higher-level) management system integration work should be performed by the customer after detailed SOW integration discussions.

2. Hardware Configuration

Figure 1 shows the hardware configuration of the interface between PNMSj+ and the upper (higher-level) manager.

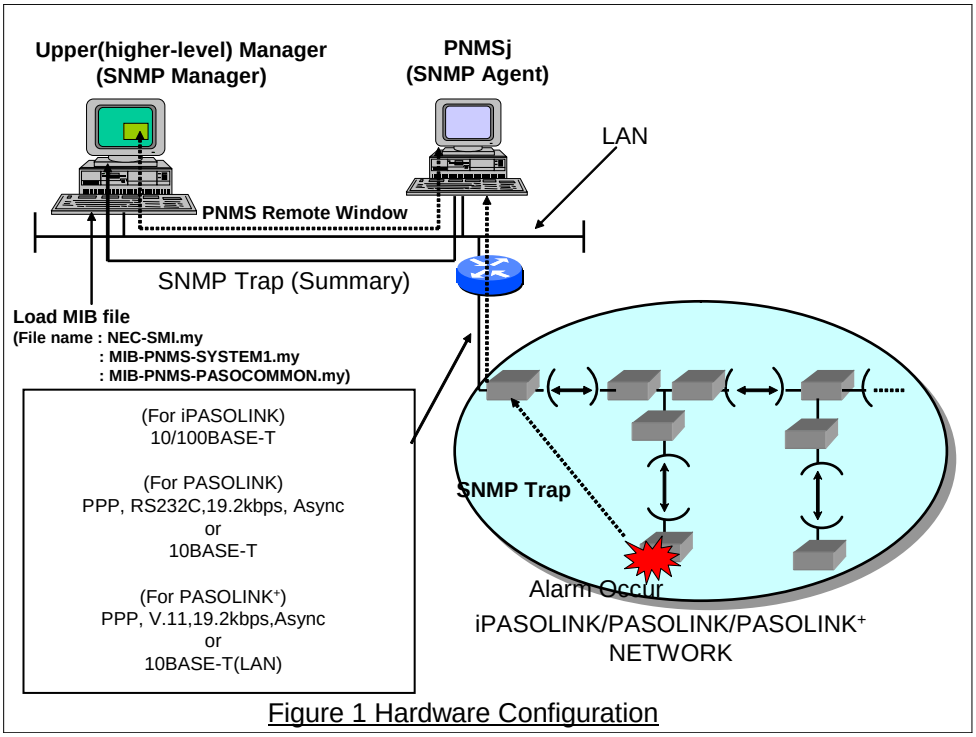

Figure 1 Hardware Configuration

3. Communication Protocol

Upper (higher-level) interface protocol is as follows.

1) The Simple Network Management Protocol (SNMP-V1: RFC 1157)
2) Management Information Base (MIB)
3) Information Transfer Mechanism (SNMP Traps)

The PNMSj+ provides the upper (higher-level) manager with information regarding the iPASOLINK/PASOLINK/PASOLINK$^+$ radio equipments in the network using SNMP v1. This section describes this interface.

The systems will intercommunicate using an IP-based protocol (UDP/IP)-LAN or WAN, as shown in Figure 1. PNMSj+ is the SNMP agent and the upper (higher-level) manager is the SNMP manager. Using SNMP traps, the PNMSj+ is able to send iPASOLINK/PASOLINK/PASOLINK$^+$ radio network data to the upper (higher-level) manager through a LAN. Moreover, the upper (higher-level) manager is able to monitor the iPASOLINK/PASOLINK/PASOLINK$^+$ radio equipments via the PNMSj+ using SNMP *get* commands. Since the iPASOLINK/PASOLINK/PASOLINK$^+$ wireless network may be composed of a large number of elements, translating into a large amount of data, PNMSj+ SNMP interface can also be filtered to prevent congestion in the LAN or the IP network. Note that in this setup, the upper (higher-level) manager accesses the iPASOLINK/PASOLINK/PASOLINK$^+$ wireless network indirectly through the PNMSj+.

4. Interface Function

4.1 Upper (higher-level) Manager Registration

It is possible to register the upper (higher-level) manager's IP address in the PNMSj+ and distribute the trap message from the grouped iPASOLINK/PASOLINK/PASOLINK$^+$ equipments using the following grouping function to the registered upper (higher-level) manager. A maximum of 8 upper (higher-level) managers can be registered. The upper (higher-level) manager registration is executed on PNMSj+.

4.2 Grouping Function

The PNMSj+ can divide all iPASOLINK/PASOLINK/PASOLINK$^+$ NE's into several groups. The PNMSj+ provides the upper (higher-level) manager with an effective way to monitor the iPASOLINK/PASOLINK/PASOLINK$^+$ NE's using this function.

Note: It is necessary for the upper (higher-level) manager to receive the trap to create the grouping iPASOLINK/PASOLINK/PASOLINK$^+$ NE's. The PNMSj+ does not send trap messages from ungrouped iPASOLINK/PASOLINK/PASOLINK$^+$ NE's to the upper (higher-level) manager. This grouping is executed on PNMSj+.

4.3 Filtering Function

The PNMSj+ provides the upper (higher-level) manager with the filtering function. It is possible to suppress the trap in the PNMSj+ using this function to reduce the network traffic. Filter table is composed of two levels for grouped iPASOLINK/PASOLINK/PASOLINK$^+$ NE's by above grouping function. These levels are based on the severity (Critical, Major, Minor and Clear) and the trap type (Group summary and NE summary).

Note: iPASOLINK/PASOLINK/PASOLINK$^+$ NE's must be grouped before this filter function can be enabled (See 4.2 Grouping function).

4.4 Trap Loss Detection (Optional)

PNMSj+ provides two methods for detecting Trap Loss for the upper (higher-level) SNMP manager.

1) Each summary trap has unique sequence number for the upper (higher-level) SNMP manager (Figure 2).
2) PNMSj+ retains the last trap sequence number, which is notified to the upper (higher-level) SNMP manager as part of MIB (Figure 3).

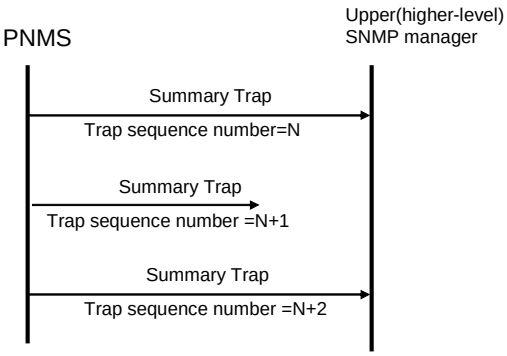

Figure 2 In case of using unique sequence number in summary trap

In case a summary Trap (Trap sequence number =N+1) is lost, when the upper (higher-level) SNMP manager receives the next summary Trap (Trap sequence number =N+2), upper (higher-level) SNMP manager can recognize the loss of Trap message (Trap sequence number =N+1).

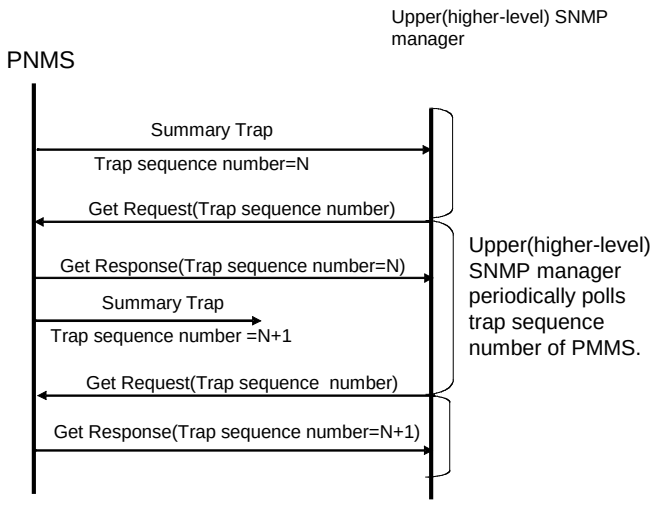

Figure 3 In case of using the last trap sequence number which isstored in PNMS as MIB

The upper (higher-level) SNMP manager can recognize the loss of the summary trap (Trap sequence number (N+1)) by checking the last trap sequence number sent to the upper (higher-level) SNMP manager, which is stored in the PNMSj+'s MIB.

4.5 Resending Traps (Optional)

PNMSj+ provides the upper (higher-level) SNMP manager with two methods for resending Trap.

Figure 4 describes the sequence of exchange in order to resend Trap by the upper (higher-level) manager.

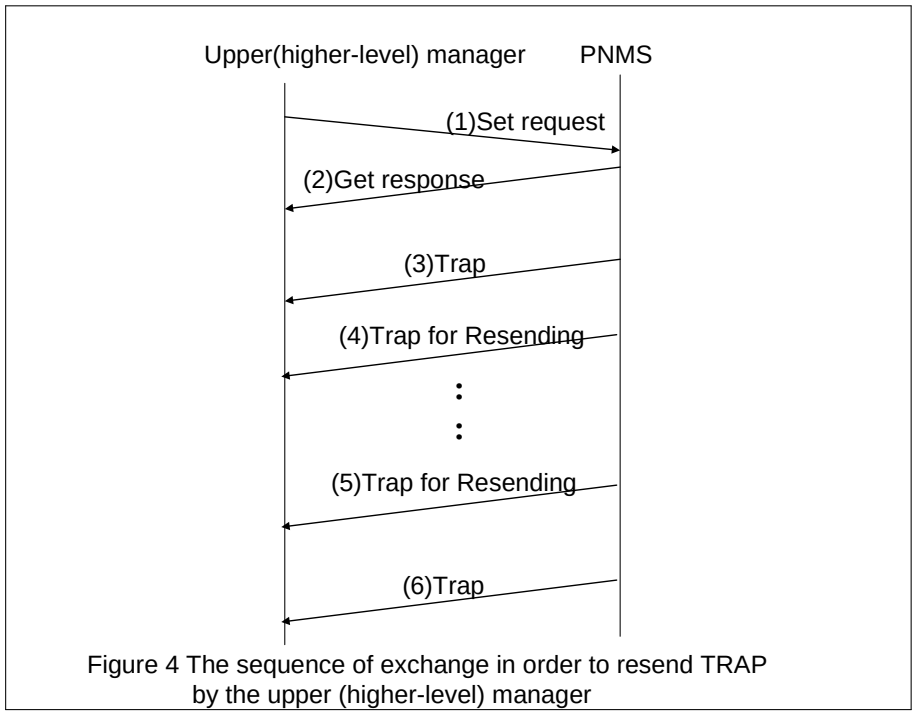

Figure 4 The sequence of exchange in order to resend TRAP by the upper (higher-level) manager

<Procedure to Resend Trap for Group>

1. When Upper manager needs to request PNMSj+ to resend alarm related traps of specific groups, the upper manager takes srsGroupID and srsResendType as a set of request packet and sends it to PNMSj+.
   SrsGroupID designates the desired group ID to resend and a value selected from below for srsResendType determines in what style the resending needs to be in.

   A list of srsResendType values
   2: Cancel request from upper
   4: Resend Summary Trap
   8: Resend Detail Alarm Trap (5000S is not supported)
   12: Resend both Summary and Detail Alarm Traps (5000S is not supported)

2. Upon reception of a request, PNMSj+ sends Get Response to requested Upper Manager.

3. At the start of resend trap, PNMSj+ notifies all upper managers registered in PNMSj+ with resendStatus Trap (Trap Number=400).

4 - 5. Traps related to requested Groups are resent.
   When srsResendType=2, Summary traps (pnePasoComSummary Trap (Trap Number=100)) for NEs which belong to Group specified by srsGroupID and group summary traps (s1gsGroupSummary (Trap Number=10)) are resent.

When srsResendType=4, detail alarm Traps for NEs which belong to group specified by srsGroupID are resent.
When srsResendType=6, detail alarm traps for NEs which belong to NE specified by srsGroupID, summary traps (pnePasoComSummary Trap (Trap Number=100)) and Group summary traps (s1gsGroupSummary (Trap Number=10)) are resent.
While resending traps, new traps generated from NEs are queued only during detail traps for objective NEs are sent. Any traps queued after resend completed are sent in sequential order.

6. Upon completion of trap resend, PNMSj+ notifies all upper managers registered in PNMSj+ with resendStatus Trap. (Trap Number=400 , The value of resendStatusType is 2(wait).)

<Procedure for Resending Trap for NE>

1. When Upper manager needs to request PNMSj+ to resend alarm related traps of Specific NEs, the upper manager takes srsNetworkElementAddress and srsResendType as a set of request packet and sends it to PNMSj+.
   srsNetworkElementAddress designates the desired ID of NEs to resend and a value selected from below for srsResendType determines in what style the resending needs to be in.

   A list of srsResendType values
   2: Cancel request from upper
   4: Resend summary trap
   8: Resend Detail Alarm Trap (5000S is not supported)
   12: Resend both Summary and Detail Alarm Traps (5000S is not supported)

NOTE

When setting to srsNetworkElementAddress object under pnmsPlus(211) MIB tree, it is required to specify the IP Address type with srsNetworkElementAddressAddrType object. That is, the upper manager (OSS) has to send srsNetworkElementAddressAddrType, srsNetworkElementAddress and srsResendType objects using a single set command. (one packet)

2. Upon reception of a request, PNMSj+ sends Get Response to requested Upper Manager.

3. At the start of resend trap, PNMSj+ notifies all upper managers registered in PNMSj+ with resendStatus Trap (Trap Number=400).

4 - 5. Traps related to requested Network Elements are resent.
When srsResendType=2, summary traps (pnePasoComSummary Trap (Trap Number=100)) for NEs specified by srsNetworkElementAddress are resent.
When srsResendType=4, detail alarm traps for NEs specified by srsNetworkElementAddress are resent.
When srsResendType=6, detail alarm traps for NEs specified by srsNetworkElementAddress, summary traps (pnePasoComSummary Trap (Trap Number=100)) and group summary traps (s1gsGroupSummary (Trap Number=10)) are resent.
While resending traps, new traps generated from NEs are queued only during detail traps for objective NEs are sent. Any traps queued after resend completed are sent in sequential order.

6. Upon completion of resend trap, PNMSj+ notifies all upper managers registered in PNMSj+ with resendStatus Trap. (Trap Number=400 , The value of resendStatusType is 2(wait).)

5. Operation

Sending summary traps to the upper (higher-level) SNMP manager is a PNMSj+ function. There are two kinds of summary traps as described below. A detailed description is provided in Section 7 << Fault Management >>

1) Group Summary Trap

The group Summary Trap contains the summary of the status in the group. (The group is composed of multiple NEs).

2) NE Summary Trap

NE Summary Trap is the trap, which contains the summary of status of each iPASOLINK/PASOLINK/PASOLINK+.

When the upper (higher-level) SNMP manager receives the abovementioned summary alarm traps from PNMSj+, the operator should access the PNMSj+ window on the X-terminal and confirm the details.

6. PNMSj+ MIB

This section provides a detailed description of the PNMSj+ role as an SNMP agent. This document provides PNMSj+ Management Information Base (MIB) definitions for the upper (higher-level) manager and its Trap names and numbers. The detailed MIB definitions are provided in thePASOLINK-MIB file (Appendix).

The Management Information Base (MIB) for the upper (higher-level) manager mainly comprises three object ID's (system1, pasoCommon). The first seven entries are NEC assigned MIB objects. The MIB tree is shown in Figure 5 (below).

Object ID is different for dedicated IPv4 usage and IPv4/IPv6 common usage. Object ID for iPv4/iPv6 common usage includes AddrType to distinguish IPv4 or IPv6.

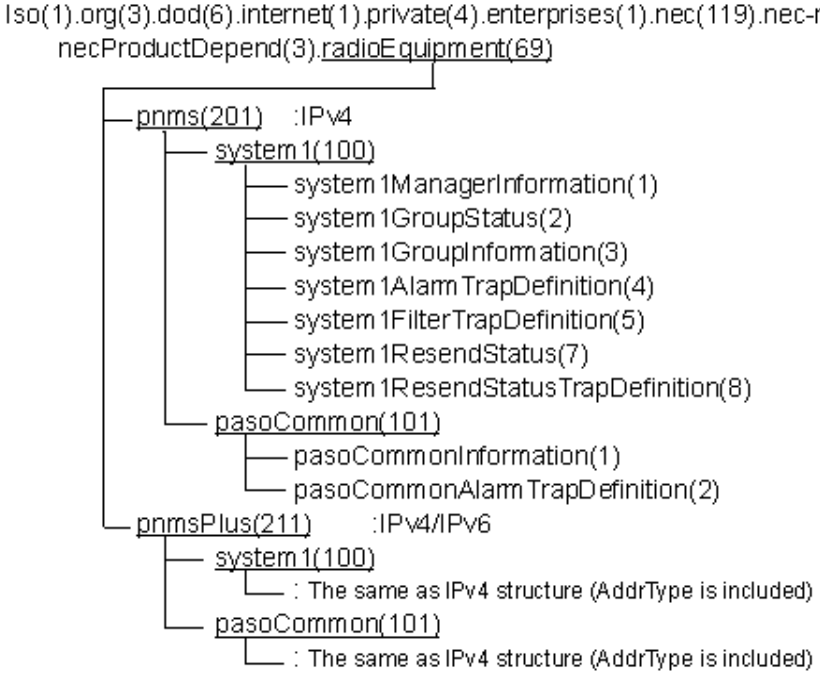

Figure 5 PASOLINK MIB Tree

6.1 system1 Object Group

This includes the information for the upper (higher-level) SNMP manager, grouping of PASOLINK/PASOLINK+ equipment and the filtering function for each group. This group MIB tree is shown in Figure 6 below and the description of these objects is shown in Table 1. The upper (higher-level) manager registration and grouping function are executed on PNMSj+. Filtering function is executed by <<SET Request>> commands from the upper (higher-level) manager.

Table 1

	Object Name	Description
1	system1ManagerInformation	the information for upper (higher-level) snmp manager
2	system1GroupStatus	the grouped NE information
3	system1GroupInformation	the filter for group
4	system1AlarmTrapDefinition	the alarm trap definition
5	system1FilterTrapDefinition	the filter trap definition
6	Unused	
7	system1ResendStatus	the resending status
8	system1ResendStatusTrapDefinition	the resending status trap definition

6.1.1 MIB Definition

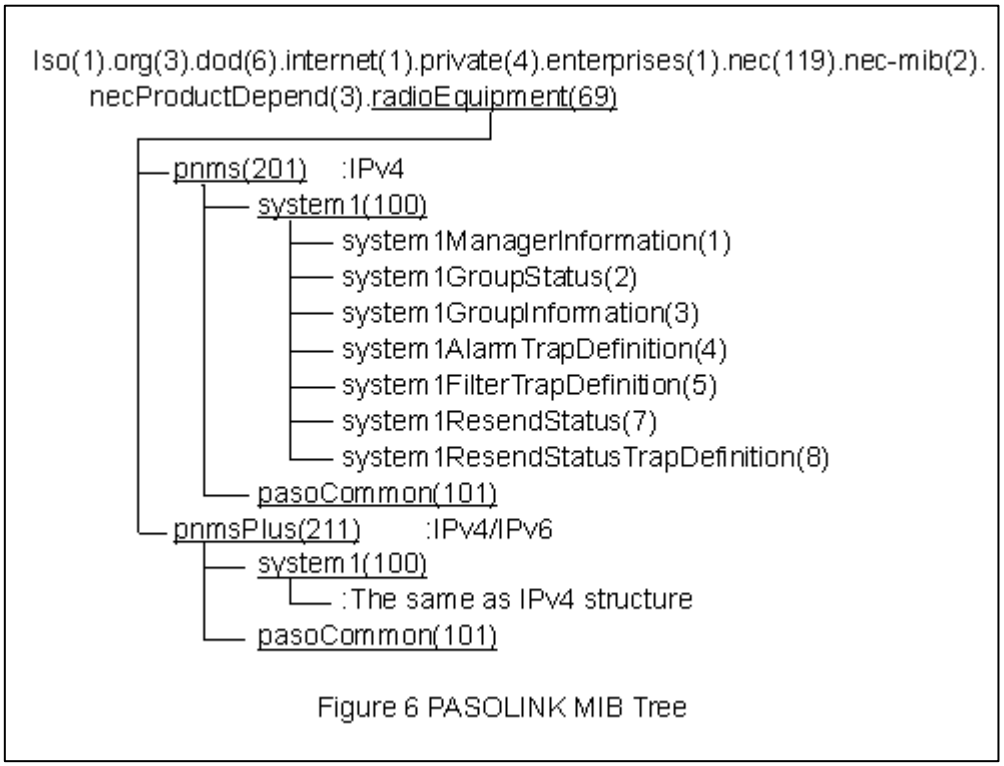

Figure 6 PASOLINK MIB Tree

sys1ManagerInformation Table

Object Name	ITEM	Trap Name	Trap Number
smtManagerIpAddress	Upper (higher-level) Manager's IP Address	-----	-----
smtManagerSequenceNumber	Trap Sequence Number	-----	-----
smtManagerCommunityName	Community Name	-----	-----

sys1GroupStatus Table

Object Name	ITEM	Trap Name	Trap Number
sgsGroupName	Group Name	-----	-----
sgsGroupSummary	Unknown (0) Clear (1) Minor (2) Major (3) Critical (4)	alarmGroupSummary	10
sgsGroupStatus	invalid (0) Valid (1)	-----	-----

sys1GroupInformation Table

Object Name	ITEM	Trap Name	Trap Number
sgiFilterSeverityMask	Alarm Severity Mask	filterTrapSeverity	300
sgiFilterTrapTypeMask	Trap Type Mask	filterTrapType	301

sys1ResendStatus Table

Object Name	ITEM	Trap Name	Trap Number
srsGroupId	Group ID	-----	-----
srsNetworkElementAddress	Network Element Address	-----	-----
srsResendType	unavailable(1) wait(2) summary(4) datailAlarm(8) summary-datailAlarm(12)	resendStatus	400

6.2 pasoCommon Object Group

This object group represents the summary information for iPASOLINK/PASOLINK/PASOLINK+ equipments. This group MIB tree is shown in Figure 7 (below) and the segments of this object group are described in Table 2. Summary status of each NE is stored in << pnePasoComSummary >> of this MIB as indicated below.

Table 2

No	Object Name	Description
1	pasoCommonInformation	the PASOLINK summary information
2	pasoCommonAlarmTrapDefinition	the alarm trap definition

6.2.1 MIB Definition

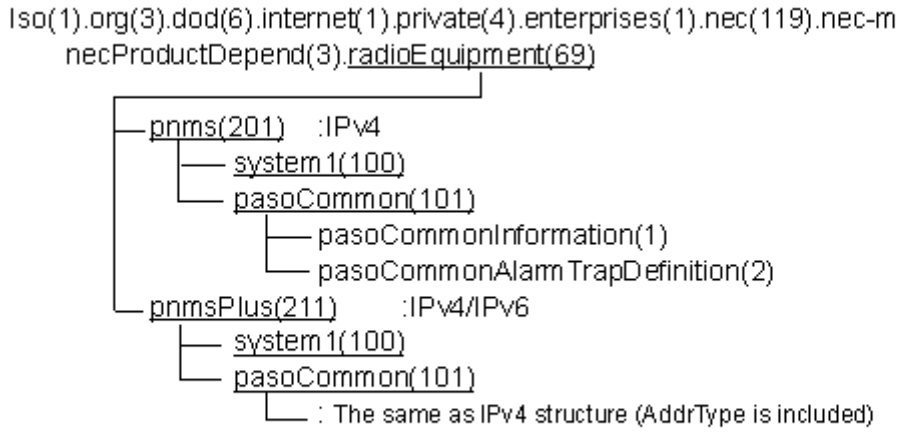

Figure 7 PASOLINK MIB Tree

pasoCommonInformationTable

Object Name	ITEM	Trap Name	Trap Number
pneGroupID	Group ID	-----	-----
pnePasoName	Paso Name	-----	-----
pneSummary	unknown (0) Clear (1) Minor (2) Major (3) Critical (4)	alarmNESummary	100
pneEquipmentType	invalid (0) pasolinkV3 (1) pasoS (2) MIU (3) Pasolink:STM-1 / NLite 155 (4) Pasolink:PDH (5) Pasolink:STM-0 (6) pasolinkV4 / NLite (7) pasolinkMx (8) NLiteL (9) NLiteLx (10) PASOLINK NEO STD / NLite E (11) 5000S(12) PASOLINK NEO CPV(13) PASOLINK NEO NODAL(14) PASOLINK NEO A(15) PASOLINK NEO HP(16) NLite N(17) PASOLINK NEO HP AMR / NLite N AMR(18) iPASOLINK 200(20) iPASOLINK 400(21) iPASOLINK 1000(22) iPASOLINK 100(23) iPASOLINK 100E(24) 5000iP Series(25) iPASOLINK 400A(26) iPASOLINK iX(27) iPASOLINK SX(28) iPASOLINK EX(29)	-----	-----

	iPASOLINK 100A(30) iPASOLINK 200A(31) iPASOLINK VR 2(32) iPASOLINK VR 4(33) iPASOLINK VR 10(34) iPASOLINK EX/A(35) iPASOLINK VR 1250(36) 7000iP / 5000iP ADV(37) iPASOLINK iX/A(38)		

7. PNMSj+ Trap definition

This section describes the event mediation between the PNMSj+ and the upper (higher-level) manager. Notification concerning PNMSj+ startup and alarms from the iPASOLINK/PASOLINK/PASOLINK$^+$ wireless equipments are sent by the PNMSj+ to the upper (higher-level) manager in the format described below. These notifications are sent with the SNMP v1 trap.

7.1 Start up trap

When the PNMSj+ starts up, the upper (higher-level) manager is notified of this event by a generic trap, known as a “ColdStart”, which is sent from the PNMSj+. This is a minimal trap sent to the upper (higher-level) manager. Once the upper (higher-level) manager is notified that the PNMSj+ is already started it recognizes that PNMSj+ is starting to obtain the status of each iPASOLINK/PASOLINK/PASOLINK$^+$. The figure below illustrates the communication between the PNMSj+ and the upper (higher-level) manager during the PNMSj+ start up sequence.

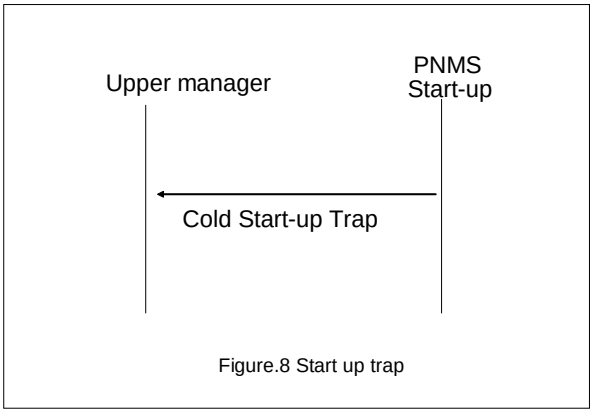

Figure.8 Start up trap

Cold Start-up Trap PDU

	Item	Data Description
SNMP common Header	Version	SNMP version-1 = [0]
	Community	SNMP community name. PNMS uses “Public”.
	PDU Type	Trap = [4]
Trap Header	Enterprise	SNMPv2-MIB::snmpTraps = [1.3.6.1.6.3.1.1.5]
	Agent Address	[PNMS IP Address]
	Generic Trap Type	coldStart = [0]
	Specific Trap Type	[0]
	Timestamp	Time Stamp (time elapsed between the last (re)initialization of the agent and the generation of the trap)
Data	Variable Bindings	None = [0]

7.2 Alarm trap

The PNMSj+ will notify the Customer's NMS if an alarm occurs in the managed group or NE in the network using SNMP v1 Trap –UDP. The alarm trap is sent to the Customer's NMS in the following formats:

<Group Summary Trap>
This contains a summary of the alarms in a managed group. Obviously, a group contains more than one NE.

	Item		Data Description
SNMP common Header	Version		[0]
	Community		SNMP community name. PNMS uses "Public".
	PDU Type		[4]
Trap Header	Enterprise		PNMS identification tag. [pnms]
	Agent Address		[PNMS IP Address]
	Generic Trap Type		[6]
	Specific Trap Type		A decimal value used to represent the type of alarm. "10" is used to represent Group Summary trap
	Timestamp		Time stamp (not used)
Data	Variable Bindings	alarmTrapSequenceNumber 1.3.6.1.4.1.119.2.3.69.201.100.4.1.0	A decimal value used to detect trap loss.
		alarmDate 1.3.6.1.4.1.119.2.3.69.201.100.4.2.0	Date in yyyy/mm/dd when the alarm occurred
		alarmTime 1.3.6.1.4.1.119.2.3.69.201.100.4.3.0	Time in hh:mm:ss when the alarm occurred.
		alarmSeverity 1.3.6.1.4.1.119.2.3.69.201.100.4.4.0	The alarm severity of the group as defined by X.733 Critical (4), Major (3), Minor (2), Clear (1)
		alarmType 1.3.6.1.4.1.119.2.3.69.201.100.4.5.0	Not Used - 0 (invalid)
		probableCause 1.3.6.1.4.1.119.2.3.69.201.100.4.6.0	Not Used - 0 (invalid)
		alarmSource 1.3.6.1.4.1.119.2.3.69.201.100.4.7.0	The group's index number used to identify from which group the alarm occurs. s1gsGroupSummary.<Group Number>
		alarmItemStateId 1.3.6.1.4.1.119.2.3.69.201.100.4.8.0	The summary alarm status of the group. Normal (1), Alarm (2), or Invalid (0)

<NE summary trap>
This contains the summary of a managed NE. Once an alarm occurs on an NE, it will notify the PNMSj+ which in turn will notify the Customer's NMS with the following format:

	Item		Data Description
SNMP common Header	Version		[0]
	Community		SNMP community name. PNMS uses "Public".
	PDU Type		[4]
Trap Header	Enterprise		PNMS identification tag. [pnms]
	Agent Address		[PNMS IP Address]
	Generic Trap Type		[6]
	Specific Trap Type		A decimal value used to represent the type of alarm. "100" is used to represent Group Summary trap
	Timestamp		Time stamp (not used)
Data	Variable Bindings	alarmTrapSequenceNumber 1.3.6.1.4.1.119.2.3.69.201.101.2.1.0	A decimal value used to detect trap loss.
		AlarmDate 1.3.6.1.4.1.119.2.3.69.201.101.2.2.0	Date in yyyy/mm/dd when the alarm occurred
		AlarmTime 1.3.6.1.4.1.119.2.3.69.201.101.2.3.0	Time in hh:mm:ss when the alarm occurred.
		alarmSeverity 1.3.6.1.4.1.119.2.3.69.201.101.2.4.0	The alarm severity of the group as defined by X.733 Critical (4), Major (3), Minor (2), Clear (1), Unknown (0)
		alarmType 1.3.6.1.4.1.119.2.3.69.201.101.2.5.0	Not Used - 0 (invalid)
		probableCause 1.3.6.1.4.1.119.2.3.69.201.101.2.6.0	Not Used - 0 (invalid)
		alarmSource 1.3.6.1.4.1.119.2.3.69.201.101.2.7.0	The source NE's IP address pnePasoComSummary.<***.***.***.***(NE IP address)>.
		alarmItemStatusId 1.3.6.1.4.1.119.2.3.69.201.101.2.8.0	The summary alarm status of the NE. Normal (1), Alarm (2), or Invalid (0)

NOTE

When NE was Unmanaged by PNMSj+:
alarmSeverity=0(unknown),
alarmItemStatusId=0(Invalid)

When NE was Disconnect:
alarmSeverity=0(unknown),
alarmItemStatusId=0(Invalid)

When GetAllData failed:
alarmSeverity=0(unknown),
alarmItemStatusId=0(Invalid)

7.3 Filter Trap

The filter object (table) is used by the upper (higher-level) manager to request the suppression of the iPASOLINK/PASOLINK/PASOLINK+ equipment group created in the PNMSj+. Filter table is composed of two levels; severity level (Critical, Major, Minor and Clear) and Trap Type (Group summary and NE summary). This filter is set upper (higher-level) group. For example, when the upper (higher-level) manager sets a filter, the registered upper (higher-level) managers will receive the filter trap from the PNMSj+.

Note) The alarm trap from the iPASOLINK/PASOLINK/PASOLINK+ in the filtered out group is not forwarded from the PNMSj+ to the upper (higher-level) manager if an alarm trap filter for the respective group is set in the upper (higher-level) manager.

The filter trap is sent to the Customer's NMS in the following formats:

<Filter Severity Change Trap>

	Item		Data Description
SNMP Header	Version		[0]
	Community		SNMP community name. PNMS uses “Public”.
	PDU Type		[4]
Trap Header	Enterprise		PNMS identification tag. [pnms]
	Agent Address		[PNMS IP Address]
	Generic Trap Type		[6]
	Specific Trap Type		A decimal value used to represent the type of alarm. “300” is used to represent Filter Severity Change trap
	Timestamp		Time stamp (not used)
Data	Variable Bindings	filterTrapSequenceNumber 1.3.6.1.4.1.119.2.3.69.201.100.5.1.0	A decimal value used to detect trap loss.
		filterDate 1.3.6.1.4.1.119.2.3.69.201.100.5.2.0	Date in yyyy/mm/dd when the alarm occurred
		filterTime 1.3.6.1.4.1.119.2.3.69.201.100.5.3.0	Time in hh:mm:ss when the alarm occurred.
		filterSource 1.3.6.1.4.1.119.2.3.69.201.100.5.4.0	sgiFilterSeverityMask.<Group Number>.<Manager Number>
		filterSeverityMask 1.3.6.1.4.1.119.2.3.69.201.100.5.5.0	Filter Severity level(Critical/Major/Minor/Clear)

<Filter Trap type Change Trap>

	Item		Data Description
SNMP Header	Version		[0]
	Community		SNMP community name. PNMS uses “Public”.
	PDU Type		[4]
Trap Header	Enterprise		PNMS identification tag. [pnms]
	Agent Address		[PNMS IP Address]
	Generic Trap Type		[6]
	Specific Trap Type		A decimal value used to represent the type of alarm. “300” is used to represent Filter Severity Change trap
	Timestamp		Time stamp (not used)
Data	Variable Bindings	filterTrapSequenceNumber 1.3.6.1.4.1.119.2.3.69.201.100.5.1.0	A decimal value used to detect trap loss.
		filterDate 1.3.6.1.4.1.119.2.3.69.201.100.5.2.0	Date in yyyy/mm/dd when the alarm occurred
		filterTime 1.3.6.1.4.1.119.2.3.69.201.100.5.3.0	Time in hh:mm:ss when the alarm occurred.
		filterSource 1.3.6.1.4.1.119.2.3.69.201.100.5.4.0	sgiFilterSeverityMask.<Group Number>.<Manager Number>
		filterTrapTypeMask 1.3.6.1.4.1.119.2.3.69.201.100.5.6.0	Trap Type(Group summary/NE summary)

7.4 Resend Status Trap

When Customer's NMS uses the Resend Trap function, PNMSj+ will notify the customer's NMS by means of Resend Status trap. The Resend Status trap is sent to the Customer's NMS in the following formats:

<Resend Status Trap>

	Item		Data Description
SNMP Header	Version		[0]
	Community		SNMP community name. PNMS uses "Public".
	PDU Type		[4]
Trap Header	Enterprise		PNMS identification tag. [unixpnms]
	Agent Address		[PNMS IP Address]
	Generic Trap Type		[6]
	Specific Trap Type		A decimal value used to represent the type of alarm. "400" is used to represent Resend Status trap
	Timestamp		Time stamp (not used)
Data	Variable Bindings	resendStatusSequenceNumber 1.3.6.1.4.1.119.2.3.69.202.100.8.1.0	A decimal value used to detect trap loss.
		resendStatusDate 1.3.6.1.4.1.119.2.3.69.202.100.8.2.0	Date in yyyy/mm/dd when the alarm occurred
		resendStatusTime 1.3.6.1.4.1.119.2.3.69.202.100.8.3.0	Time in hh:mm:ss when the alarm occurred.
		resendStatusGroupIdSource 1.3.6.1.4.1.119.2.3.69.202.100.8.4.0	srsGroupId
		resendStatusNetworkElement AddressSource 1.3.6.1.4.1.119.2.3.69.202.100.8.5.0	The value of Group ID(srsGroupId)
		resendStatusNetworkElementAddress 1.3.6.1.4.1.119.2.3.69.202.100.8.6.0	srsNetworkElementAddress
		resendStatusTime 1.3.6.1.4.1.119.2.3.69.202.100.8.7.0	The value of Network Element Address
		resendStatusTypeSource 1.3.6.1.4.1.119.2.3.69.202.100.8.8.0	srsResendType
		resendStatusType 1.3.6.1.4.1.119.2.3.69.202.100.8.9.0	The value of status of Resending trap.

Appendix 1

NEC-SMI DEFINITIONS

```
--
-- NEC Corporation root SMI
--
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-- All rights reserved.
--

        NEC-SMI DEFINITIONS ::= BEGIN

        IMPORTS
                enterprises
                        FROM RFC1155-SMI;

        nec OBJECT IDENTIFIER
                ::= { enterprises 119 }

        nec-mib OBJECT IDENTIFIER
                ::= { nec 2 }

        necProductDepend OBJECT IDENTIFIER
                ::= { nec-mib 3 }

        radioEquipment OBJECT IDENTIFIER
                ::= { necProductDepend 69 }

        pnms OBJECT IDENTIFIER
                ::= { radioEquipment 201 }

        commonPnms OBJECT IDENTIFIER
                ::= { radioEquipment 203 }

        pnmsPlus OBJECT IDENTIFIER
                ::= { radioEquipment 211 }

        commonPnmsPlus OBJECT IDENTIFIER
                ::= { radioEquipment 213 }

END
```

```
MIB-PNMS-SYSTEM1 DEFINITIONS ::= BEGIN

-----------------------------------------------
-- INPORTS Definitions
-----------------------------------------------

        IMPORTS
                IpAddress,Counter,TimeTicks,enterprises
                        FROM RFC1155-SMI
                OBJECT-TYPE
                        FROM RFC-1212
                TRAP-TYPE
                        FROM RFC-1215
                DisplayString
                        FROM RFC1213-MIB
                pnms
                        FROM NEC-SMI;

-----------------------------------------------
-- enterprises Group Definitions
-----------------------------------------------

        system1 OBJECT IDENTIFIER
                ::= { pnms 100 }

-----------------------------------------------
-- system1 Group Definitions
-----------------------------------------------

        system1ManagerInformation OBJECT IDENTIFIER
                ::= { system1 1 }

        system1GroupStatus OBJECT IDENTIFIER
                ::= { system1 2 }

        system1GroupInformation OBJECT IDENTIFIER
                ::= { system1 3 }

        system1AlarmTrapDefinition OBJECT IDENTIFIER
                ::= { system1 4 }

        system1FilterTrapDefinition OBJECT IDENTIFIER
                ::= { system1 5 }

        system1ResendStatus OBJECT IDENTIFIER
                ::= { system1 7 }

        system1ResendStatusTrapDefinition OBJECT IDENTIFIER
                ::= { system1 8 }

-----------------------------------------------
-- system1ManagerInformation Group
-- sys1ManagerTable Definitions
-----------------------------------------------

        sys1ManagerTable OBJECT-TYPE
                SYNTAX          SEQUENCE OF Sys1ManagerEntry
                ACCESS          not-accessible
                STATUS          mandatory
                DESCRIPTION     "SNMP Upper(higher-level) Manager Information"
```

```
            ::= { system1ManagerInformation 1 }

        sys1ManagerEntry OBJECT-TYPE
            SYNTAX          Sys1ManagerEntry
            ACCESS          not-accessible
            STATUS          mandatory
            INDEX           {
                                smtManagerIndex
                            }
            ::= { sys1ManagerTable 1 }

        Sys1ManagerEntry ::= SEQUENCE {
            smtManagerIndex                 INTEGER,
            smtManagerIpAddress             IpAddress,
            smtManagerSequenceNumber        INTEGER,
            smtManagerCommunityName                 OCTET STRING,
            smtManagerAgentTrapType         INTEGER
        }

        smtManagerIndex OBJECT-TYPE
            SYNTAX          INTEGER (1..4)
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Manager Index"
            ::= { sys1ManagerEntry 1 }

        smtManagerIpAddress OBJECT-TYPE
            SYNTAX          IpAddress
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "Manager IpAddress"
            ::= { sys1ManagerEntry 2 }

        smtManagerSequenceNumber OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Trap Sequence Number for Manager"
            ::= { sys1ManagerEntry 3 }

        smtManagerCommunityName OBJECT-TYPE
            SYNTAX          OCTET STRING
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "Community Name"
            ::= { sys1ManagerEntry 4 }

        smtManagerAgentTrapType OBJECT-TYPE
            SYNTAX          INTEGER (1..2)
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "(1) Upper SNMP Trap Type Legacy MIB(IPv4 Only)
                        or (2) New MIB(IPv4/v6 support)"
            ::= { sys1ManagerEntry 5 }

-----------------------------------------------
-- system1GroupStatus Group
-- sys1GroupStatusTable Definitions
-----------------------------------------------
```

```
sys1GroupStatusTable OBJECT-TYPE
        SYNTAX          SEQUENCE OF Sys1GroupStatusEntry
        ACCESS          not-accessible
        STATUS          mandatory
        DESCRIPTION     "Group Status"
        ::= { system1GroupStatus 1 }

sys1GroupStatusEntry OBJECT-TYPE
        SYNTAX          Sys1GroupStatusEntry
        ACCESS          not-accessible
        STATUS          mandatory
        INDEX           {
                                sgsGroupIndex
                        }
        ::= { sys1GroupStatusTable 1 }

Sys1GroupStatusEntry ::= SEQUENCE {
        sgsGroupIndex           INTEGER,
        sgsGroupName            OCTET STRING,
        sgsGroupSummary                 INTEGER,
        sgsGroupStatus          INTEGER
}

sgsGroupIndex OBJECT-TYPE
        SYNTAX          INTEGER
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Manager Index"
        ::= { sys1GroupStatusEntry 1 }

sgsGroupName OBJECT-TYPE
        SYNTAX          OCTET STRING
        ACCESS          read-write
        STATUS          mandatory
        DESCRIPTION     "Group name"
        ::= { sys1GroupStatusEntry 2 }

sgsGroupSummary OBJECT-TYPE
        SYNTAX          INTEGER {
                                unknown(0),
                                clear(1),
                                minor(2),
                                major(3),
                                critical(4)
                        }
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Group Summary"
        ::= { sys1GroupStatusEntry 3 }

sgsGroupStatus OBJECT-TYPE
        SYNTAX          INTEGER {
                                invalid(0),
                                valid(1)
                        }
        ACCESS          read-write
        STATUS          mandatory
        DESCRIPTION     "Group Status"
        ::= { sys1GroupStatusEntry 4 }
```

```
-----------------------------------------------
-- system1GroupInformation Group
-- sys1GroupInformationTable Definitions
-----------------------------------------------

        sys1GroupInformationTable OBJECT-TYPE
                SYNTAX          SEQUENCE OF Sys1GroupInformationEntry
                ACCESS          not-accessible
                STATUS          mandatory
                DESCRIPTION     "Group Status"
                ::= { system1GroupInformation 1 }

        sys1GroupInformationEntry OBJECT-TYPE
                SYNTAX          Sys1GroupInformationEntry
                ACCESS          not-accessible
                STATUS          mandatory
                INDEX           {
                                        sgiGroupIndex,
                                        sgiManagerIndex
                                }
                ::= { sys1GroupInformationTable 1 }

        Sys1GroupInformationEntry ::= SEQUENCE {
                sgiGroupIndex           INTEGER,
                sgiManagerIndex         INTEGER,
                sgiFilterSeverityMask   INTEGER,
                sgiFilterTrapTypeMask   INTEGER
        }

        sgiGroupIndex OBJECT-TYPE
                SYNTAX          INTEGER
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Group Index"
                ::= { sys1GroupInformationEntry 1 }

        sgiManagerIndex OBJECT-TYPE
                SYNTAX          INTEGER
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Manager Index"
                ::= { sys1GroupInformationEntry 2 }

        sgiFilterSeverityMask OBJECT-TYPE
                SYNTAX          INTEGER
                ACCESS          read-write
                STATUS          mandatory
                DESCRIPTION     "Severity Mask
                                The alarm filter severity is implemented as a
                                bit mask. The bits have the following meaning:
                                        Bit 0 = clear,
                                        Bit 1 = minor,
                                        Bit 2 = major,
                                        Bit 3 = critical.
                                The severity definitions are per X.733.
                                Ex. 00010 stands for the mask of minor alarm."
                ::= { sys1GroupInformationEntry 3 }

        sgiFilterTrapTypeMask OBJECT-TYPE
                SYNTAX          INTEGER
```

```
                ACCESS          read-write
                STATUS          mandatory
                DESCRIPTION     "Trap Type Mask
                                The filter Trap Type is implemented as a
                                bit mask. The bits have the following meaning:
                                        Bit 0 = Group Summary,
                                        Bit 1 = Network Element Summary,
                                        Bit 2 = Partial Summary,
                                        Bit 3 = Other Alarm,
                                        Bit 4 = Event,
                                        Bit 5 = Filter,
                                        Bit 6 = Config,
                                        Bit 7 = Status,
                                        Bit 8 = System"
                ::= { sys1GroupInformationEntry 4 }

-------------------------------------------------
-- Alarm Trap Status Group Definitions
-------------------------------------------------
        NormalAlarmStatusId ::= INTEGER {
                invalid(0),
                normal(1),
                alarm(2)
        }

        alarmTrapSequenceNumber OBJECT-TYPE
                SYNTAX          Counter
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "When a new trap is created, trapSequenceCounter
                                is incremented, and copied to this scalar."
        ::= { system1AlarmTrapDefinition 1 }

        alarmDate OBJECT-TYPE
                SYNTAX          OCTET STRING
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Date when alarm was raised or cleared: YYYY/MM/DD"
        ::= { system1AlarmTrapDefinition 2 }

        alarmTime OBJECT-TYPE
                SYNTAX          OCTET STRING
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Time when alarm was raised or cleared. A value in
                                the format hh:mm:ss. The time is expressed as a
                                24 hour clock. Some examples of legal values
                                are: 02:03:33 and 14:59:59."
        ::= { system1AlarmTrapDefinition 3 }

        alarmSeverity OBJECT-TYPE
                SYNTAX          INTEGER
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "The valid values for this object are:
                                        0=unknown,
                                        1=clear,
                                        2=minor,
                                        3=major,
                                        4=critical.
```

```
                        Alarm severity( 1-4 ) per X.733."
::= { system1AlarmTrapDefinition 4 }

alarmType OBJECT-TYPE
        SYNTAX          INTEGER {
                                invalid(0),
                                communicationAlarm(1),
                                qualityOfServiceAlarm(2),
                                processingErrorAlarm(3),
                                equipmentAlarm(4),
                                environmentalAlarm(5),
                                integrityViolationAlarm(6),
                                operationalViolationAlarm(7),
                                physicalViolationAlarm(8),
                                securityViolationAlarm(9),
                                timeDomainViolationAlarm(10)
                        }
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Alarm types per X.733/X.736."
::= { system1AlarmTrapDefinition 5 }

probableCause OBJECT-TYPE
        SYNTAX          INTEGER {
                                invalid(0),
                                aIS(1),
                                callSetUpFailure(2),
                                degradedSignal(3),
                                farEndReceiverFailure(4),
                                framingError(5),
                                lossOfFrame(6),
                                lossOfPointer(7),
                                lossOfSignal(8),
                                payloadTypeMismatch(9),
                                transmissionError(10),
                                remoteAlarmInterface(11),
                                excessiveBER(12),
                                pathTraceMismatch(13),
                                backplaneFailure(51),
                                dataSetProblem(52),
                                equipmentIdentifierDuplication(53),
                                externalIFDeviceProblem(54),
                                lineCardProblem(55),
                                multiplexerProblem(56),
                                nEIdentifierDuplication(57),
                                powerProblem(58),
                                processorProblem(59),
                                protectionPathFailure(60),
                                receiverFailure(61),
                                replaceableUnitMissing(62),
                                replaceableUnitTypeMismatch(63),
                                synchronizationSourceMismatch(64),
                                terminalProblem(65),
                                timingProblem(66),
                                transmitterFailure(67),
                                trunkCardProblem(68),
                                replaceableUnitProblem(69),
                                airCompressorFailure(101),
                                airConditioningFailure(102),
                                airDryerFailure(103),
```

batteryDischarging(104),
batteryFailure(105),
commercialPowerFailure(106),
coolingFanFailure(107),
engineFailure(108),
fireDetectorFailure(109),
fuseFailure(110),
generatorFailure(111),
lowBatteryThreshold(112),
pumpFailure(113),
rectifierFailure(114),
rectifierHighVoltage(115),
rectifierLowFVoltage(116),
ventilationsSystemFailure(117),
enclosureDoorOpen(118),
explosiveGas(119),
fire(120),
flood(121),
highHumidity(122),
highTemperature(123),
highWind(124),
iceBuildUp(125),
intrusionDetection(126),
lowFuel(127),
lowHumidity(128),
lowCablePressure(129),
lowTemperature(130),
lowWater(131),
smoke(132),
toxicGas(133),
storageCapacityProblem(151),
memoryMismatch(152),
corruptData(153),
outOfCPUCycles(154),
sfwrEnvironmentProblem(155),
sfwrDownloadFailure(156),
communicationsProtocolError(157),
congestion(158),
heatingOrVentilationOrCoolingSystemProblem(159),
lANError(160),
performanceDegraded(161),
temperatureUnacceptable(162),
thresholdCrossed(163),
underlyingResourceUnavailable(164),
equipmentMalfunction(165),
configurationOrCustomizationError(166),
duplicateInformation(501),
informationMissing(502),
informationModificationDetected(503),
informationOutOfSequence(504),
unexpectedInformation(505),
denialOfService(506),
outOfService(507),
proceduralError(508),
cableTamper(509),
securityIntrusionDetection(510),
authenticationFailure(511),
breachOfConfidentiality(512),
unauthorisedAccessAttempt(513),
delayedInformation(514),

```
                                        keyExpired(515),
                                        outOfHoursActivity(516),
                                        otherReasons(517),
                                        bossHardwareFailure(518),
                                        bossSystemSoftwareFailure(519),
                                        bossApplicationSoftwareFailure(520),
                                        bossDatabaseFailure(521),
                                        bossNetworkFailure(522)
                                }
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Probable causes per X.733/X.736.
                                Values 1..50 are used with communications alarms.
                                Values 51..100 are used with equipment alarms.
                                Values 101..150 are used with environmental alarms.
                                Values 151..200 are used with processing error alarms.
                                Values 501..600 are used with any of the violation
                                alarm types."
        ::= { system1AlarmTrapDefinition 6 }

        alarmSource OBJECT-TYPE
                        SYNTAX          OBJECT IDENTIFIER
                        ACCESS          read-only
                        STATUS          mandatory
                        DESCRIPTION     "Pasolink OID"
        ::= { system1AlarmTrapDefinition 7 }

        alarmItemStatusId OBJECT-TYPE
                SYNTAX          NormalAlarmStatusId
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Alarm Status"
        ::= { system1AlarmTrapDefinition 8 }

-----------------------------------------------
-- Alarm Trap Group Definitions
-----------------------------------------------

        alarmGroupSummary TRAP-TYPE
                ENTERPRISE      pnms
                VARIABLES       {
                                        alarmTrapSequenceNumber,
                                        alarmDate,
                                        alarmTime,
                                        alarmSeverity,
                                        alarmType,
                                        probableCause,
                                        alarmSource,
                                        alarmItemStatusId
                                }
                DESCRIPTION             "Group Summary Status"
        ::= 10

-----------------------------------------------
-- Filter configuration change Trap Group Definitions
-----------------------------------------------

        filterTrapSequenceNumber OBJECT-TYPE
                SYNTAX          Counter
                ACCESS          read-only
```

```
            STATUS          mandatory
            DESCRIPTION     "When a new trap is created, trapSequenceCounter
                            is incremented, and copied to this scalar."
::= { system1FilterTrapDefinition 1 }

filterDate OBJECT-TYPE
            SYNTAX          OCTET STRING
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Date when alarm was raised or cleared: YYYY/MM/DD"
::= { system1FilterTrapDefinition 2 }

filterTime OBJECT-TYPE
            SYNTAX          OCTET STRING
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Time when alarm was raised or cleared. A value in
                            the format hh:mm:ss. The time is expressed as a
                            24 hour clock. Some examples of legal values
                            are: 02:03:33 and 14:59:59."
::= { system1FilterTrapDefinition 3 }

filterSource OBJECT-TYPE
            SYNTAX          OBJECT IDENTIFIER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Filter Source"
::= { system1FilterTrapDefinition 4 }

filterSeverityMask OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "The alarm filter severity is implemented as a
                            bit mask for each Group.
                            The bits have the following meaning:
                                        Bit 1 = clear,
                                        Bit 2 = minor,
                                        Bit 3 = major,
                                        Bit 4 = critical.
                            The severity definitions are per X.733.
                            Ex. 00010 stands for the mask of minor alarm."
::= { system1FilterTrapDefinition 5 }

filterTrapTypeMask OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "The filter Trap Type is implemented as a
                            bit mask for each Group.
                            The bits have the following meaning:
                                        Bit 0 = Group Summary,
                                        Bit 1 = Network Element Summary,
                                        Bit 2 = Partial Summary,
                                        Bit 3 = Other Alarm,
                                        Bit 4 = Event,
                                        Bit 5 = Filter,
                                        Bit 6 = Config,
                                        Bit 7 = Status,
                                        Bit 8 = System"
```

```
        ::= { system1FilterTrapDefinition 6 }

        filterTrapSeverity TRAP-TYPE
                ENTERPRISE      pnms
                VARIABLES       {
                                        filterTrapSequenceNumber,
                                        filterDate,
                                        filterTime,
                                        filterSource,
                                        filterSeverityMask
                                }
                DESCRIPTION     "Filter Severity Change Trap"
        ::= 300

        filterTrapType TRAP-TYPE
                ENTERPRISE      pnms
                VARIABLES       {
                                        filterTrapSequenceNumber,
                                        filterDate,
                                        filterTime,
                                        filterSource,
                                        filterTrapTypeMask
                                }
                DESCRIPTION     "Filter Trap Type Change Trap"
        ::= 301

-----------------------------------------------
-- system1ResendStatus Group
-----------------------------------------------
        srsGroupId OBJECT-TYPE
                SYNTAX INTEGER (0..255)
                ACCESS read-write
                STATUS mandatory
                DESCRIPTION     "Group where trap currently is resent (GET Request)/
                                Group where trap will be resent (SET Request)
                                        0: Invalid
                                        1..255: Group ID

                                [With regards to SET Request]
                                Send srsGroupId and srsResendType as 1PDU. PNMSj will
                                resend specified type of trap to specified Group.
                                        srsGroupId:
                                                Specify ID of Group to request resend
                                                trap. No other than 1..255 are used.
                                        srsResendType:
                                                Specify the type of trap to resend.

                                [About Get Request]
                                        0: There are no groups with traps currently
                                           being resent.
                                        1..255: ID of Group to where trap currently is
                                                being resent.
                                        Other than above: Value not accepted."
        ::= { system1ResendStatus 1 }

        srsNetworkElementAddress OBJECT-TYPE
                SYNTAX IpAddress
                ACCESS read-write
                STATUS mandatory
                DESCRIPTION     "Network element where trap currently is resent (GET
```

```
                                Request)/ Network element where trap will be resent
                                (SET Request)
                                        '00000000'h: Invalid
                                        Other that above: Network element IP Address
                                                Ex. 'c0210415'h = 192.33.4.21

                                [With regards to SET Request]
                                Send srsNetworkElementAddress and srsResendType as
1PDU.
                                PNMSj will resend specified type of trap to specified
                                Network Element.
                                        srsNetworkElementAddress:
                                                Specify IP Address of Network Element to
                                                request resend trap. '00000000'h (0.0.0.0)
                                                is not used.
                                        srsResendType:
                                                Specify the type of trap to be resent.

                                [About Get Request]
                                        '00000000'h(0.0.0.0):
                                                There are no network element with trap
                                                currently being resent.
                                        Other than above:
                                                IP address of network element to where
                                                trap currently is being resent."
        ::= { system1ResendStatus 2 }

        srsResendType OBJECT-TYPE
                SYNTAX INTEGER {
                                unavailable(1),
                                wait(2),
                                summary(4),
                                detailAlarm(8),
                                summary-detailAlarm(12)
                                }
                ACCESS read-write
                STATUS mandatory
                DESCRIPTION     "Type of trap currently being resent (GET Response)/ Type
                                of trap to be resent (SET Request)
                                        1 : Invalid
                                        2 : Standing by for resend request from upper
                                            (GET Response)/ Cancel request from upper
                                            (SET Request)
                                        4 : Resending summary trap (Summary License or
                                            detail license necessary)
                                        8 : Resending detail alarm trap (Detail License
                                            necessary)
                                        12: Resending both summary and detail alarm trap
                                            (Detail License necessary)

                                [When resending trap to NE (SET Request)]
                                        srsNetworkElementAddress:
                                                Specify IP Address of Network Element to
                                                request resend trap. '00000000'h (0.0.0.0)
                                                is not used.
                                        srsResendType:
                                                Specify the type of trap to be resent.

                                [When resending trap to group (SET Request)]
                                Send srsGroupId and srsResendType as 1PDU. PNMSj will
```

```
                                    resend specified type of trap to specified Group.
                                        srsGroupId:
                                            Specify ID of Group to request resend trap.
                                            No other than 1..255 are used.
                                        srsResendType:
                                            Specify the type of trap to be resent.

                                    [About Get Request]
                                        1 : Cannot request to resend trap.
                                        2 : Standing by for request to resend trap.
                                        4 : Resending summary trap. For destination and
                                            details, please refer to information found
                                            in srsGroupId and srsNetworkElementAddress.
                                        8 : Resending detail alarm trap. For destination
                                            and details, please refer to information found
                                            in srsGroupId and srsNetworkElementAddress.
                                        12: Resending both summary and detail alarm trap.
                                            For destination and details, please refer to
                                            information found in srsGroupId and
                                            srsNetworkElementAddress."
        ::= { system1ResendStatus 3 }

-----------------------------------------------
-- Resend Status Group Definitions
-----------------------------------------------

        resendStatusSequenceNumber OBJECT-TYPE
                SYNTAX Counter
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION     "When a new trap is created, trapSequenceCounter
                                is incremented, and copied to this scalar."
        ::= { system1ResendStatusTrapDefinition 1 }

        resendStatusDate OBJECT-TYPE
                SYNTAX OCTET STRING
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION     "Date when alarm was raised or cleared: MM-DD-YYYY"
        ::= { system1ResendStatusTrapDefinition 2 }

        resendStatusTime OBJECT-TYPE
                SYNTAX OCTET STRING
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION     "Time when alarm was raised or cleared. A value in
                                the format hh:mm:ss. The time is expressed as a
                                24 hour clock. Some examples of legal values
                                are: 02:03:33 and 14:59:59."
        ::= { system1ResendStatusTrapDefinition 3 }

        resendStatusGroupIdSource OBJECT-TYPE
                SYNTAX OBJECT IDENTIFIER
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION     "This value is OID of srsGroupId."
                REFERENCE       "srsGroupId"
        ::= { system1ResendStatusTrapDefinition 4 }

        resendStatusGroupId OBJECT-TYPE
```

```
                SYNTAX INTEGER (0..255)
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION     "This value is value of srsGroupId.
                                Group where trap currently is resent (GET Request)/
                                Group where trap will be resent (SET Request)
                                        0: Invalid
                                        1..255: Group ID

                                [With regards to SET Request]
                                Send srsGroupId and srsResendType as 1PDU. PNMSj will
                                resend specified type of trap to specified Group.
                                        srsGroupId:
                                                Specify ID of Group to request resend trap.
                                                No other than 1..255 are used.
                                        srsResendType:
                                                Specify the type of trap to resend.

                                [About Get Request]
                                        0: There are no groups with traps currently
                                            being resent.
                                        1..255: ID of Group where trap currently is
                                                being resent.
                                        Other than above: Value not accepted."
                        REFERENCE       "srsGroupId"
        ::= { system1ResendStatusTrapDefinition 5 }

        resendStatusNetworkElementAddressSource OBJECT-TYPE
                SYNTAX OBJECT IDENTIFIER
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION     "This value is OID of srsNetworkElementAddress."
                REFERENCE       "srsNetworkElementAddress"
        ::= { system1ResendStatusTrapDefinition 6 }

        resendStatusNetworkElementAddress OBJECT-TYPE
                SYNTAX IpAddress
                ACCESS read-only
                STATUS mandatory
                DESCRIPTION     "This value is value of srsNetworkElementAddress.
                                Network element where trap currently is resent
                                (GET Request)/ Network element where trap will be
                                resent (SET Request)
                                        '00000000'h: Invalid
                                        Other that above: IP Address of network element
                                                Ex. 'c0210415'h = 192.33.4.21

                                [With regards to SET Request]
                                Send srsNetworkElementAddress and srsResendType as
1PDU.
                                PNMSj will resend specified type of trap to specified
                                Network Element.
                                        srsNetworkElementAddress:
                                                Specify IP Address of Network Element
                                                to request resend trap. '00000000'h
                                                (0.0.0.0) is not used.
                                        srsResendType:
                                                Specify the type of trap to be resent.

                                [About Get Request]
```

```
                                        '00000000'h(0.0.0.0):
                                                There are no network element with
                                                trap currently being resent.
                                        Other than above:
                                                IP address of network element to where
                                                trap currently is being resent."
        REFERENCE       "srsNetworkElementAddress"
::= { system1ResendStatusTrapDefinition 7 }

resendStatusTypeSource OBJECT-TYPE
        SYNTAX OBJECT IDENTIFIER
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "This value is OID of srsResendType."
        REFERENCE       "srsResendType"
::= { system1ResendStatusTrapDefinition 8 }

resendStatusType OBJECT-TYPE
        SYNTAX INTEGER {
                unavailable(1),
                wait(2),
                summary(4),
                detailAlarm(8),
                summary-detailAlarm(12)
                }
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "Type of trap currently being resent (GET Response)/
                        type of trap to be resent (SET Request)
                                1 : Invalid
                                2 : Standing by for resend request from upper
                                    (GET Response)/ Cancel request from upper
                                    (SET Request)
                                4 : Resending summary trap
                                    (Summary License or detail license necessary)
                                8 : Resending detail alarm trap
                                    (Detail License necessary)
                                12: Resending both summary and detail alarm trap
                                    (Detail License necessary)

                        [When resending trap to NE (SET Request)]
                                srsNetworkElementAddress:
                                        Specify IP Address of Network Element
                                        to request resend trap. '00000000'h
                                        (0.0.0.0) is not used.
                                srsResendType:
                                        Specify the type of trap to be resent.

                        [When resending trap to group (SET Request)]
                        Send srsGroupId and srsResendType as 1PDU. PNMSj will
                        resend specified type of trap to specified Group.
                                srsGroupId:
                                        Specify ID of Group to request resend trap.
                                         No other than 1..255 are used.
                                srsResendType:
                                        Specify the type of trap to be resent.

                        [About Get Request]
                                1 : Cannot request to resend trap.
                                2 : Standing by for request to resend trap.
```

```
                                        4 : Resending summary trap. For destination and
                                            details, please refer to information found
                                            in srsGroupId and srsNetworkElementAddress.
                                        8 : Resending detail alarm trap. For destination
                                            and details, please refer to information found
                                            in srsGroupId and srsNetworkElementAddress.
                                        12: Resending both summary and detail alarm trap.
                                            For destination and details, please refer to
                                            information found in srsGroupId and
                                            srsNetworkElementAddress."
                        ::= { system1ResendStatusTrapDefinition 9 }

    resendStatus TRAP-TYPE
            ENTERPRISE pnms
            VARIABLES {
                    resendStatusSequenceNumber,
                    resendStatusDate,
                    resendStatusTime,
                    resendStatusGroupIdSource,
                    resendStatusGroupId,
                    resendStatusNetworkElementAddressSource,
                    resendStatusNetworkElementAddress,
                    resendStatusTypeSource,
                    resendStatusType
                    }
            DESCRIPTION     "Resend Status Change Trap"
    ::= 400

END
```

```
MIB-PNMS-PASOCOMMON DEFINITIONS ::= BEGIN

-----------------------------------------------
-- INPORTS Definitions
-----------------------------------------------

        IMPORTS
                IpAddress,Counter,TimeTicks,enterprises
                        FROM RFC1155-SMI
                OBJECT-TYPE
                        FROM RFC-1212
                TRAP-TYPE
                        FROM RFC-1215
                DisplayString
                        FROM RFC1213-MIB
                pnms
                        FROM NEC-SMI;

-----------------------------------------------
-- enterprises Group Definitions
-----------------------------------------------

        pasoCommon OBJECT IDENTIFIER
                ::= { pnms 101 }

-----------------------------------------------
-- pasoCommon Group Definitions
-----------------------------------------------

        pasoCommonInformation OBJECT IDENTIFIER
                ::= { pasoCommon 1 }

        pasoCommonAlarmTrapDefinition OBJECT IDENTIFIER
                ::= { pasoCommon 2 }

-----------------------------------------------
-- pasoCommonInformation Group
-- pcNetworkElementTable Definitions
-----------------------------------------------

        pcNetworkElementTable OBJECT-TYPE
                SYNTAX          SEQUENCE OF PcNetworkElementEntry
                ACCESS          not-accessible
                STATUS          mandatory
                DESCRIPTION     "Network Element Information"
                ::= { pasoCommonInformation 1 }

        pcNetworkElementEntry OBJECT-TYPE
                SYNTAX          PcNetworkElementEntry
                ACCESS          not-accessible
                STATUS          mandatory
                DESCRIPTION     "Pasolink Network Element Information Entry"
                INDEX { pnePasoIndex }
                ::= { pcNetworkElementTable 1 }

        PcNetworkElementEntry ::= SEQUENCE {
                pnePasoIndex            IpAddress,
                pneGroupID              INTEGER,
                pnePasoName             OCTET STRING,
                pneConnection           INTEGER,
```

```
        pneSummary              INTEGER,
        pneEquipmentType        INTEGER
}

pnePasoIndex OBJECT-TYPE
        SYNTAX          IpAddress
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Pasolink IpAddress"
        ::= { pcNetworkElementEntry 1 }

pneGroupID OBJECT-TYPE
        SYNTAX          INTEGER
        ACCESS          read-write
        STATUS          mandatory
        DESCRIPTION     "Group ID
                        Note: 0 stands for No Group"
        ::= { pcNetworkElementEntry 2 }

pnePasoName OBJECT-TYPE
        SYNTAX          OCTET STRING
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Paso Name"
        ::= { pcNetworkElementEntry 3 }

pneConnection OBJECT-TYPE
        SYNTAX          INTEGER (0..1)
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Not Used
                        Connection Status
                                disconnect(0),
                                connect(1)"
        ::= { pcNetworkElementEntry 4 }

pneSummary OBJECT-TYPE
        SYNTAX          INTEGER (0..4)
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Network Element Summary Status
                                unknown(0),
                                clear(1),
                                minor(2),
                                major(3),
                                critical(4)"
        ::= { pcNetworkElementEntry 5 }

pneEquipmentType OBJECT-TYPE
        SYNTAX          INTEGER (0..23)
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Equipment Type
                        Note: If disconnect occurs, this vaile is set to invailed(0).
                                invalid(0),
                                PASOLINK V3(1),
                                PASOLINK S(2),
                                MIU(3),
                                PASOLINK+ STM-1 / NLite 155(4),
                                PASOLINK+ PDH(5),
```

```
                                        PASOLINK+ STM-0(6),
                                        PASOLINK V4 / NLite(7),
                                        PASOLINK Mx(8),
                                        NLite L(9),
                                        NLite Lx(10),
                                        PASOLINK NEO STD / NLite E(11),
                                        5000S(12),
                                        PASOLINK NEO CPV(13),
                                        PASOLINK NEO NODAL(14),
                                        PASOLINK NEO A(15),
                                        PASOLINK NEO HP(16),
                                        NLite N(17),
                                        PASOLINK NEO HP AMR / NLite N AMR(18),
                                        iPASOLINK 200(20),
                                        iPASOLINK 400(21),
                                        iPASOLINK 1000(22),
                                        iPASOLINK 100(23),
                                        iPASOLINK 100E(24),
                                        5000iP Series(25),
                                        iPASOLINK 400A(26),
                                        iPASOLINK iX(27),
                                        iPASOLINK SX(28),
                                        iPASOLINK EX(29),
                                        iPASOLINK 100A(30),
                                        iPASOLINK 200A(31),
                                        iPASOLINK VR 2(32),
                                        iPASOLINK VR 4(33),
                                        iPASOLINK VR 10(34),
                                        iPASOLINK EX/A(35),
                                        iPASOLINK VR 1250(36),
                                        7000iP / 5000iP ADV(37),
                                        iPASOLINK iX/A(38)"
        ::= { pcNetworkElementEntry 6 }

-------------------------------------------------
-- Alarm Trap Status Group Definitions
-------------------------------------------------
        NormalAlarmStatusId ::= INTEGER {
                invalid(0),
                normal(1),
                alarm(2)
        }

        alarmTrapSequenceNumber OBJECT-TYPE
                SYNTAX          Counter
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "When a new trap is created, trapSequenceCounter
                                is incremented, and copied to this scalar."
        ::= { pasoCommonAlarmTrapDefinition   1 }

        alarmDate OBJECT-TYPE
                SYNTAX          OCTET STRING
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Date when alarm was raised or cleared: YYYY/MM/DD"
        ::= { pasoCommonAlarmTrapDefinition   2 }

        alarmTime OBJECT-TYPE
                SYNTAX          OCTET STRING
```

```
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Time when alarm was raised or cleared. A value in
                            the format hh:mm:ss. The time is expressed as a
                            24 hour clock. Some examples of legal values
                            are: 02:03:33 and 14:59:59."
::= { pasoCommonAlarmTrapDefinition   3 }

alarmSeverity OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "The valid values for this object are:
                                    0=unknown,
                                    1=clear,
                                    2=minor,
                                    3=major,
                                    4=critical.
                                    Alarm severity( 1-4 ) per X.733."
::= { pasoCommonAlarmTrapDefinition   4 }

alarmType OBJECT-TYPE
            SYNTAX          INTEGER (0..10)
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Alarm types per X.733/X.736.
                                    invalid(0),
                                    communicationAlarm(1),
                                    qualityOfServiceAlarm(2),
                                    processingErrorAlarm(3),
                                    equipmentAlarm(4),
                                    environmentalAlarm(5),
                                    integrityViolationAlarm(6),
                                    operationalViolationAlarm(7),
                                    physicalViolationAlarm(8),
                                    securityViolationAlarm(9),
                                    timeDomainViolationAlarm(10)"
::= { pasoCommonAlarmTrapDefinition   5 }

probableCause OBJECT-TYPE
            SYNTAX          INTEGER (0..522)
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Probable causes per X.733/X.736.
                            Values 1..50 are used with communications alarms.
                            Values 51..100 are used with equipment alarms.
                            Values 101..150 are used with environmental alarms.
                            Values 151..200 are used with processing error alarms.
                            Values 501..600 are used with any of the violation alarm types.
                                    invalid(0),
                                    aIS(1),
                                    callSetUpFailure(2),
                                    degradedSignal(3),
                                    farEndReceiverFailure(4),
                                    framingError(5),
                                    lossOfFrame(6),
                                    lossOfPointer(7),
                                    lossOfSignal(8),
                                    payloadTypeMismatch(9),
                                    transmissionError(10),
```

remoteAlarmInterface(11),
excessiveBER(12),
pathTraceMismatch(13),
backplaneFailure(51),
dataSetProblem(52),
equipmentIdentifierDuplication(53),
externalIFDeviceProblem(54),
lineCardProblem(55),
multiplexerProblem(56),
nEIdentifierDuplication(57),
powerProblem(58),
processorProblem(59),
protectionPathFailure(60),
receiverFailure(61),
replaceableUnitMissing(62),
replaceableUnitTypeMismatch(63),
synchronizationSourceMismatch(64),
terminalProblem(65),
timingProblem(66),
transmitterFailure(67),
trunkCardProblem(68),
replaceableUnitProblem(69),
airCompressorFailure(101),
airConditioningFailure(102),
airDryerFailure(103),
batteryDischarging(104),
batteryFailure(105),
commercialPowerFailure(106),
coolingFanFailure(107),
engineFailure(108),
fireDetectorFailure(109),
fuseFailure(110),
generatorFailure(111),
lowBatteryThreshold(112),
pumpFailure(113),
rectifierFailure(114),
rectifierHighVoltage(115),
rectifierLowFVoltage(116),
ventilationsSystemFailure(117),
enclosureDoorOpen(118),
explosiveGas(119),
fire(120),
flood(121),
highHumidity(122),
highTemperature(123),
highWind(124),
iceBuildUp(125),
intrusionDetection(126),
lowFuel(127),
lowHumidity(128),
lowCablePressure(129),
lowTemperature(130),
lowWater(131),
smoke(132),
toxicGas(133),
storageCapacityProblem(151),
memoryMismatch(152),
corruptData(153),
outOfCPUCycles(154),
sfwrEnvironmentProblem(155),

```
                                        sfwrDownloadFailure(156),
                                        communicationsProtocolError(157),
                                        congestion(158),
                                        heatingOrVentilationOrCoolingSystemProblem(159),
                                        lANError(160),
                                        performanceDegraded(161),
                                        temperatureUnacceptable(162),
                                        thresholdCrossed(163),
                                        underlyingResourceUnavailable(164),
                                        equipmentMalfunction(165),
                                        configurationOrCustomizationError(166),
                                        duplicateInformation(501),
                                        informationMissing(502),
                                        informationModificationDetected(503),
                                        informationOutOfSequence(504),
                                        unexpectedInformation(505),
                                        denialOfService(506),
                                        outOfService(507),
                                        proceduralError(508),
                                        cableTamper(509),
                                        securityIntrusionDetection(510),
                                        authenticationFailure(511),
                                        breachOfConfidentiality(512),
                                        unauthorisedAccessAttempt(513),
                                        delayedInformation(514),
                                        keyExpired(515),
                                        outOfHoursActivity(516),
                                        otherReasons(517),
                                        bossHardwareFailure(518),
                                        bossSystemSoftwareFailure(519),
                                        bossApplicationSoftwareFailure(520),
                                        bossDatabaseFailure(521),
                                        bossNetworkFailure(522)"
        ::= { pasoCommonAlarmTrapDefinition   6 }

        alarmSource OBJECT-TYPE
                        SYNTAX          OBJECT IDENTIFIER
                        ACCESS          read-only
                        STATUS          mandatory
                        DESCRIPTION     "Pasolink OID"
        ::= { pasoCommonAlarmTrapDefinition   7 }

        alarmItemStatusId OBJECT-TYPE
                SYNTAX          NormalAlarmStatusId
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION
                        "Alarm Status"
        ::= { pasoCommonAlarmTrapDefinition   8       }


-----------------------------------------------
-- Alarm Trap Group Definitions
-----------------------------------------------

        alarmNESummary TRAP-TYPE
                ENTERPRISE pnms
                VARIABLES {
                        alarmTrapSequenceNumber,
                        alarmDate,
```

```
                    alarmTime,
                    alarmSeverity,
                    alarmType,
                    probableCause,
                    alarmSource,
                    alarmItemStatusId
            }
            DESCRIPTION     "Network Element Summary"
    ::= 100

    alarmPasoConnection TRAP-TYPE
            ENTERPRISE pnms
            VARIABLES {
                    alarmTrapSequenceNumber,
                    alarmDate,
                    alarmTime,
                    alarmSeverity,
                    alarmType,
                    probableCause,
                    alarmSource,
                    alarmItemStatusId
            }
            DESCRIPTION     "Not Used
                            Pasolink Connection"
    ::= 101


END
```

```
MIB-PNMSJPLUS-SYSTEM1 DEFINITIONS ::= BEGIN

-----------------------------------------------
-- INPORTS Definitions
-----------------------------------------------

    IMPORTS
            Counter,TimeTicks,enterprises
                    FROM RFC1155-SMI
            OBJECT-TYPE
                    FROM RFC-1212
            TRAP-TYPE
                    FROM RFC-1215
            DisplayString
                    FROM RFC1213-MIB
            InetAddress,InetAddressType
                    FROM INET-ADDRESS-MIB
            pnmsPlus
                    FROM NEC-SMI;

-----------------------------------------------
-- enterprises Group Definitions
-----------------------------------------------

    system1 OBJECT IDENTIFIER
            ::= { pnmsPlus 100 }

-----------------------------------------------
-- system1 Group Definitions
-----------------------------------------------

    system1ManagerInformation OBJECT IDENTIFIER
            ::= { system1 1 }

    system1GroupStatus OBJECT IDENTIFIER
            ::= { system1 2 }

    system1GroupInformation OBJECT IDENTIFIER
            ::= { system1 3 }

    system1AlarmTrapDefinition OBJECT IDENTIFIER
            ::= { system1 4 }

    system1FilterTrapDefinition OBJECT IDENTIFIER
            ::= { system1 5 }

    system1ResendStatus OBJECT IDENTIFIER
            ::= { system1 7 }

    system1ResendStatusTrapDefinition OBJECT IDENTIFIER
            ::= { system1 8 }

-----------------------------------------------
-- system1ManagerInformation Group
-- sys1ManagerTable Definitions
-----------------------------------------------

    sys1ManagerTable OBJECT-TYPE
            SYNTAX          SEQUENCE OF Sys1ManagerEntry
            ACCESS          not-accessible
```

```
        STATUS          mandatory
        DESCRIPTION     "SNMP Upper(higher-level) Manager Information"
        ::= { system1ManagerInformation 1 }

sys1ManagerEntry OBJECT-TYPE
        SYNTAX          Sys1ManagerEntry
        ACCESS          not-accessible
        STATUS          mandatory
        INDEX           {
                                smtManagerIndex
                        }
        ::= { sys1ManagerTable 1 }

Sys1ManagerEntry ::= SEQUENCE {
        smtManagerIndex                 INTEGER,
        smtManagerIpAddressAddrType     InetAddressType,
        smtManagerIpAddress             InetAddress,
        smtManagerSequenceNumber        INTEGER,
        smtManagerCommunityName                 OCTET STRING,
        smtManagerAgentTrapType         INTEGER
}

smtManagerIndex OBJECT-TYPE
        SYNTAX          INTEGER (1..4)
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Manager Index"
        ::= { sys1ManagerEntry 1 }

smtManagerIpAddressAddrType OBJECT-TYPE
        SYNTAX          InetAddressType
        ACCESS          read-write
        STATUS          mandatory
        DESCRIPTION     "The address type of the Manager IpAddress
                        Only ipv4(1) and ipv6(2) are supported."
        ::= { sys1ManagerEntry 1001 }

smtManagerIpAddress OBJECT-TYPE
        SYNTAX          InetAddress
        ACCESS          read-write
        STATUS          mandatory
        DESCRIPTION     "Manager IpAddress"
        ::= { sys1ManagerEntry 2 }

smtManagerSequenceNumber OBJECT-TYPE
        SYNTAX          INTEGER
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Trap Sequence Number for Manager"
        ::= { sys1ManagerEntry 3 }

smtManagerCommunityName OBJECT-TYPE
        SYNTAX          OCTET STRING
        ACCESS          read-write
        STATUS          mandatory
        DESCRIPTION     "Community Name"
        ::= { sys1ManagerEntry 4 }

smtManagerAgentTrapType OBJECT-TYPE
        SYNTAX          INTEGER (1..2)
```

```
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "(1) Upper SNMP Trap Type Legacy MIB(IPv4 Only)
                    or (2) New MIB(IPv4/v6 support)"
            ::= { sys1ManagerEntry 5 }

-----------------------------------------------
-- system1GroupStatus Group
-- sys1GroupStatusTable Definitions
-----------------------------------------------

    sys1GroupStatusTable OBJECT-TYPE
            SYNTAX          SEQUENCE OF Sys1GroupStatusEntry
            ACCESS          not-accessible
            STATUS          mandatory
            DESCRIPTION     "Group Status"
            ::= { system1GroupStatus 1 }

    sys1GroupStatusEntry OBJECT-TYPE
            SYNTAX          Sys1GroupStatusEntry
            ACCESS          not-accessible
            STATUS          mandatory
            INDEX           {
                                sgsGroupIndex
                            }
            ::= { sys1GroupStatusTable 1 }

    Sys1GroupStatusEntry ::= SEQUENCE {
            sgsGroupIndex           INTEGER,
            sgsGroupName            OCTET STRING,
            sgsGroupSummary                 INTEGER,
            sgsGroupStatus          INTEGER
    }

    sgsGroupIndex OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Manager Index"
            ::= { sys1GroupStatusEntry 1 }

    sgsGroupName OBJECT-TYPE
            SYNTAX          OCTET STRING
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "Group name"
            ::= { sys1GroupStatusEntry 2 }

    sgsGroupSummary OBJECT-TYPE
            SYNTAX          INTEGER {
                                unknown(0),
                                clear(1),
                                minor(2),
                                major(3),
                                critical(4)
                            }
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Group Summary"
            ::= { sys1GroupStatusEntry 3 }
```

```
    sgsGroupStatus OBJECT-TYPE
            SYNTAX          INTEGER {
                                invalid(0),
                                valid(1)
                            }
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "Group Status"
            ::= { sys1GroupStatusEntry 4 }

-----------------------------------------------
-- system1GroupInformation Group
-- sys1GroupInformationTable Definitions
-----------------------------------------------

    sys1GroupInformationTable OBJECT-TYPE
            SYNTAX          SEQUENCE OF Sys1GroupInformationEntry
            ACCESS          not-accessible
            STATUS          mandatory
            DESCRIPTION     "Group Status"
            ::= { system1GroupInformation 1 }

    sys1GroupInformationEntry OBJECT-TYPE
            SYNTAX          Sys1GroupInformationEntry
            ACCESS          not-accessible
            STATUS          mandatory
            INDEX           {
                                sgiGroupIndex,
                                sgiManagerIndex
                            }
            ::= { sys1GroupInformationTable 1 }

    Sys1GroupInformationEntry ::= SEQUENCE {
            sgiGroupIndex           INTEGER,
            sgiManagerIndex         INTEGER,
            sgiFilterSeverityMask   INTEGER,
            sgiFilterTrapTypeMask   INTEGER
    }

    sgiGroupIndex OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Group Index"
            ::= { sys1GroupInformationEntry 1 }

    sgiManagerIndex OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Manager Index"
            ::= { sys1GroupInformationEntry 2 }

    sgiFilterSeverityMask OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "Severity Mask
                            The alarm filter severity is implemented as a
```

```
                                bit mask. The bits have the following meaning:
                                        Bit 0 = clear,
                                        Bit 1 = minor,
                                        Bit 2 = major,
                                        Bit 3 = critical.
                                The severity definitions are per X.733.
                                Ex. 00010 stands for the mask of minor alarm."
            ::= { sys1GroupInformationEntry 3 }

    sgiFilterTrapTypeMask OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "Trap Type Mask
                            The filter Trap Type is implemented as a
                            bit mask. The bits have the following meaning:
                                        Bit 0 = Group Summary,
                                        Bit 1 = Network Element Summary,
                                        Bit 2 = Partial Summary,
                                        Bit 3 = Other Alarm,
                                        Bit 4 = Event,
                                        Bit 5 = Filter,
                                        Bit 6 = Config,
                                        Bit 7 = Status,
                                        Bit 8 = System"
            ::= { sys1GroupInformationEntry 4 }

-----------------------------------------------
-- Alarm Trap Status Group Definitions
-----------------------------------------------
    NormalAlarmStatusId ::= INTEGER {
            invalid(0),
            normal(1),
            alarm(2)
    }

    alarmTrapSequenceNumber OBJECT-TYPE
            SYNTAX          Counter
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "When a new trap is created, trapSequenceCounter
                            is incremented, and copied to this scalar."
    ::= { system1AlarmTrapDefinition 1 }

    alarmDate OBJECT-TYPE
            SYNTAX          OCTET STRING
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Date when alarm was raised or cleared: YYYY/MM/DD"
    ::= { system1AlarmTrapDefinition 2 }

    alarmTime OBJECT-TYPE
            SYNTAX          OCTET STRING
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Time when alarm was raised or cleared. A value in
                            the format hh:mm:ss. The time is expressed as a
                            24 hour clock. Some examples of legal values
                            are: 02:03:33 and 14:59:59."
    ::= { system1AlarmTrapDefinition 3 }
```

```
alarmSeverity OBJECT-TYPE
        SYNTAX          INTEGER
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "The valid values for this object are:
                                0=unknown,
                                1=clear,
                                2=minor,
                                3=major,
                                4=critical.
                        Alarm severity( 1-4 ) per X.733."
::= { system1AlarmTrapDefinition 4 }

alarmType OBJECT-TYPE
        SYNTAX          INTEGER {
                                invalid(0),
                                communicationAlarm(1),
                                qualityOfServiceAlarm(2),
                                processingErrorAlarm(3),
                                equipmentAlarm(4),
                                environmentalAlarm(5),
                                integrityViolationAlarm(6),
                                operationalViolationAlarm(7),
                                physicalViolationAlarm(8),
                                securityViolationAlarm(9),
                                timeDomainViolationAlarm(10)
                        }
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Alarm types per X.733/X.736."
::= { system1AlarmTrapDefinition 5 }

probableCause OBJECT-TYPE
        SYNTAX          INTEGER {
                                invalid(0),
                                aIS(1),
                                callSetUpFailure(2),
                                degradedSignal(3),
                                farEndReceiverFailure(4),
                                framingError(5),
                                lossOfFrame(6),
                                lossOfPointer(7),
                                lossOfSignal(8),
                                payloadTypeMismatch(9),
                                transmissionError(10),
                                remoteAlarmInterface(11),
                                excessiveBER(12),
                                pathTraceMismatch(13),
                                backplaneFailure(51),
                                dataSetProblem(52),
                                equipmentIdentifierDuplication(53),
                                externalIFDeviceProblem(54),
                                lineCardProblem(55),
                                multiplexerProblem(56),
                                nEIdentifierDuplication(57),
                                powerProblem(58),
                                processorProblem(59),
                                protectionPathFailure(60),
                                receiverFailure(61),
```

replaceableUnitMissing(62),
replaceableUnitTypeMismatch(63),
synchronizationSourceMismatch(64),
terminalProblem(65),
timingProblem(66),
transmitterFailure(67),
trunkCardProblem(68),
replaceableUnitProblem(69),
airCompressorFailure(101),
airConditioningFailure(102),
airDryerFailure(103),
batteryDischarging(104),
batteryFailure(105),
commercialPowerFailure(106),
coolingFanFailure(107),
engineFailure(108),
fireDetectorFailure(109),
fuseFailure(110),
generatorFailure(111),
lowBatteryThreshold(112),
pumpFailure(113),
rectifierFailure(114),
rectifierHighVoltage(115),
rectifierLowFVoltage(116),
ventilationsSystemFailure(117),
enclosureDoorOpen(118),
explosiveGas(119),
fire(120),
flood(121),
highHumidity(122),
highTemperature(123),
highWind(124),
iceBuildUp(125),
intrusionDetection(126),
lowFuel(127),
lowHumidity(128),
lowCablePressure(129),
lowTemperature(130),
lowWater(131),
smoke(132),
toxicGas(133),
storageCapacityProblem(151),
memoryMismatch(152),
corruptData(153),
outOfCPUCycles(154),
sfwrEnvironmentProblem(155),
sfwrDownloadFailure(156),
communicationsProtocolError(157),
congestion(158),
heatingOrVentilationOrCoolingSystemProblem(159),
lANError(160),
performanceDegraded(161),
temperatureUnacceptable(162),
thresholdCrossed(163),
underlyingResourceUnavailable(164),
equipmentMalfunction(165),
configurationOrCustomizationError(166),
duplicateInformation(501),
informationMissing(502),
informationModificationDetected(503),

```
                                        informationOutOfSequence(504),
                                        unexpectedInformation(505),
                                        denialOfService(506),
                                        outOfService(507),
                                        proceduralError(508),
                                        cableTamper(509),
                                        securityIntrusionDetection(510),
                                        authenticationFailure(511),
                                        breachOfConfidentiality(512),
                                        unauthorisedAccessAttempt(513),
                                        delayedInformation(514),
                                        keyExpired(515),
                                        outOfHoursActivity(516),
                                        otherReasons(517),
                                        bossHardwareFailure(518),
                                        bossSystemSoftwareFailure(519),
                                        bossApplicationSoftwareFailure(520),
                                        bossDatabaseFailure(521),
                                        bossNetworkFailure(522)
                                }
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Probable causes per X.733/X.736.
                                Values 1..50 are used with communications alarms.
                                Values 51..100 are used with equipment alarms.
                                Values 101..150 are used with environmental alarms.
                                Values 151..200 are used with processing error alarms.
                                Values 501..600 are used with any of the violation
                                alarm types."
        ::= { system1AlarmTrapDefinition 6 }

        alarmSource OBJECT-TYPE
                        SYNTAX          OBJECT IDENTIFIER
                        ACCESS          read-only
                        STATUS          mandatory
                        DESCRIPTION     "Pasolink OID"
        ::= { system1AlarmTrapDefinition 7 }

        alarmItemStatusId OBJECT-TYPE
                SYNTAX          NormalAlarmStatusId
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Alarm Status"
        ::= { system1AlarmTrapDefinition 8 }

-----------------------------------------------
-- Alarm Trap Group Definitions
-----------------------------------------------

        alarmGroupSummary TRAP-TYPE
                ENTERPRISE      pnmsPlus
                VARIABLES       {
                                        alarmTrapSequenceNumber,
                                        alarmDate,
                                        alarmTime,
                                        alarmSeverity,
                                        alarmType,
                                        probableCause,
                                        alarmSource,
                                        alarmItemStatusId
```

```
                                }
            DESCRIPTION             "Group Summary Status"
    ::= 10

-----------------------------------------------
-- Filter configuration change Trap Group Definitions
-----------------------------------------------

    filterTrapSequenceNumber OBJECT-TYPE
            SYNTAX          Counter
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "When a new trap is created, trapSequenceCounter
                            is incremented, and copied to this scalar."
    ::= { system1FilterTrapDefinition 1 }

    filterDate OBJECT-TYPE
            SYNTAX          OCTET STRING
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Date when alarm was raised or cleared: YYYY/MM/DD"
    ::= { system1FilterTrapDefinition 2 }

    filterTime OBJECT-TYPE
            SYNTAX          OCTET STRING
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Time when alarm was raised or cleared. A value in
                            the format hh:mm:ss. The time is expressed as a
                            24 hour clock. Some examples of legal values
                            are: 02:03:33 and 14:59:59."
    ::= { system1FilterTrapDefinition 3 }

    filterSource OBJECT-TYPE
            SYNTAX          OBJECT IDENTIFIER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "Filter Source"
    ::= { system1FilterTrapDefinition 4 }

    filterSeverityMask OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION     "The alarm filter severity is implemented as a
                            bit mask for each Group.
                            The bits have the following meaning:
                                    Bit 1 = clear,
                                    Bit 2 = minor,
                                    Bit 3 = major,
                                    Bit 4 = critical.
                            The severity definitions are per X.733.
                            Ex. 00010 stands for the mask of minor alarm."
    ::= { system1FilterTrapDefinition 5 }

    filterTrapTypeMask OBJECT-TYPE
            SYNTAX          INTEGER
            ACCESS          read-write
            STATUS          mandatory
            DESCRIPTION     "The filter Trap Type is implemented as a
```

```
                                bit mask for each Group.
                                The bits have the following meaning:
                                        Bit 0 = Group Summary,
                                        Bit 1 = Network Element Summary,
                                        Bit 2 = Partial Summary,
                                        Bit 3 = Other Alarm,
                                        Bit 4 = Event,
                                        Bit 5 = Filter,
                                        Bit 6 = Config,
                                        Bit 7 = Status,
                                        Bit 8 = System"
    ::= { system1FilterTrapDefinition 6 }

    filterTrapSeverity TRAP-TYPE
            ENTERPRISE      pnmsPlus
            VARIABLES       {
                                filterTrapSequenceNumber,
                                filterDate,
                                filterTime,
                                filterSource,
                                filterSeverityMask
                            }
            DESCRIPTION     "Filter Severity Change Trap"
    ::= 300

    filterTrapType TRAP-TYPE
            ENTERPRISE      pnmsPlus
            VARIABLES       {
                                filterTrapSequenceNumber,
                                filterDate,
                                filterTime,
                                filterSource,
                                filterTrapTypeMask
                            }
            DESCRIPTION     "Filter Trap Type Change Trap"
    ::= 301

-----------------------------------------------
-- system1ResendStatus Group
-----------------------------------------------
    srsGroupId OBJECT-TYPE
            SYNTAX INTEGER (0..255)
            ACCESS read-write
            STATUS mandatory
            DESCRIPTION     "Group where trap currently is resent (GET Request)/
                            Group where trap will be resent (SET Request)
                                    0: Invalid
                                    1..255: Group ID

                            [With regards to SET Request]
                            Send srsGroupId and srsResendType as 1PDU. PNMSj will
                            resend specified type of trap to specified Group.
                                    srsGroupId:
                                            Specify ID of Group to request resend
                                            trap. No other than 1..255 are used.
                                    srsResendType:
                                            Specify the type of trap to resend.

                            [About Get Request]
                                    0: There are no groups with traps currently
```

```
                                        being resent.
                                    1..255: ID of Group to where trap currently is
                                            being resent.
                                    Other than above: Value not accepted."
::= { system1ResendStatus 1 }

srsNetworkElementAddressAddrType OBJECT-TYPE
        SYNTAX InetAddressType
        ACCESS read-write
        STATUS mandatory
        DESCRIPTION     "The address type of srsNetworkElementAddress
                        Only ipv4(1) and ipv6(2) are supported."
::= { system1ResendStatus 1001 }

srsNetworkElementAddress OBJECT-TYPE
        SYNTAX InetAddress
        ACCESS read-write
        STATUS mandatory
        DESCRIPTION     "Network element where trap currently is resent (GET
                        Request)/ Network element where trap will be resent
                        (SET Request)
                                '00000000'h: Invalid
                                Other that above: Network element IP Address
                                        Ex. 'c0210415'h = 192.33.4.21

                        [With regards to SET Request]
                        Send srsNetworkElementAddressAddrType,
                        srsNetworkElementAddress and srsResendType as 1PDU.
                        PNMSj will resend specified type of trap to specified
                        Network Element.
                                srsNetworkElementAddressAddrType:
                                        Specify address type of
                                        srsNetworkElementAddress.
                                srsNetworkElementAddress:
                                        Specify IP Address of Network Element to
                                        request resend trap. '00000000'h (0.0.0.0)
                                        is not used.
                                srsResendType:
                                        Specify the type of trap to be resent.

                        [About Get Request]
                                '00000000'h(0.0.0.0):
                                        There are no network element with trap
                                        currently being resent.
                                Other than above:
                                        IP address of network element to where
                                        trap currently is being resent."
::= { system1ResendStatus 2 }

srsResendType OBJECT-TYPE
        SYNTAX INTEGER {
                        unavailable(1),
                        wait(2),
                        summary(4),
                        detailAlarm(8),
                        summary-detailAlarm(12)
                        }
        ACCESS read-write
        STATUS mandatory
        DESCRIPTION     "Type of trap currently being resent (GET Response)/ Type
```

of trap to be resent (SET Request)
1 : Invalid
2 : Standing by for resend request from upper (GET Response)/ Cancel request from upper (SET Request)
4 : Resending summary trap (Summary License or detail license necessary)
8 : Resending detail alarm trap (Detail License necessary)
12: Resending both summary and detail alarm trap (Detail License necessary)

[When resending trap to NE (SET Request)]
Send srsNetworkElementAddressAddrType, srsNetworkElementAddress and srsResendType as 1PDU. PNMSj will resend specified type of trap to specified Network Element.
srsNetworkElementAddressAddrType:
Specify address type of srsNetworkElementAddress.
srsNetworkElementAddress:
Specify IP Address of Network Element to request resend trap. '00000000'h (0.0.0.0) is not used.
srsResendType:
Specify the type of trap to be resent.

[When resending trap to group (SET Request)]
Send srsGroupId and srsResendType as 1PDU. PNMSj will resend specified type of trap to specified Group.
srsGroupId:
Specify ID of Group to request resend trap. No other than 1..255 are used.
srsResendType:
Specify the type of trap to be resent.

[About Get Request]
1 : Cannot request to resend trap.
2 : Standing by for request to resend trap.
4 : Resending summary trap. For destination and details, please refer to information found in srsGroupId and srsNetworkElementAddress.
8 : Resending detail alarm trap. For destination and details, please refer to information found in srsGroupId and srsNetworkElementAddress.
12: Resending both summary and detail alarm trap. For destination and details, please refer to information found in srsGroupId and srsNetworkElementAddress."

::= { system1ResendStatus 3 }

```
-----------------------------------------------
-- Resend Status Group Definitions
-----------------------------------------------

    resendStatusSequenceNumber OBJECT-TYPE
            SYNTAX Counter
            ACCESS read-only
            STATUS mandatory
            DESCRIPTION     "When a new trap is created, trapSequenceCounter
```

```
                        is incremented, and copied to this scalar."
::= { system1ResendStatusTrapDefinition 1 }

resendStatusDate OBJECT-TYPE
        SYNTAX OCTET STRING
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "Date when alarm was raised or cleared: MM-DD-YYYY"
::= { system1ResendStatusTrapDefinition 2 }

resendStatusTime OBJECT-TYPE
        SYNTAX OCTET STRING
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "Time when alarm was raised or cleared. A value in
                        the format hh:mm:ss. The time is expressed as a
                        24 hour clock. Some examples of legal values
                        are: 02:03:33 and 14:59:59."
::= { system1ResendStatusTrapDefinition 3 }

resendStatusGroupIdSource OBJECT-TYPE
        SYNTAX OBJECT IDENTIFIER
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "This value is OID of srsGroupId."
        REFERENCE       "srsGroupId"
::= { system1ResendStatusTrapDefinition 4 }

resendStatusGroupId OBJECT-TYPE
        SYNTAX INTEGER (0..255)
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "This value is value of srsGroupId.
                        Group where trap currently is resent (GET Request)/
                        Group where trap will be resent (SET Request)
                                0: Invalid
                                1..255: Group ID

                        [With regards to SET Request]
                        Send srsGroupId and srsResendType as 1PDU. PNMSj will
                        resend specified type of trap to specified Group.
                                srsGroupId:
                                        Specify ID of Group to request resend trap.
                                        No other than 1..255 are used.
                                srsResendType:
                                        Specify the type of trap to resend.

                        [About Get Request]
                                0: There are no groups with traps currently
                                    being resent.
                                1..255: ID of Group where trap currently is
                                        being resent.
                                Other than above: Value not accepted."
                REFERENCE       "srsGroupId"
::= { system1ResendStatusTrapDefinition 5 }

resendStatusNetworkElementAddressSource OBJECT-TYPE
        SYNTAX OBJECT IDENTIFIER
        ACCESS read-only
        STATUS mandatory
```

```
        DESCRIPTION     "This value is OID of srsNetworkElementAddress."
        REFERENCE       "srsNetworkElementAddress"
::= { system1ResendStatusTrapDefinition 6 }

resendStatusNetworkElementAddressAddrType OBJECT-TYPE
        SYNTAX InetAddressType
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "The address type of the resendStatusNetworkElementAddress.
                        Only ipv4(1) and ipv6(2) are supported."
        REFERENCE       "srsNetworkElementAddress"
::= { system1ResendStatusTrapDefinition 1001 }

resendStatusNetworkElementAddress OBJECT-TYPE
        SYNTAX InetAddress
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "This value is value of srsNetworkElementAddress.
                        Network element where trap currently is resent
                        (GET Request)/ Network element where trap will be
                        resent (SET Request)
                                '00000000'h: Invalid
                                Other that above: IP Address of network element
                                        Ex. 'c0210415'h = 192.33.4.21

                        [With regards to SET Request]
                        Send srsNetworkElementAddressAddrType,
                        srsNetworkElementAddress and srsResendType as 1PDU.
                        PNMSj will resend specified type of trap to specified
                        Network Element.
                                srsNetworkElementAddressAddrType:
                                        Specify address type of
                                        srsNetworkElementAddress.
                                srsNetworkElementAddress:
                                        Specify IP Address of Network Element
                                        to request resend trap. '00000000'h
                                        (0.0.0.0) is not used.
                                srsResendType:
                                        Specify the type of trap to be resent.

                        [About Get Request]
                                '00000000'h(0.0.0.0):
                                        There are no network element with
                                        trap currently being resent.
                                Other than above:
                                        IP address of network element to where
                                        trap currently is being resent."
        REFERENCE       "srsNetworkElementAddress"
::= { system1ResendStatusTrapDefinition 7 }

resendStatusTypeSource OBJECT-TYPE
        SYNTAX OBJECT IDENTIFIER
        ACCESS read-only
        STATUS mandatory
        DESCRIPTION     "This value is OID of srsResendType."
        REFERENCE       "srsResendType"
::= { system1ResendStatusTrapDefinition 8 }

resendStatusType OBJECT-TYPE
        SYNTAX INTEGER {
```

```
            unavailable(1),
            wait(2),
            summary(4),
            detailAlarm(8),
            summary-detailAlarm(12)
            }
ACCESS read-only
STATUS mandatory
DESCRIPTION     "Type of trap currently being resent (GET Response)/
                type of trap to be resent (SET Request)
                        1 : Invalid
                        2 : Standing by for resend request from upper
                            (GET Response)/ Cancel request from upper
                            (SET Request)
                        4 : Resending summary trap
                            (Summary License or detail license necessary)
                        8 : Resending detail alarm trap
                            (Detail License necessary)
                        12: Resending both summary and detail alarm trap
                            (Detail License necessary)

                [When resending trap to NE (SET Request)]
                Send srsNetworkElementAddressAddrType,
                srsNetworkElementAddress and srsResendType as 1PDU.
                PNMSj will resend specified type of trap to specified
                Network Element.
                        srsNetworkElementAddressAddrType:
                                Specify address type of
                                srsNetworkElementAddress.
                        srsNetworkElementAddress:
                                Specify IP Address of Network Element
                                to request resend trap. '00000000'h
                                (0.0.0.0) is not used.
                        srsResendType:
                                Specify the type of trap to be resent.

                [When resending trap to group (SET Request)]
                Send srsGroupId and srsResendType as 1PDU. PNMSj will
                resend specified type of trap to specified Group.
                        srsGroupId:
                                Specify ID of Group to request resend trap.
                                  No other than 1..255 are used.
                        srsResendType:
                                Specify the type of trap to be resent.

                [About Get Request]
                        1 : Cannot request to resend trap.
                        2 : Standing by for request to resend trap.
                        4 : Resending summary trap. For destination and
                            details, please refer to information found
                            in srsGroupId and srsNetworkElementAddress.
                        8 : Resending detail alarm trap. For destination
                            and details, please refer to information found
                            in srsGroupId and srsNetworkElementAddress.
                        12: Resending both summary and detail alarm trap.
                            For destination and details, please refer to
                            information found in srsGroupId and
                            srsNetworkElementAddress."
        ::= { system1ResendStatusTrapDefinition 9 }
```

```
    resendStatus TRAP-TYPE
            ENTERPRISE pnmsPlus
            VARIABLES {
                    resendStatusSequenceNumber,
                    resendStatusDate,
                    resendStatusTime,
                    resendStatusGroupIdSource,
                    resendStatusGroupId,
                    resendStatusNetworkElementAddressSource,
                    resendStatusNetworkElementAddress,
                    resendStatusTypeSource,
                    resendStatusType
                    }
            DESCRIPTION     "Resend Status Change Trap"
    ::= 400

END
```

```
MIB-PNMSJPLUS-PASOCOMMON DEFINITIONS ::= BEGIN

-----------------------------------------------
-- INPORTS Definitions
-----------------------------------------------

        IMPORTS
                Counter,TimeTicks,enterprises
                        FROM RFC1155-SMI
                OBJECT-TYPE
                        FROM RFC-1212
                TRAP-TYPE
                        FROM RFC-1215
                DisplayString
                        FROM RFC1213-MIB
                InetAddress,InetAddressType
                        FROM INET-ADDRESS-MIB
                pnmsPlus
                        FROM NEC-SMI;

-----------------------------------------------
-- enterprises Group Definitions
-----------------------------------------------

        pasoCommon OBJECT IDENTIFIER
                ::= { pnmsPlus 101 }

-----------------------------------------------
-- pasoCommon Group Definitions
-----------------------------------------------

        pasoCommonInformation OBJECT IDENTIFIER
                ::= { pasoCommon 1 }

        pasoCommonAlarmTrapDefinition OBJECT IDENTIFIER
                ::= { pasoCommon 2 }

-----------------------------------------------
-- pasoCommonInformation Group
-- pcNetworkElementTable Definitions
-----------------------------------------------

        pcNetworkElementTable OBJECT-TYPE
                SYNTAX          SEQUENCE OF PcNetworkElementEntry
                ACCESS          not-accessible
                STATUS          mandatory
                DESCRIPTION     "Network Element Information"
                ::= { pasoCommonInformation 1 }

        pcNetworkElementEntry OBJECT-TYPE
                SYNTAX          PcNetworkElementEntry
                ACCESS          not-accessible
                STATUS          mandatory
                DESCRIPTION     "Pasolink Network Element Information Entry"
                INDEX { pnePasoIndexAddrType, pnePasoIndex }
                ::= { pcNetworkElementTable 1 }

        PcNetworkElementEntry ::= SEQUENCE {
                pnePasoIndexAddrType    InetAddressType,
                pnePasoIndex            InetAddress,
```

```
        pneGroupID              INTEGER,
        pnePasoName             OCTET STRING,
        pneConnection           INTEGER,
        pneSummary              INTEGER,
        pneEquipmentType        INTEGER
}

pnePasoIndexAddrType OBJECT-TYPE
        SYNTAX          InetAddressType
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "The address type of the Pasolink IpAddress
                        Only ipv4(1) and ipv6(2) are supported."
        ::= { pcNetworkElementEntry 1001 }

pnePasoIndex OBJECT-TYPE
        SYNTAX          InetAddress
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Pasolink IpAddress"
        ::= { pcNetworkElementEntry 1 }

pneGroupID OBJECT-TYPE
        SYNTAX          INTEGER
        ACCESS          read-write
        STATUS          mandatory
        DESCRIPTION     "Group ID
                        Note: 0 stands for No Group"
        ::= { pcNetworkElementEntry 2 }

pnePasoName OBJECT-TYPE
        SYNTAX          OCTET STRING
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Paso Name"
        ::= { pcNetworkElementEntry 3 }

pneConnection OBJECT-TYPE
        SYNTAX          INTEGER (0..1)
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Not Used
                        Connection Status
                                disconnect(0),
                                connect(1)"
        ::= { pcNetworkElementEntry 4 }

pneSummary OBJECT-TYPE
        SYNTAX          INTEGER (0..4)
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Network Element Summary Status
                                unknown(0),
                                clear(1),
                                minor(2),
                                major(3),
                                critical(4)"
        ::= { pcNetworkElementEntry 5 }

pneEquipmentType OBJECT-TYPE
```

```
                SYNTAX          INTEGER (0..23)
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "Equipment Type
                                Note: If disconnect occurs, this vaile is set to invailed(0).
                                        invalid(0),
                                        PASOLINK V3(1),
                                        PASOLINK S(2),
                                        MIU(3),
                                        PASOLINK+ STM-1 / NLite 155(4),
                                        PASOLINK+ PDH(5),
                                        PASOLINK+ STM-0(6),
                                        PASOLINK V4 / NLite(7),
                                        PASOLINK Mx(8),
                                        NLite L(9),
                                        NLite Lx(10),
                                        PASOLINK NEO STD / NLite E(11),
                                        5000S(12),
                                        PASOLINK NEO CPV(13),
                                        PASOLINK NEO NODAL(14),
                                        PASOLINK NEO A(15),
                                        PASOLINK NEO HP(16),
                                        NLite N(17),
                                        PASOLINK NEO HP AMR / NLite N AMR(18),
                                        iPASOLINK 200(20),
                                        iPASOLINK 400(21),
                                        iPASOLINK 1000(22),
                                        iPASOLINK 100(23),
                                        iPASOLINK 100E(24),
                                        5000iP Series(25),
                                        iPASOLINK 400A(26),
                                        iPASOLINK iX(27),
                                        iPASOLINK SX(28),
                                        iPASOLINK EX(29),
                                        iPASOLINK 100A(30),
                                        iPASOLINK 200A(31),
                                        iPASOLINK VR 2(32),
                                        iPASOLINK VR 4(33),
                                        iPASOLINK VR 10(34),
                                        iPASOLINK EX/A(35),
                                        iPASOLINK VR 1250(36),
                                        7000iP / 5000iP ADV(37)"
                ::= { pcNetworkElementEntry 6 }

-----------------------------------------------
-- Alarm Trap Status Group Definitions
-----------------------------------------------
        NormalAlarmStatusId ::= INTEGER {
                invalid(0),
                normal(1),
                alarm(2)
        }

        alarmTrapSequenceNumber OBJECT-TYPE
                SYNTAX          Counter
                ACCESS          read-only
                STATUS          mandatory
                DESCRIPTION     "When a new trap is created, trapSequenceCounter
                                is incremented, and copied to this scalar."
        ::= { pasoCommonAlarmTrapDefinition   1 }
```

```
alarmDate OBJECT-TYPE
        SYNTAX          OCTET STRING
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Date when alarm was raised or cleared: YYYY/MM/DD"
::= { pasoCommonAlarmTrapDefinition   2 }

alarmTime OBJECT-TYPE
        SYNTAX          OCTET STRING
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Time when alarm was raised or cleared. A value in
                        the format hh:mm:ss. The time is expressed as a
                        24 hour clock. Some examples of legal values
                        are: 02:03:33 and 14:59:59."
::= { pasoCommonAlarmTrapDefinition   3 }

alarmSeverity OBJECT-TYPE
        SYNTAX          INTEGER
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "The valid values for this object are:
                                0=unknown,
                                1=clear,
                                2=minor,
                                3=major,
                                4=critical.
                                Alarm severity( 1-4 ) per X.733."
::= { pasoCommonAlarmTrapDefinition   4 }

alarmType OBJECT-TYPE
        SYNTAX          INTEGER (0..10)
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Alarm types per X.733/X.736.
                                invalid(0),
                                communicationAlarm(1),
                                qualityOfServiceAlarm(2),
                                processingErrorAlarm(3),
                                equipmentAlarm(4),
                                environmentalAlarm(5),
                                integrityViolationAlarm(6),
                                operationalViolationAlarm(7),
                                physicalViolationAlarm(8),
                                securityViolationAlarm(9),
                                timeDomainViolationAlarm(10)"
::= { pasoCommonAlarmTrapDefinition   5 }

probableCause OBJECT-TYPE
        SYNTAX          INTEGER (0..522)
        ACCESS          read-only
        STATUS          mandatory
        DESCRIPTION     "Probable causes per X.733/X.736.
                        Values 1..50 are used with communications alarms.
                        Values 51..100 are used with equipment alarms.
                        Values 101..150 are used with environmental alarms.
                        Values 151..200 are used with processing error alarms.
                        Values 501..600 are used with any of the violation alarm types.
                                invalid(0),
```

aIS(1),
callSetUpFailure(2),
degradedSignal(3),
farEndReceiverFailure(4),
framingError(5),
lossOfFrame(6),
lossOfPointer(7),
lossOfSignal(8),
payloadTypeMismatch(9),
transmissionError(10),
remoteAlarmInterface(11),
excessiveBER(12),
pathTraceMismatch(13),
backplaneFailure(51),
dataSetProblem(52),
equipmentIdentifierDuplication(53),
externalIFDeviceProblem(54),
lineCardProblem(55),
multiplexerProblem(56),
nEIdentifierDuplication(57),
powerProblem(58),
processorProblem(59),
protectionPathFailure(60),
receiverFailure(61),
replaceableUnitMissing(62),
replaceableUnitTypeMismatch(63),
synchronizationSourceMismatch(64),
terminalProblem(65),
timingProblem(66),
transmitterFailure(67),
trunkCardProblem(68),
replaceableUnitProblem(69),
airCompressorFailure(101),
airConditioningFailure(102),
airDryerFailure(103),
batteryDischarging(104),
batteryFailure(105),
commercialPowerFailure(106),
coolingFanFailure(107),
engineFailure(108),
fireDetectorFailure(109),
fuseFailure(110),
generatorFailure(111),
lowBatteryThreshold(112),
pumpFailure(113),
rectifierFailure(114),
rectifierHighVoltage(115),
rectifierLowFVoltage(116),
ventilationsSystemFailure(117),
enclosureDoorOpen(118),
explosiveGas(119),
fire(120),
flood(121),
highHumidity(122),
highTemperature(123),
highWind(124),
iceBuildUp(125),
intrusionDetection(126),
lowFuel(127),
lowHumidity(128),

```
                                        lowCablePressure(129),
                                        lowTemperature(130),
                                        lowWater(131),
                                        smoke(132),
                                        toxicGas(133),
                                        storageCapacityProblem(151),
                                        memoryMismatch(152),
                                        corruptData(153),
                                        outOfCPUCycles(154),
                                        sfwrEnvironmentProblem(155),
                                        sfwrDownloadFailure(156),
                                        communicationsProtocolError(157),
                                        congestion(158),
                                        heatingOrVentilationOrCoolingSystemProblem(159),
                                        lANError(160),
                                        performanceDegraded(161),
                                        temperatureUnacceptable(162),
                                        thresholdCrossed(163),
                                        underlyingResourceUnavailable(164),
                                        equipmentMalfunction(165),
                                        configurationOrCustomizationError(166),
                                        duplicateInformation(501),
                                        informationMissing(502),
                                        informationModificationDetected(503),
                                        informationOutOfSequence(504),
                                        unexpectedInformation(505),
                                        denialOfService(506),
                                        outOfService(507),
                                        proceduralError(508),
                                        cableTamper(509),
                                        securityIntrusionDetection(510),
                                        authenticationFailure(511),
                                        breachOfConfidentiality(512),
                                        unauthorisedAccessAttempt(513),
                                        delayedInformation(514),
                                        keyExpired(515),
                                        outOfHoursActivity(516),
                                        otherReasons(517),
                                        bossHardwareFailure(518),
                                        bossSystemSoftwareFailure(519),
                                        bossApplicationSoftwareFailure(520),
                                        bossDatabaseFailure(521),
                                        bossNetworkFailure(522)"
::= { pasoCommonAlarmTrapDefinition   6 }

alarmSource OBJECT-TYPE
                        SYNTAX          OBJECT IDENTIFIER
                        ACCESS          read-only
                        STATUS          mandatory
                        DESCRIPTION     "Pasolink OID"
::= { pasoCommonAlarmTrapDefinition   7 }

alarmItemStatusId OBJECT-TYPE
            SYNTAX          NormalAlarmStatusId
            ACCESS          read-only
            STATUS          mandatory
            DESCRIPTION
                        "Alarm Status"
::= { pasoCommonAlarmTrapDefinition   8       }
```

```
-----------------------------------------------
-- Alarm Trap Group Definitions
-----------------------------------------------

        alarmNESummary TRAP-TYPE
                ENTERPRISE pnmsPlus
                VARIABLES {
                        alarmTrapSequenceNumber,
                        alarmDate,
                        alarmTime,
                        alarmSeverity,
                        alarmType,
                        probableCause,
                        alarmSource,
                        alarmItemStatusId
                }
                DESCRIPTION     "Network Element Summary"
        ::= 100

        alarmPasoConnection TRAP-TYPE
                ENTERPRISE pnmsPlus
                VARIABLES {
                        alarmTrapSequenceNumber,
                        alarmDate,
                        alarmTime,
                        alarmSeverity,
                        alarmType,
                        probableCause,
                        alarmSource,
                        alarmItemStatusId
                }
                DESCRIPTION     "Not Used
                                 Pasolink Connection"
        ::= 101


END
```

Appendix 2

Access Guide
for pnmsPlus(211) MIB tree

An example is shown below showing an access scenario to pnePasoName defined in MIB-PNMSJPLUS-PASOCOMMON.my file:

Extracted part from the MIB-PNMSJPLUS-PASOCOMMON.my file.

```
==========================================================================

pcNetworkElementEntry OBJECT-TYPE
        SYNTAX          PcNetworkElementEntry
        ACCESS          not-accessible
        STATUS          mandatory
        DESCRIPTION     "Pasolink Network Element Information Entry"
        INDEX { pnePasoIndexAddrType, pnePasoIndex }
        ::= { pcNetworkElementTable 1 }

PcNetworkElementEntry ::= SEQUENCE {
        pnePasoIndexAddrType    InetAddressType,
        pnePasoIndex            InetAddress,
        pneGroupID              INTEGER,
        pnePasoName             OCTET STRING,   (<- This is the focus MIB object in example)
        pneConnection           INTEGER,
        pneSummary              INTEGER,
        pneEquipmentType        INTEGER
}

==========================================================================
```

[In case of IPv4]
Set the focus MIB object and index as shown below.
The example shown is in case the NE IP address is 172.18.0.1

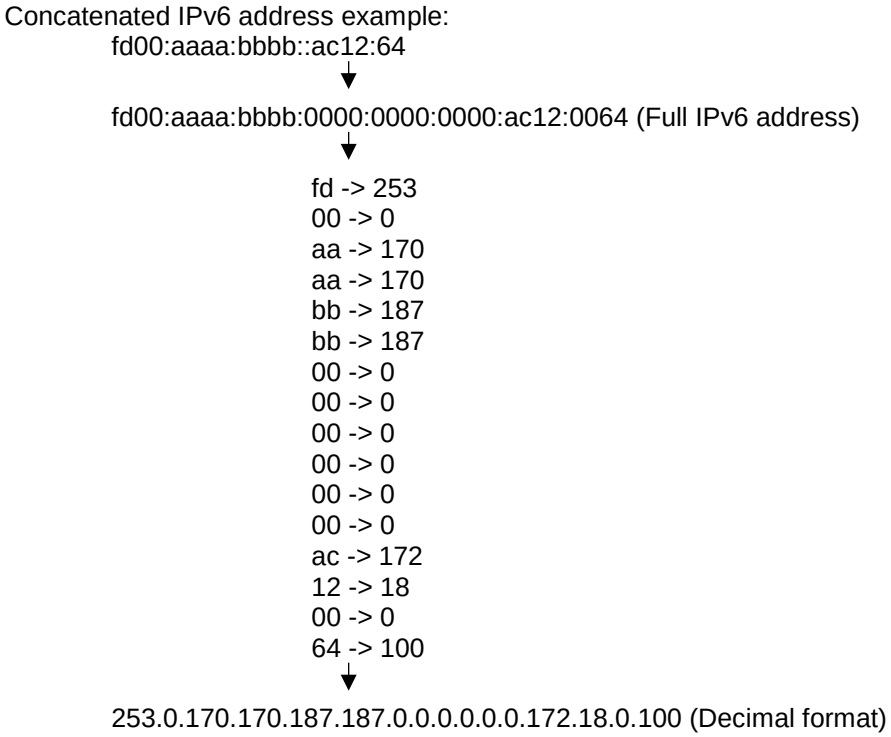
1.3.6.1.4.1.119.2.3.69.211.101.1.1.1.3.1.4.172.18.0.1
|------------------------1-----------------------|2|--------3-------|

1) pnePasoName: 1.3.6.1.4.1.119.2.3.69.211.101.1.1.1.3
2) pnePasoIndexAddrType: 1 (iPv4)
3) pnePasoIndex: 4.172.18.0.1
Note: pnePasoIndex requires “4(IP type).IPv4 address” format like “4.172.18.0.1”.
The type value of “4” is fixed for IPv4.

[In case of IPv6]
Set the focus MIB object and index as shown below.
The example shown is in case the NE IP address is fd00:aaaa:bbbb::ac12:64

1.3.6.1.4.1.119.2.3.69.211.101.1.1.1.3.2.16.253.0.170.170.187.187.0.0.0.0.0.0.172.18.0.100
|------------------------1-----------------------|2|----------------------------------3----------------------------------|

1) pnePasoName: 1.3.6.1.4.1.119.2.3.69.211.101.1.1.1.3
2) pnePasoIndexAddrType: 2 (iPv6)
3) pnePasoIndex: 16.253.0.170.170.187.187.0.0.0.0.0.0.172.18.0.100
Note: pnePasoIndex requires “16(IP type).IPv6 address” format like
“16. 253.0.170.170.187.187.0.0.0.0.0.0.172.18.0.100”.
The type value of “16” is fixed for IPv6.
IPv6 address is in decimal format.


Concatenated IPv6 address example:
fd00:aaaa:bbbb::ac12:64
fd00:aaaa:bbbb:0000:0000:0000:ac12:0064 (Full IPv6 address)
fd -> 253
00 -> 0
aa -> 170
aa -> 170
bb -> 187
bb -> 187
00 -> 0
00 -> 0
00 -> 0
00 -> 0
00 -> 0
00 -> 0
ac -> 172
12 -> 18
00 -> 0
64 -> 100
253.0.170.170.187.187.0.0.0.0.0.0.172.18.0.100 (Decimal format)