

**Lucent Technologies**  
Bell Labs Innovations



# **WaveStar<sup>®</sup> ITM-SC Release 8.0**

## Maintenance Guide

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Issue a  
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##### **Wrist Strap**

Wrist Strap The wrist strap must be worn when opening the Subrack doors.

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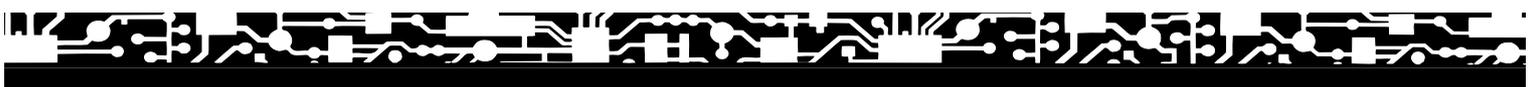
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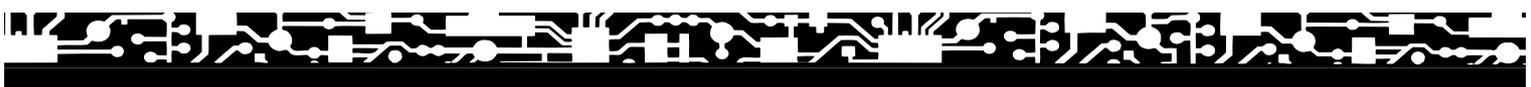
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# About this information product

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- Purpose** The purpose of the Subnetwork Maintenance Guide (SMG) is to provide maintenance personnel with all information necessary to carry out maintenance activities of network elements in a network using the Integrated Transport Management-Subnetwork Controller (ITM-SC).  
The Subnetwork Maintenance Guide is a network oriented manual and will be shipped to all sites where an ITM-SC is available.  
The philosophy behind maintenance of network elements within a network is that the network is already installed, configured and service has been provided to the network after first installation. It is also assumed that the network functions properly and no malfunctions are detected so far.  
Actions required to restore the service from a degraded or disturbed condition can be found in the "Alarm Messages and Maintenance Guide".
- Reason for reissue** First issue.
- Safety labels** The safety guidelines are not applicable for this guide
- Intended audience** The intended audience of this guide is personnel who take care of daily maintenance activities. It is assumed that this personnel has some knowledge about operating the ITM-SC. For more information on maintenance refer to the concepts explained in chapter 3.

**How to use this information product**

The Subnetwork Maintenance Guide (SMG) is divided into a number of chapters.

This guide is divided into the following chapters:

- *About this guide:* Brief description over how to use this guide.
- *Event Management:* This chapter explains the concepts of Event Management and describes procedures to configure the ITM-SC to respond appropriately to any event. It is recommended that the procedures should be performed in the order in which they are presented.
- *Performance Monitoring:* This chapter explains the concepts of Performance Monitoring and describes procedures to configure the ITM-SC to obtain performance monitoring measurements of the network. Furthermore it is explained how to display, print and store these measurements.
- *Concepts:*. This chapter explains the concepts of both Event Management as well as Performance Monitoring.
- *ITM-SC Tutorial:* This chapter explains the concepts over how to use the ITM-SC in combination with a Network Element and describes procedures to configure the ITM-SC so that it can communicate with the Network Element.
- *Glossary:* In this chapter all the special terms, used in this manual, are listed.

**Conventions used**

The samples of windows shown in this guide are examples of typical windows. The contents (text) on a window as well as the window itself may differ from the window displayed on the ITM-SC.

This guide will use the following notations

**DANGER**

*Suggests the possibility of a personal injury*

**CAUTION**

*Suggests the possibility of service interruption*

**WARNING**

*Suggests the possibility of equipment damage or software corruption*

**Important!** Gives supplementary information

**Approval mark** The following CE approval mark applies to this product.



CE Marking is the indicator for products conform with relevant European Community (EC) Directives. CE stands for *Conformité Européenne*. The CE-marked transmission equipment is compliant with one EC Directive: 89/336/EEC - Electro-magnetic compatibility (EMC). In this manual you will find several chapters in relation with the CE-marking, for example the use of EMC closed connector Hoods, filtered connectors, and warnings to use a wrist strap when handling equipment.

**Related industry standards** The whole masking tree is described in the following standards:

- ITU-T recommendation G.783, issue April 1997
- ETSI standard ETS 300 417-1-1, issue January 1996
- ETSI standard ETS 300 417-2-1, issue April 1997
- ETSI standard ETS 300 417-3-1, issue June 1997
- ETSI standard ETS 300 417-4-1, issue June 1997

**Related documents**

The following documents are network element related:

- For more detailed information of an ne system, technical characteristics, features, cross-product interworking and system planning and engineering, refer to the: APPLICATION AND PLANNING GUIDE
- For information on the physical installation of an NE and for connecting the cabling, refer to the: NETWORK ELEMENT INSTALLATION GUIDE
- For information on provisioning and maintenance of an NE with the use of the Craft Interface Terminal (CIT), refer to the: CRAFT USER GUIDE
- For information on corrective procedures and action tables of the Network Elements refer to the: ALARM MESSAGES AND MAINTENANCE

The following documents are Subnetwork Controller related:

- For more detailed information of the Integrated Transport Management-Subnetwork Controller (ITM-SC), technical characteristics, features, cross-product interworking and system planning and engineering, refer to the: ITM-SC APPLICATION AND PLANNING GUIDE
- For information on installation of the Integrated Transport Management-Subnetwork Controller (ITM-SC), refer to the: ITM-SC INSTALLATION GUIDE
- For information on how to give users access to the Integrated Transport Management-Subnetwork Controller (ITM-SC) and to backup and restore databases, refer to the: ITM-SC ADMINISTRATION GUIDE
- For information on provisioning of the Network Elements with the use of the Integrated Transport Management-Subnetwork Controller (ITM-SC), refer to the: ITM-SC PROVISIONING GUIDE
- For information on maintenance of the Network Elements with the use of the Integrated Transport Management-Subnetwork Controller (ITM-SC), refer to the: ITM-SC MAINTENANCE GUIDE
- For information on corrective procedures and action tables of the Integrated Transport Management-Subnetwork Controller (ITM-SC) refer to the: ITM-SC ALARM MESSAGES AND MAINTENANCE

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# 1 Event Management

## Overview

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**Objectives** To perform customized Event Management via the ITM-SC.  
In general Event Management comprises three types of activities:

- *Configuration*: customize the behavior of events towards the ITM-SC
- *Display*: showing all events and their status
- *Alarm Storage and Archiving*: store history events to obtain a long term view about the transmission network.

**Definition** Event Management is a set of features enabling the user to perform corrective maintenance by using the ITM-SC.

**Outcome** A customized response to events occurring within the elements of the network being managed.

**Intended use** This chapter explains the concepts of Event Management and describes procedures to configure the ITM-SC to respond appropriately to any event. It is recommended that the procedures should be performed in the order in which they are presented.

**Abbreviations used** When Network Elements OLS 80G, ADM 4/1, ADM 16/1, ADM16/1c, AM 1 (Plus) and TM 1 are described WaveStar® OLS 80 G, WaveStar® ADM 4/1, WaveStar® ADM 16/1, WaveStar® ADM16/1 compact, WaveStar® AM 1 (Plus) and WaveStar® TM 1 are meant.

□

## Task Cluster: Configuring Event Management

### Overview

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**Purpose** The purpose of this section is to group logically related tasks. This section will provide an introduction to all tasks used to customize the event behavior.



## Configuring Event Management

---

**Introduction** The ITM-SC supports the collection of event information from each Network Element in the Network being managed. The characteristics of an alarm or autonomous event are determining:

- *if* a fault will become a alarm or autonomous event and so will be notified
- *when* a fault will become an alarm
- *how* an alarm or autonomous event will be presented

These characteristics have to be configured in order to comply with the maintenance philosophy agreed upon.

**Objective** The purpose of these tasks is to enable the user to customize the event behavior to the users' needs.

**Configuration tasks available** The table below indicates which task to refer to, to perform a specific configuration task

To..	refer to the task
change the NE event severity or report state	Setting NE Event Parameters [1-6]
change NE event parameters other than severity and report state	Setting NE Event Control Information [1-12]
change the SLM event parameters for SLM regenerators	Setting SLM Regenerator Alarm Information [1-19]
change which severities of WDACS alarms can be suppressed	Setting WDACS Station Alarm Control [1-24]
change NE event parameters for existing resources	Setting Event Parameters for Existing Resources [1-27]
change the latching state for all NEs or the NE alarm history recovery status	Setting All NE Event Control [1-34]
change the Manager Event parameters. (these events are associated with the management of the NE, but generated by the ITM-SC)	Setting Manager Event Parameters [1-38]
change the EMS Event parameters. (these events are generated by the ITM-SC and not related to any NE)	Setting EMS Event Parameters [1-42]

<b>To..</b>	<b>refer to the task</b>
change the latching state of the EMS events or change the event list warning threshold and deletion time.	Setting EMS Event Control [1-46]

**Outcome** The behavior of events is customized according the maintenance philosophy.



## Section: Setting NE Event Parameters

### Overview

---

**Purpose** This procedure allows the user to set the alarm severity for each alarm the selected NE can generate. By using the ITM-SC it is possible to customize the alarm severity of alarms generated by the NE.



## Setting NE Event Parameters

---

**When to use** To change severities and report state of NE Alarms

**Before you begin** Before performing this procedure consider the following:

- Changes to NE Alarm Severity Information do not affect alarms currently raised on the ITM-SC, only new alarms will use the new severity and report status.
- Changing the report state to *non-reporting* will prevent an alarm to appear.
- Make sure the report state and severity of each alarm is in compliance with the maintenance philosophy.

**Related information** Related procedures are:

- Setting NE Event Control Information
- Setting SLM Regenerator Alarm Information
- Setting WDACS Station Alarm Control
- Setting Alarm Parameters for Existing Resources
- Setting All NE Event Control
- Setting Manager Event Parameters
- Setting EMS Event Parameters
- Setting EMS Event Control

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]

Parameters used in this procedure can be found at Parameters for Setting NE Event Parameters [1-8].

**Procedure** Follow these steps to set alarm severities, reporting states and hold off periods:

- 
- 1 Select *Events* -> *Event Parameters* -> *NE* from the top level menu.

**Result:**

The *EMS - NE Event Parameters* window is displayed.

---

- 2 Select a network element via the *Selection Dialog* button for which you want to change the Alarm Severities.

- 
- 3 By using *Factory Defaults*, all alarms can be set together to the factory defaults. This is not available on OLS 80 G NEs. When selected an ADM 155 NE or ADM 4/1 NE it is possible to choose whether new or existing resources should be reset to the factory defaults.
- 

- 4 To set the severity for individual alarms, highlight an alarm in the list and click *Edit*.

**Result:**

The *EMS - Edit NE Event Parameters* window is displayed.

---

- 5 Set the *Severity* and the *Reported* fields. When changing the reporting state on a ADM 155 NE to non-reported, a severity must be chosen.
- 

- 6 For ADM 155, ADM 4/1 and Phase NEs set values in the *Alarm Raise Hold Off* and *Alarm Clear Hold Off* fields.

- For ADM155 and ADM 4/1 NEs this will be in seconds.
  - For PHASE this will be in discrete values of milliseconds.
- 

- 7 For ADM 155 and ADM 4/1 NEs select either *Defaults for new resources* or *Existing resources* in the *Apply Settings to* field.
- 

- 8 For ADM16/1 NEs select a MDO ID when needed. A value of zero means this alarm is NOT associated with any MDO.
- 

- 9 Click *OK* to confirm your selection.

**Result:**

The window closes and the *EMS - NE Event Parameters* window is updated.

---

- 10 Click *Close* in the *EMS - NE Alarm Severity Information* window to end configuring the NE alarm severities.

**Result:**

The *EMS - NE Event Parameters* window closes to complete the procedure.

END OF STEPS

---



## Parameters for Setting NE Event Parameters

---

**Introduction** The parameters, as described below, indicate the settings for severity, report state and the Raise and Clear Hold Off periods.

**Alarm Type** The description of the probable cause of the alarm. This is pre-defined.

**Configurable per instance** Indicates whether the Severities and reporting can be configured on a per instance basis. The value is indicated in the table below.

NE	Value
ISM, SLM, RR, TM1, AM1, WDACS	“N” (no)
ADM 16/1, ADM 16/1 compact, AM1 Plus, ADM155 and ADM4/1	“Y” (yes)
PHASE	Reporting only
OLS80G	“Y”(yes) for persistent events and “N”(no) for instantaneous events.

**(Default/Global) Severity** Indicates the current severity of the alarm:

- *Prompt* alarms require immediate maintenance.
- Maintenance on *deferred* alarms may be postponed.
- *Information* alarms are the lowest priority, indicating that maintenance may be required.

Besides indicating the current severity this value can indicate the default and/or global setting for this alarm. This is detailed in the table below.

For NE	Alarm Severity value indicates also..
ADM 155 and ADM 4/1	the default value on newly created resources.
ADM 16/1	the default value on newly created resources. that this value is used for existing resources whose setting for this alarm is set to <i>linked to global</i>
OLS80G	the default severity on persistent events. Not applicable to instantaneous events.

**(Default/Global) Reporting**

Indicates the reported state of the alarm:

- *Reported* alarms will be raised by the NE and reported to the ITM-SC.
- *Not Reported* alarms will not be reported at the ITM-SC. If this alarm condition occurs, the ITM-SC will have no record of it.

Besides indicating the report state this value can indicate the default and/or global setting for this alarm. This is detailed in the table below.

For NE	Alarm Report value indicates also..
PHASE, ADM 155 and ADM 4/1	the default value on newly created resources.
ADM 16/1, ADM 16/1 compact, AM1 Plus	the default value on newly created resources. that this value is used for existing resources whose setting for this alarm is set to <i>linked to global</i>

**(Default) Raise Hold Off**

Only applicable to ADM155, ADM 4/1 and PHASE NEs. Failures must be present on the NE for a *Raise Hold Off* period, before an alarm event is sent to the ITM-SC. The Raise Hold Off for

- the ADM155, ADM 4/1 NEs is indicated in seconds (0 -255 seconds). Only applicable to alarms that are of the *Transmission, Processing* or *Environment* alarm type. This value indicates the default value for the alarm on newly created resources.
- other NEs are not applicable. A “-” is displayed.

**(Default) Clear Hold Off**

Only applicable to ADM155, ADM 4/1 and PHASE NEs. Failures must be removed on the NE for a *Clear Hold Off* period, before an alarm is cleared on the ITM-SC. The Clear Hold Off for

- the ADM155 and ADM 4/1 NEs is indicated in seconds (0 -255 seconds). Only applicable to alarms that are of the *Transmission, Processing* or *Environment* alarm type.
- other NEs are not applicable. A “-” is displayed.

**MDO ID/Select MDO**

Applicable to ADM16/1, ADM16/1 compact and AM1 Plus NEs only. This value will indicate if an alarm is associated with an MDO and if so, to which MDO. The value “-” (or 0 in the edit window) indicate the alarm is not related to any MDO. Valid MDO Id’s are in the range of [1–4].

**Apply Settings to** Indicates whether the current settings are applied to the default for new resources or on existing resources. The *Existing Resources* option applies to the chosen event on all existing resources capable of raising that event.

This choice is applicable to ADM 155 and ADM 4/1 NEs only.

**Button description** The buttons in the NE Alarm Severity Information window are:

Button	Description
Factory Defaults	Resets all severities to factory default. This action can be applied to the default for new resources or existing resources. Greyed out for OLS80 G.
Edit	Opens the Edit NE Alarm Severities window. Greyed out for OLS80G.
Impose Settings	Imposes all Severities, Alarm Hold Off Periods and Reported/Not Reported settings on the NE. Valid for ADM155 and ADM4/1 NEs only. Greyed out for other NEs.



## Section: Setting NE Event Control Information

### Overview

---

**Purpose** Use this procedure to edit the information that controls how the ITM-SC responds to alarms from the NE. The setting of this information will depend on the event management philosophy used. The following information can be adjusted:

- the amount of time allowed for the ITM-SC to respond to alarms
- AIS invoking upon certain types of errors
- element alarm latching
- alarm reporting enabling/disabling.



## Setting NE Event Control Information

---

**When to use** To change the characteristics which determine the behavior of NE Alarms.

**Before you begin** Before performing this procedure consider the following:

- To prevent an alarm from being misinterpreted, setting the Lining Up parameter should be taken very seriously and always in accordance with your maintenance philosophy. It is highly recommended to deselect Lining Up after first installation/maintenance actions on an NE.

**Related information** Related procedures are:

- Setting NE Event Parameters
- Setting SLM Regenerator Alarm Information
- Setting WDACS Station Alarm Control
- Setting Alarm Parameters for Existing Resources
- Setting All NE Event Control
- Setting Manager Event Parameters
- Setting EMS Event Parameters
- Setting EMS Event Control

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]

Parameters used in this procedure can be found at Parameters for Setting NE Event Control Information [1-14].

**Procedure** Follow these steps to set NE alarm control:

---

- 1 Select Events -> NE Event Control from the top level menu.

**Result:**

The EMS - NE Event Control Information window is displayed.

---

- 2 To change the NE currently displayed select the Selection Dialog button and highlight the NE from which you want to set the Alarm Control parameters.

- 
- 3** Select *Edit* in the bottom of the EMS - NE Event Control Information window.

**Result:**

The EMS - Edit NE Event Control Information window is displayed.

- 
- 4** Change the available parameters when necessary.

- 
- 5** Click OK in the EMS - Edit NE Event Control Information window to confirm your selections.

**Result:**

The window closes and the EMS - NE Event Control Information window is updated.

- 
- 6** Click Close in the EMS - NE Event Control Information window to complete the procedure.

END OF STEPS



## Parameters for Setting NE Event Control Information

**Introduction** Parameters, as described below, indicate the settings of the NE Alarm. When a field does not apply to specific network element types, it is 'greyed out' or fixed at 0. In the table below the availability of the parameters is given for each type of NE.

Parameter\NE	ADM 155	ADM 4/1	ISM	SLM	RR	PHASE	ADM 16/1	OLS 80G	TM1 AM1	WDACS
Signal Alarm Raise Hold Off				x				x		
Equipment Alarm Raise Hold Off				x				x		
Alarm Raise Hold Off										x
Alarm Clear Hold Off				x				x		x
Station Alarm Raise & Clear Hold Off			x				x			
Station Alarms Disconnected			x				x			x
Station Alarms Suppressed			x		x		x	x		x
Station Alarms affected by Suppress							x			
Excessive Bit Error Rate (BER)				x						
Lining Up	x	x	x	x	x	x	x	x	x	x
Invoke AIS on Excessive Errors on Multiplex Section, High Order Path and Low Order Path			x							
Element Alarm Latching	x	x	x	x	x	x	x	x	x	x

Parameter	NE	ADM 155	ADM 4/1	ISM	SLM	RR	PHAS	ADM 16/1	OLS 80G	TM1 AM1	WDACS
NE Alarm History Recovery		x	x								

**Setting a selection**

A selection is set when the little square in front of the selection name is red after clicking on it. Clicking a second time makes the selection inactive again. The little square will turn grey.

**Signal Alarm Raise Hold Off**

This indicates the time in seconds that an NE verifies an active transmission alarm condition, before raising a station alarm on the ITM-SC. Values are 0 - 120 seconds

**Equipment Alarm Raise Hold Off**

This indicates the time in seconds that an NE verifies an active equipment alarm condition, before raising a station alarm on the ITM-SC. Values are 0 - 120 seconds.

**(Station) Alarm Raise Hold Off**

This indicates the time in seconds that an NE verifies an active alarm condition, before raising a station alarm on the ITM-SC. Values are 0 - 60 seconds with 1 s. interval for ISM and ADM 16/1 and 0–128 seconds for WDACS with a 0,5 s. interval.

**(Station) Alarm Clear Hold Off**

This indicates the time in seconds that the NE verifies an alarm condition has been cleared for, before clearing the station alarm condition. Values are 0 - 120 s. for SLM, 0 - 60 s. for ISM and ADM 16/1, both with a 1 s. interval. WDACS values range from 0–128 with a 0,5 s. interval.

**Station Alarms Disconnected**

If this parameter is set to *yes*, the Station Alarms have been disabled by interaction from the User Panel of the NE. The station alarms will not be activated if an alarm is raised. Values are *Disconnected* or *No Request*.

**(Station) Alarm Suppressed**

If *Suppress* is chosen then any alarms raised on the NEs will stop any current alarm notification on the station alarm interface. Subsequent alarms will force the station alarm to be raised again. Alarms are raised on ITM-SC regardless of how this option is set. When RR is chosen Alarm Suppression affects all alarms. Values are *Suppress* or *No Request*

**Station Alarms Affected by Suppression**

If this options is set to *Yes*, all subsequent station alarm notifications will be suppressed and so not visible on the station alarm interface. Only available to ADM16/1 NEs.

## Information

## Parameters for Setting NE Event Control

## Information

**Excessive Bit Error Rate (BER)** This parameter indicates the level of errors at which an excessive BER alarm will be raised from the SLM. Values are 10E-3 or 10E-4

**Lining Up** If enabled, alarms will not be reported for this NE. If the NE has alarms in the current list and lining up is enabled, the alarms are removed from the current list and placed in the history list. Use this option during first installation/maintenance of the NE, to prevent alarms being raised during the configuration process. When NE setup is complete, set this field to *No* and ITM-SC re-evaluates the faults on this NE and report any remaining ones.

**About invoking AIS** Regarding the company's event management philosophy AIS can be activated whenever a signal is degrading. A degrading signal will generate errors. These errors indicate the degradation of the signal.

Invoking AIS means that:

- an error count higher than 10E-3 on the Multiplex Section will cause AIS to be injected into the datasignal and a Remote Defect Indicator to be sent to the sending NE.
- an error count higher than 10E-3 on the High Order Path will cause AIS to be injected into the datasignal.
- an error count higher than 10E-3 on the Low Order Path will cause AIS to be injected into the datasignal.

It is recommended to enable AIS insertion so that downstream alarms that would be otherwise generated in case of high error rates, are prevented. When alarm latching is not used NE alarms need only be cleared to be moved from the current alarm list to the alarm history list. Still acknowledgment will be possible.

**Invoke AIS on Excessive Errors on Multiplex Section** If enabled, an error count, higher than 10E-3 on the Multiplex Section, will cause AIS to be injected into the datasignal and a Remote Defect Indicator (RDI) to be sent to the sending NE.

**Invoke AIS on Excessive Errors on High Order Path** If enabled, a high error count, higher than 10E-3 on the High Order Path, will cause AIS to be injected into the datasignal.

**Invoke AIS on Excessive Errors on Low Order Path** If enabled, a high error count, higher than 10E-3 on the Low Order Path, will cause AIS to be injected into the datasignal.

**Element Alarm Latching** If enabled, all alarms for this NE are latched. If alarms are latched, then an alarm remains in the current list until it is both cleared and acknowledged. If alarms are not latched, then alarms are removed from the current list once they have been cleared.

**NE Alarm History  
Recovery**

When an ITM-SC has lost its association with an NE the events cannot be forwarded to the ITM-SC. Some NEs can hold their own event information. On recovery of association the ITM-SC downloads the event information to update its own alarm database.



## Section: Setting SLM Regenerator Alarm Information

### Overview

---

**Purpose** Use this procedure to set Fault localization to report SLM Regenerator alarms to a specific ISM, ADM 16/1 or ADM 16/1 Compact, as reported by the NE. SLM Regenerator fault information can be passed via the F1 byte in the regenerator section to a managed ISM, ADM 16/1 or ADM 16/1 Compact. If this option is not used you are able to use the F1 byte as an user channel. The alarms for SLM regens are handled by the SLMs that are at the head or tail of the regen span. Regeneration Fault Localization allows SLM regenerators to report alarms via an NE at the end of the chain. This is facilitated by the alarms being sent in the F-Byte or the RS-DCC (D1,D2,D3 bytes).

□

## Setting SLM Regenerator Alarm Information

---

- When to use** To report SLM regenerator alarms via an ISM, ADM 16/1 or ADM 16/1 Compact to the ITM-SC.
- Before you begin** No prerequisites or precautions are needed when performing this procedure.
- Related information** Related procedures are:
- Setting NE Event Parameters
  - Setting NE Event Control Information
  - Setting Alarm Parameters for Existing Resources
  - Setting All NE Event Control
  - Setting Manager Event Parameters
  - Setting EMS Event Parameters
  - Setting EMS Event Control
- Related concepts are:
- Events [3-3]
  - Event Characteristics [3-6]
- Parameters used in this procedure can be found at Parameters for Setting SLM Regenerator Alarm Information [1-21].
- Procedure** Follow these steps to set Fault localization to report SLM Regenerator alarms to a specific ADM 16/1, ADM 16/1 Compact or ISM.
- 
- 1** Select *Events -> SLM Regen Alarm Info* from the top level menu.
- Result:**
- The *EMS - SLM Regen (= Regenerator) Alarm Information* window is displayed.
- 
- 2** Select the NE Name from the list of *Provisioned NEs* to which alarms of the Regenerators should be reported.
- Result:**
- The NE name and type appears in the selection box in this window.
- 
- 3** Click OK to confirm your selection.

- 4 Select an *MDI* if you wish to change its name.
- 5 Select Edit in the EMS - SLM Regen Alarm Information window. The EMS - Edit SLM Regen Alarm Information window is displayed.
- 6 Change *MDI name* if desired.
- 7 Set the *Regenerator Fault Reporting* to enabled or disabled.
- 8 Set the *Head/Tail Configuration* to Head or Tail.
- 9 Select OK in this window to confirm your selection.
- 10 Select Cl ose in the *EMS - SLM Regen Alarm Information* window to end setting Regen Fault Localization parameters.

**Result:**

The *EMS - SLM Regen Alarm Information* window closes to complete the procedure.

END OF STEPS



## Parameters for Setting SLM Regenerator Alarm Information

---

<b>Introduction</b>	The parameters, as described below, indicate the settings of the SLM Regenerator Alarm setup.
<b>Span Name</b>	The unique name of the regenerator span, derived from the SID (System Identity) of the Tail of the span and the Line Port Identity. This name is automatically generated
<b>Port</b>	The Port Identity (e.g. LR1.1) of the LPU ports. Applicable to all valid LPUs
<b>Head/Tail</b>	Indicates whether the SLM LPU Port is at the Head or the Tail of the regenerator span.
<b>Regen Fault Channel</b>	Indicates which embedded communication channel is used to pass the alarm information, either via the F1-Byte or the DCC Channel. Values are F1 or RS-DCC.
<b>Regenerator Fault Reporting</b>	This is for ADM 16/1 and ADM 16/1 Compact only. The values displayed are disabled or enabled. <ul style="list-style-type: none"><li>• enabled: faults are distributed to this NE</li><li>• disabled: no faults are reported</li></ul>
<b>Number of Regens</b>	The number of regenerators in the regeneration span. The maximum is 30.
<b>Type</b>	The Alarm Type fault management level. <ul style="list-style-type: none"><li>• Full: The Regen Alarm has additional locate information (slot and line), together with a full range of reported probable causes.</li><li>• Summary: The Regen Alarm has only a sub-set of the possible Probable Causes.</li></ul> When a regen span is selected from the list, the following information is provided: <ul style="list-style-type: none"><li>• Unknown indicates that the SLM cannot determine the alarm type being used</li><li>• Inconsistent identifies an error condition.</li></ul>
<b>MDI Id</b>	The unique (1-8) numeric identifier of a Miscellaneous Discrete Input.
<b>MDI Name</b>	The Miscellaneous Discrete Input Name of a user alarm. This has a maximum of 26 characters

**Head/Tail Configuration** Valid for ADM 16/1 and ADM 16/1 Compact only. Indicates whether the selected NE is head or tail.



## Section: Setting WDACS Station Alarm Control

### Overview

---

**Purpose** The user can suppress the activated station alarm by pressing the suppression button on the WDACS. Use this procedure to change or set which severities of the WDACS station alarms are suppressible.



## Setting WDACS Station Alarm Control

---

**When to use** When changing the settings for suppression on the WDACS.

**Before you begin** Before performing this procedure make sure:

- the new settings are in accordance with the maintenance philosophy.

**Related information** Related procedures are:

- Setting NE Event Parameters
- Setting NE Event Control Information
- Setting SLM Regenerator Alarm Information
- Setting Alarm Parameters for Existing Resources
- Setting All NE Event Control
- Setting Manager Event Parameters
- Setting EMS Event Parameters
- Setting EMS Event Control

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]

### Procedure

---

**1** Select *Events* -> *WDACS Station Alarm Control*

**Result:**

The *WDACS Station Alarm Control* window is displaying the current settings

---

**2** Select *Edit*

**Result:**

The *Edit WDACS Station Alarm Control* window is displayed

---

**3** Change the settings. Each severities can be selected for suppression

---

**4** Select *OK* to activate the settings

**Result:**

The *Edit WDACS Station Alarm Control* window disappears

---

- 
- 5** Select **C**lose in the *WDACS Station Alarm Control* window to complete the procedure.

END OF STEPS

---



## Section: Setting Event Parameters for Existing Resources

### Overview

---

**Purpose** Use this procedure to enable the selection of an alarm source and the display of the list of alarm probable causes for that instance to be displayed. The user specifies to what level of alarm source the restriction is to be applied and is then given information as to what the current enabled or disabled alarms are. An alarm source may therefore be any instance of an alarmable object such as an individual, NE, slot, port etc. The “Alarm Sources” list is intended to house objects if the result of the primary selection is more than one object. If only one object is involved then the “Alarm Sources” list will be greyed out and preselected and the “Reported Alarms-” and “Not Reported Alarms” lists filled in immediately.

This procedure is only valid for PHASE, OLS 80G, ADM 155, ADM 4/1, ADM 16/1, ADM 16/1 compact and AM1 Plus NEs.

□

## Setting Event Parameters for Existing Resources

---

**When to use** To set alarm reporting for existing resources

**Before you begin** Before performing this procedure consider the following:

- This procedure is only valid for PHASE, OLS 80G, ADM 155, ADM 4/1, ADM 16/1, ADM 16/1 compact and AM1 Plus NEs.

**Related information** Related procedures are:

- Setting NE Event Parameters
- Setting NE Event Control Information
- Setting SLM Regenerator Alarm Information
- Setting WDACS Station Alarm Control
- Setting All NE Event Control
- Setting Manager Event Parameters
- Setting EMS Event Parameters
- Setting EMS Event Control

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]

Parameters used in this procedure can be found at Parameters for Setting Event Parameters for Existing Resources [1-30].

**Procedure** Follow these steps to change the alarm severities and reporting state per resource on the applicable NEs.

---

- 1 Select *Events* -> *Event Parameters* -> *Existing Resource* from the top level menu.

**Result:**

The *EMS - Event Parameters for Existing Resources* window is displayed.

---

- 2 Select an *NE Type*.

**Result:**

Some entries in the Source Type field are highlighted or greyed out.

---

- 3 Select a Source Type.
-

**Result:**

Some entries in the Selection field can change

---

- 4 Use the *Selection Dialog Button* to specify the source type.

**Result:**

The sources field will be updated with the available resources on the source selected.

---

- 5 Select one source out of the list in the sources field, when necessary.

**Result:**

The Applicable Alarms field is now displaying all alarms which can be generated by the selected resource.

---

- 6 To edit multiple alarms select also the other alarms to change the parameters for.
- 

- 7 Click *Edit* to change the settings for the selected alarms.

**Result:**

The *EMS - Edit Event Parameters for Existing Resources* window is displayed.

---

- 8 Highlight the *Set to Defaults* option when necessary (ADM 155 and ADM 4/1 NEs only).
- 

- 9 Highlight the *Link to Global* option when necessary (ADM 16/1 and AM1 Plus NEs only).

**Result:**

If *Link to Global* is chosen, the *Severity*, *Reporting* and *Hold Off* buttons are greyed out. The alarm parameters for the selected alarms would be set to their defaults.

---

- 10 Change the *Severity*, *Reporting State* and/or *Hold off Times* when necessary.
- 

- 11 Click *OK* to confirm the changes.

**Result:**

The *EMS - Edit Event Parameters for Existing Resources* window closes.

---

**12** Click Close.

**Result:**

The *EMS - Event Parameters for Existing Resources* window closes to complete the procedure.

END OF STEPS

---



## Parameters for Setting Event Parameters for Existing Resources

---

**Introduction** These parameters, as described below, indicate the selection of instances and the applicable settings.

**NE Type** Filters the NE to restrict the resource types available.

**Resource type** Filters the resource type to specify which selection dialog button is displayed. The available resource types are detailed in the table below.

NE	Available resource types
OLS 80G	Port, Node, Logical port and SDH Channel
PHASE	Timing, Shelf, Slot, Port, AU, TU, VC and Transmission Protection.
ADM 155, ADM 4/1	Node, Timing, Slot, Port, Au, VC, TU, Timing Protection, Equipment Protection and Transmission Protection.
ADM 16/1	Node, Timing, Shelf, Slot, Port, AU, VC, TU, Equipment Protection, Transmission Protection and Regen.
ADM 16/1 compact	Node, Timing, Shelf, Slot, Port, AU, VC, TU, Equipment Protection, Transmission Protection, Regen, Logical Port and SDH Channel.
AM1 Plus	Node, Timing, Shelf Slot, Port, U, VC, TU, Transmission Protection, Logical Port and .

**Select TCM Points** Select TCM Points is greyed out for all NE Types except PHASE and for all sources except AU, VC or TU. The default value is unselected. When selected the resources related to TCM for the selected TP are displayed. These resources have the same layout as those for existing AU, VC or TU resources with the addition of SINK or NIM as appropriate.

**Selection Dialog Button** Selecting the selection dialog button will display a selection dialog window according the Resource Type chosen. All of these selection dialog windows will enable the user to select an available resource on the selected resource type.

**Resources** Shows all the resources available on the selected resource. For example when selecting *Port* in the *Resource Type* field and selecting a specific port by means of the selection dialog button the Resources field will indicate all resources available on this selected port.

- Applicable Events** Indicate the alarms and their parameters which can be generated by the selected resource in the Resources field.
- Linked to global** Indicates if the alarm parameters on the selected resource are linked to the global parameters for the alarm. This is only applicable for ADM 16/1, ADM 16/1 compact and AM1 Plus NEs.
- Severity** Indicates the current severity of the alarm:
- *Prompt* alarms require immediate maintenance.
  - Maintenance on *deferred* alarms may be postponed.
  - *Information* alarms are the lowest priority, indicating that maintenance may be required.
- Reporting** Indicates the reported state of the alarm:
- *Reported* alarms will be raised by the NE and reported to the ITM-SC.
  - *Not Reported* alarms will not be reported at the ITM-SC. If this alarm condition occurs, the ITM-SC will have no record of it.
- For ADM155 the *Not Reported* state is equivalent to a severity of *No Alarm*.
- Raise Hold Off (sec./msec.)** Only applicable to ADM155, ADM 4/1 and PHASE alarms that are not of the *Quality of Service* alarm type. Failures must be present on the NE for a *Raise Hold Off* period, before an alarm event is sent to the ITM-SC. The Raise Hold Off for
- the ADM155, ADM 4/1 NEs is indicated in seconds (0 -255 seconds).
  - other NEs are not applicable. A “-” is displayed.
- Clear Hold Off** Only applicable to ADM155, ADM 4/1 and PHASE alarms that are not of a *Quality of Service* alarm type. Failures must be removed on the NE for a *Clear Hold Off* period, before an alarm is cleared on the ITM-SC. The Clear Hold Off for
- the ADM155 and ADM 4/1 NEs is indicated in seconds (0 -255 seconds).
  - other NEs are not applicable. A “-” is displayed.
- Alarm Type** Displays the long description text for the last selected alarm in the applicable alarm list.

**Buttons to use** The buttons on the Alarm Parameters for Existing Resources Information window are detailed in the table below.

Button	Description
De-Select All	De-Selects all alarms as displayed in the Applicable alarms field.
Select All	Selects all alarms as displayed in the Applicable alarms field.
Refresh	Only applicable for ADM 16/1, ADM 16/1 compact and AM1 Plus NEs. Allows refreshing of the <i>Probable Causes</i> field.



## Section: Setting All NE Event Control

### Overview

---

**Purpose** Use this procedure to enable alarm latching and/or NE Alarm History Recovery for several or all NEs. Latching helps to ensure that alarms for network elements cannot be moved to the History Alarm List without being acknowledged. The user can set the latching status per Network Element or for all Network Elements at once. When the latter is selected the NE Alarm Control Information window will be displayed. When an ITM-SC has lost its association with an NE the events cannot be forwarded to the ITM-SC. Some NEs can hold their own event information. On recovery of association the ITM-SC downloads the event information to update its own alarm database. The NE can be enabled/disabled for this alarm recovery.

□

## Setting All NE Event Control

---

**When to use** To change latching and/or NE Alarm History Recovery settings for NEs.

**Before you begin** Before performing this procedure consider the following:

- Alarm History Recovery is only available for ADM155 and ADM 4/1 NEs.

**Related information** Related procedures are:

- Setting NE Event Parameters (ITM-SC Maintenance Guide (SMG))
- Setting NE Event Control Information (SMG)
- Setting WDACS Station Alarm Control (SMG)
- Setting SLM Regenerator Alarm Information (SMG)
- Setting Alarm Parameters for Existing Resources (SMG)
- Setting Manager Event Parameters (SMG)
- Setting EMS Event Parameters (ITM-SC Administration Guide (SAG))
- Setting EMS Event Control (SAG)

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]

Parameters used in this procedure can be found at Parameters for Setting All NE Event Control [1-36].

**Procedure** Follow these steps to set alarm latching:

---

- 1 Select *Events* -> *Multi NE Alarm Control* from the top level menu.

**Result:**

The *EMS - Multi NE Event Control* window, showing the present settings, is displayed.

---

- 2 To set Latching and/or NE Alarm History Recovery for an individual NE, select *Individual NE alarm Control*.

**Result:**

The *EMS - NE Event Control Information* window is displayed. By means of the procedure described in procedure “Setting NE Alarm Control Information” individual NEs can be latched.

---

- 3** To set Latching and/or Alarm History Recovery for *ALL* NEs select *Edi t*.

**Result:**

The *EMS - Edit All NE Event Control* window is displayed.

---

- 4** Set the Latching and Alarm History Recovery for all NEs to *On* or *Of f*
- 

- 5** Select *OK*.

**Result:**

The *EMS - Edit All NE Event Control* window closes.

---

- 6** Select *Cl ose*.

**Result:**

The *EMS - Multi NE Event Control* window closes to complete the procedure.

END OF STEPS

---



## Parameters for Setting All NE Event Control

---

**Introduction** The fields needed during setting All NE Event Control are described below:

**Latching state** The following information is displayed for the latching status:

<b>Latching Status</b>	<b>Displayed When...</b>
On for Some NEs	Latching has been previously set only on a per NE basis.
On for All NEs	Latching for all NEs has been previously set.
Off for All NEs	Latching for all NEs was not previously set.

**NE Alarm History Recovery** Alarm History Recovery is only available to ADM155 and ADM 4/1 NEs. The following information is displayed for the NE Alarm History Recovery status:

<b>NE Alarm Recovery Status</b>	<b>Displayed when...</b>
On for Some NEs	NE Alarm History Recovery has been previously been enabled on a per NE basis.
On for All NEs	NE Alarm History Recovery for all NEs has been previously enabled.
Off for All NEs	NE Alarm History Recovery for all NEs was not enabled.



## Section: Setting Manager Event Parameters

### Overview

---

**Purpose** Use this procedure to customize event severities for each management alarm which the ITM-SC can generate. By using the ITM-SC it is possible to customize the event severity of Element Level Management events associated with the selected NE.



## Setting Manager Event Parameters

---

**When to use** To change severities/report state of Element Level Management events.

**Before you begin** Before performing this procedure consider the following;

- To prevent an event from being misinterpreted, setting the event severities should always be in accordance with the maintenance philosophy.
- Changes to event severity information does not affect alarms currently raised on the ITM-SC, only new events will use the new severity and report status.
- This procedure is for Element Level Management events only.

**Related information** Related procedures are:

- Setting NE Event Parameters
- Setting NE Event Control Information
- Setting SLM Regenerator Alarm Information
- Setting WDACS Station Alarm Control
- Setting Alarm Parameters for Existing Resources
- Setting All NE Event Control
- Setting EMS Event Parameters
- Setting EMS Event Control

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]

Parameters used in this procedure can be found at Parameters for Setting Manager Event Parameters [1-40].

**Procedure** Follow these steps to set the management alarm severities:

---

- 1 Select Events -> Event Parameters -> Management from the top level menu.

**Result:**

The EMS - Management Event Parameters window is displayed.

---

- 2 With *Factory Defaults* alarms can be set at once to the factory defaults.

**Result:**

A confirmation window will be displayed.

---

- 3 To set the severity per event, select an event from the list and click Edit.

**Result:**

The EMS - Edit Management Parameter window for the selected event is displayed.

---

- 4 Set the *Severity* and the *Report* fields to the desired values.
- 

- 5 Select OK in the Edit Management Event Parameters window to confirm your selections.

**Result:**

The window closes and the EMS - Management Event Parameters window is updated.

---

- 6 Select Close in the EMS - Management Event Parameters window to close the window and complete the procedure.

END OF STEPS

---



## Parameters for Setting Manager Event Parameters

---

**Introduction** The parameters, as describes below, indicate the setting of severity and report state of the Element Level Manager Events.

**Definition: element level management event** Element Level Management events are those events associated with the management of the NE but are generated by the ITM-SC.

**Description** The description of the cause of the Element Level Manager event.

**Class** Indicates the type of event. This is either Alarm or Autonomous Event

**Severity** The current severity of this event. The values can be *Prompt*, *Deferred*, *Information*. or *No Change*.

**Report** Indicates the report state of the event. This can be either *Reported* or *Not Reported*.

- *Reported* events are raised and reported on ITM-SC.
- *Not-reported* events are not displayed on the ITM-SC. The user will be unaware when an unreported events occurs.

□

## Section: Setting EMS Event Parameters

### Overview

---

**Purpose** Use this procedure to customize EMS Event parameters for each EMS Event which the ITM-SC can generate.



## Setting EMS Event Parameters

---

**When to use** To change the severities and report state of EMS related alarms.

**Before you begin** Before performing this procedure consider the following precautions:

- Setting EMS Event Parameters can only be done for ITM-SC administrators or users with administration privileges.
- To prevent an event from being misinterpreted, setting the event parameters should always be in accordance with the maintenance philosophy.
- Changes to event severity information do not affect alarms currently raised on the ITM-SC, only new events will use the new severity and report status.

**Related information** Related procedures are:

- Setting NE Event Parameters (ITM-SC Maintenance Guide (SMG))
- Setting NE Event Control Information (SMG)
- Setting SLM Regenerator Alarm Information (SMG)
- Setting WDACS Station Alarm Control (SMG)
- Setting Alarm Parameters for Existing Resources (SMG)
- Setting All NE Event Control (ITM-SC Administration Guide (SAG))
- Setting Manager Event Parameters (SMG)
- Setting EMS Event Control (SAG)

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]

Parameters used in this procedure can be found at Parameters for Setting EMS Event Parameters [1-44].

**Procedure** Follow these steps to set the EMS Level Manager events severities and report state:

---

- 1 Select Event -> Event Parameter -> EMS from the top level menu.

**Result:**

The EMS - EMS Event Parameters window is displayed.

- 
- 2** With the Factory Defaults button events can be set at once to the factory defaults.

**Result:**

A confirmation window will be displayed.

---

- 3** To set the severity per event, select an event from the list and select Edit.

**Result:**

The EMS - Edit EMS Event Parameters window for the selected alarm is displayed.

---

- 4** Set the Severity and the *Report* fields to the desired options.
- 

- 5** Select OK in the EMS - Edit EMS Parameters window to confirm your selections.

**Result:**

The window closes and the EMS - EMS Event Parameters window is updated.

---

- 6** Select Close in the EMS - EMS Event Parameters window to close the window and complete the procedure.

END OF STEPS

---



## Parameters for Setting EMS Event Parameters

---

**Introduction** The fields used to change the EMS Level Manager Event parameters are described below.

**Definition: EMS Event** To change the severities and report state of EMS related alarms.

**Description** The description of the cause of the alarm.

**Severity** Indicates the current severity of this alarm. This can be *Prompt*, *Deferred*, *Information* or *No Change*.

**Report** Either Reported or Not Reported.

- *Reported* alarms are raised and reported on ITM-SC.
- *Not Reported* alarms are not displayed on the ITM-SC, and you will be unaware when an unreported alarm occurs.



## Section: Setting EMS Event Control

### Overview

---

**Purpose** Use this procedure to set latching on EMS Events and to control storage of all events.



## Setting EMS Event Control

---

<b>When to use</b>	To change the characteristics of the EMS Events as well as to control the event storage.
<b>Before you begin</b>	No prerequisites or precaution need to be considered when performing this procedure.
<b>Related information</b>	<p>Related procedures are:</p> <ul style="list-style-type: none"><li>• Setting NE Event Parameters (ITM-SC Maintenance Guide (SMG))</li><li>• Setting NE Event Control Information (SMG)</li><li>• Setting SLM Regenerator Alarm Information (SMG)</li><li>• Setting WDACS Station Alarm Control (SMG)</li><li>• Setting Alarm Parameters for Existing Resources (SMG)</li><li>• Setting All NE Event Control (ITM-SC Administration Guide (SAG))</li><li>• Setting Manager Event Parameters (SMG)</li><li>• Setting EMS Event Parameters (SAG)</li></ul> <p>Related concepts are:</p> <ul style="list-style-type: none"><li>• Events [3-3]</li><li>• Event Characteristics [3-6]</li></ul> <p>Parameters used in this procedure can be found at Parameters for Setting EMS Event Control [1-48].</p>
<b>Procedure</b>	<p>Follow these steps to set latching and to control the storage of EMS events:</p> <hr/> <p><b>1</b> Select Events -&gt; EMS Event Control from the top level menu.</p> <p><b>Result:</b></p> <p>The EMS - NE Event Control Information window is displayed with the current settings.</p> <hr/> <p><b>2</b> Select Edit to change the settings. This button is only available for the “Supervisor”.</p> <p><b>Result:</b></p> <p>The EMS - Edit EMS Event Control Information window is displayed.</p>

.....  
**3** Change settings to customize EMS Event Control.

**Result:**

When enabling any of the options the number of events or hours is required.

.....  
**4** Select OK to impose the new settings.

.....  
**5** Select Close.

**Result:**

The EMS - Edit EMS Event Control Information window disappears.

.....  
**6** Select Close.

**Result:**

The EMS - EMS Event Control Information window disappears.

.....  
E N D O F S T E P S



## Parameters for Setting EMS Event Control

---

<b>Introduction</b>	The parameters, described below, indicate the latching state and the event storage thresholds for all events.
<b>Definition EMS Events</b>	EMS events are those which report problems with the management system (ITM-SC) and so are not associated to any specific NE.
<b>EMS Alarm Latching</b>	When events are latched, all events must be both cleared and acknowledged before they are moved to the history list. When events are not latched, the events are moved to the history list when a fault is cleared. The options are Disabled or Enabled.
<b>Current Event List Absolute Limit</b>	The maximum number of events that can be stored in the current event list. The options are Disabled or Enabled. When enabled the minimum value is 25, the maximum value is 99,999 and the default value is 10,000.
<b>Current Event List Warning Threshold</b>	The number of events that can be stored in the current list before a management event warns you that the event list is nearing capacity. This event will only be cleared once the number of events has fallen to 75% of this threshold. The options are Disabled or Enabled. When enabled the minimum value is 25, the maximum value is 99,999 and the default value is 8,000.
<b>History Alarm List Absolute Limit</b>	The maximum number of events that can be stored in the history list. The options are Disabled or Enabled. When enabled the minimum value is 25, the maximum value 80,000 and the default value is 20,000.
<b>History Alarm List Warning Threshold</b>	The number of events that can be stored in the history list before a alarm notifies the user the event list is nearing capacity. This alarm can be cleared only when the number of events has fallen to 75% of this threshold. The options are Disabled or Enabled. When enabled the minimum value is 25, the maximum value is 80,000 and the default value is 16,000.
<b>History Alarm List Deletion Time</b>	The time (in hours) before events are automatically deleted from the history list. The options are Disabled or Enabled. When enabled the default value is 240

## Task Cluster: Displaying Events

### Overview

---

**Purpose** The purpose of this section is to group logically related tasks. This section will provide an introduction to all tasks used to view all events on the ITM-SC and to customize presentation of the event information



## Displaying Events

---

**Introduction** To view the events in the network being managed several tools are provided within the ITM-SC.

Display type	Displays...
Network Map	the highest severity of all alarms on a NE by means of the NE icon turning into a color.
Alarm List	all alarms available. This list can be filtered and sorted. Via this window alarms can be acknowledged, deleted and more detailed information about the alarms can be obtained.
Autonomous Event List	all autonomous events available. This list can be filtered and sorted. Via this window autonomous events can be acknowledged, deleted and more detailed information about the autonomous events can be obtained.
Alarm Summary	displays last alarm arrived as well as the total amount of alarms sorted out by severity and raised/acknowledged status. This list can be customized by a filter.
Alarm Statistics	the amount of NE alarms per NE

**Objective** The purpose of these Display tasks is to view all events on the ITM-SC and to customize presentation of the event information.

**Outcome** The user will be provided with the alarm presentation which is customized on his/her needs.

**Display tasks available** The table below indicates when to perform a specific display task

To..	refer to the task
view and sort the events in the Event List	Using the Event Lists [1-53]
view details of a specific event	Viewing Event Details [1-59]
acknowledge events	Acknowledging Events [1-62]
delete history events	Deleting History Events [1-65]

<b>To..</b>	<b>refer to the task</b>
filter the events in the Event List	Configuring the Event List [1-68]
filter the events to be presented in the Alarm Summary	Customizing Alarm Summary Filters [1-72]
view the number and highest severity for each NE managed	Viewing Alarm Statistics [1-77]



## Section: Using the Event Lists

### Overview

---

**Purpose** Use this procedure to view the current and historical events of the network and to acknowledge the current events of the network. You can also delete historical events from the history alarm list and generate a report for displaying or printing.



## Using the Event Lists

---

**When to use** To evaluate alarms by filtering and sorting the events in every possible way.

**Before you begin** Before performing this procedure make sure:

- when wanting to the display the autonomous event list, the ITM-SC is licensed for ADM 155– ADM4/1 NE management

When performing this procedure consider the following:

- If events are described Alarms and Autonomous Events are meant.
- Alarms are displayed through the Alarm List window while the Autonomous Events are displayed through the Autonomous Event List window.

**Related information** Related procedures are:

- Viewing Event Details
- Acknowledging Events
- Deleting History Events
- Configuring the Event Lists
- Customizing Alarm Summary Filters
- Viewing Alarm Statistics

The related concept is:

- Event Display [3-9]

Parameters used in this procedure can be found at Parameters for Using the Event Lists [1-56].

**Procedure** Follow these steps to list the Event lists.

---

- 1 To view the alarms select Events -> Alarm List from the top level menu. To view the Autonomous alarms select Events -> Autonomous Event List from the top level menu or the Auto-Event button in the main EMS - Menu window .

**Result:**

The *EMS - Alarm List* or *EMS - Autonomous Event List* window is displayed.

- 
- 2 To see the time the alarm/autonomous event was raised or cleared and a cause description for the alarm instead of the code, select Show Time.

**Result:**

The list is updated with time, date and cause information.

---

- 3 Select Current to display the events that are still present in the network.
- 

- 4 Select History Alarms to update the list with an overview of events that are not present any more in the network and are moved to the history list.
- 

- 5 Select Both to update the list with an overview of both the Current and History events.
- 

- 6 When you want to filter the list by *Location, NE type, NE name, Status, Level, Category, Severity, Source* or *Time Frame* please proceed to *Configuring the Event List* procedure.
- 

- 7 When you want to acknowledge or delete an alarm please proceed to the Acknowledge Events or Deleting Events procedure.
- 

- 8 Click Selection dialog button in the *Alarms/Autonomous Events are being sorted by* field to sort the events.

**Result:**

The Alarm Sorting Dialogue or Autonomous Event Sorting Dialogue is displayed.

---

- 9 Select the first key, and second key when necessary.
- 

- 10 Click Apply to activate the sorting criteria. Select Close.

**Result:**

The Sorting dialog window disappears.

---

---

**11** Click **Apply** to change the selections for this event list only.

---

**12** Click **Close**.

**Result:**

The *EMS - Event List* window or *EMS - Autonomous Event List* window closes.

END OF STEPS

---



## Parameters for Using the Event Lists

---

**Introduction** Events are divided into two categories:

- Alarms, these are also called instantaneous events
- Autonomous events.

The options and buttons, as described below, provide possibilities to display additional event information and to select multiple events for further actions.

**Access to the Event Lists** The Alarm Lists can be accessed via

- the top level menu
- a double click on a node (the alarm list will be filtered by that node)
- the node pop-up menu by selecting the node by using the right mouse button (the alarm list will be filtered by that node)

The Autonomous Event List can be accessed via:

- the top level menu
- the autonomous event button on the network map.

**Display** You can switch the listing of events between displaying the *Current*, *History* or *Both*, by using the options on the left-hand side of the window. It is possible to display the time the events were raised by clicking on the Show Time option on the right-hand side of the window. The time will then replace the *Description* in the Alarm List or Autonomous Event List window. Select *Show Time* to display the Description field again.

**Show Time** Shows the time raised, time cleared and cause of the event. Replaces the Description column in the Alarm List or Autonomous Event List window. The date convention used is dd/mm/yy and the convention for time is hh:mm:ss

**Select All** Selects all event in the Alarm List or Autonomous Event List window.

**De-select All** Clears all selections in the Alarm List or Autonomous Event List window.

**Details** Displays details about the selected event. Please refer to the Viewing Alarm Details procedure.

**Operation** The options to choose for further action are: acknowledge and delete. When event latching is enabled the alarm must be acknowledged before the alarm moves to the history list upon clearance. Deletion is only possible to history events. Please refer to the Acknowledging Events and the Deleting History Events procedures



## Section: Viewing Event Details

### Overview

---

**Purpose** Use this procedure to view details of one of the alarms on the Alarm List or Autonomous Event list.



## Viewing Event Details

---

**When to use** To investigate an event by displaying all available details about the event.

**Before you begin** Before performing this procedure consider the following:

- If events are described Alarms and Autonomous Events are meant.
- This procedure will instruct how to view one of the respective event lists.

**Related information** Related procedures are:

- Using the Event Lists
- Acknowledging Events
- Deleting History Events
- Configuring the Event Lists
- Customizing Alarm Summary Filters
- Viewing Alarm Statistics

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]
- Event Display [3-9]

**Procedure** Use this procedure to view details of the events on the event list.

---

**1** Select (highlight) the event in the EMS - Alarm List or EMS - Autonomous Event List window which you want to see the details.

---

**2** Select Details.

**Result:**

Details of the event are displayed in the EMS - Event Details Information window. When latching is enabled for this event the fields *Acknowledged by*, *Clearance acknowledged by* and *Time clearance acknowledged* will not be greyed out.

---

**3** Click Next and Previous to move forward and backwards through the list.

- 
- 4** Click Close to end viewing event details.

**Result:**

The EMS - Event Details Information window closes.

END OF STEPS

---



## Section: Acknowledging Events

### Overview

---

**Purpose** Use this procedure to acknowledge raised alarms in the Alarm List and/or the Autonomous Event List.



## Acknowledging Events

---

**When to use** To confirm an event has been notified.

**Before you begin** This procedure describes both how to acknowledge alarms or autonomous events.

**Related information** Related procedures are:

- Using the Event Lists
- Viewing Event Details
- Deleting History Events
- Configuring the Event Lists
- Customizing Alarm Summary Filters
- Viewing Alarm Statistics

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]
- Event Display [3-9]

**Procedure** Follow these steps to acknowledge alarms in the Alarm List:

---

- 1 Select Events -> Alarm List from the top level menu to acknowledge an Alarm. Select Events -> Autonomous Event List from the top level menu to acknowledge an Autonomous Event.

**Result:**

The EMS - Alarm List window or EMS - Autonomous Event list window is displayed.

---

- 2 Select (highlight) the alarms or autonomous events which are to be acknowledged.
- 

- 3 To acknowledge all, select *Select All* instead.
- 

- 4 If a mistake is made select Deselect All to deselect the alarms again, then start again to select alarms or autonomous events for acknowledging.
- 

- 5 Click Acknowledge under *Operation*.
-

- 
- 6** Click Apply to acknowledge the selected alarms or autonomous events.

**Result:**

The selected alarms or autonomous events are changed to the status of Acknowledged.

- 
- 7** Click Close.

**Result:**

The EMS - Alarm List window or EMS - Autonomous Event List window closes.

END OF STEPS



## Section: Deleting History Events

### Overview

---

**Purpose** Use this procedure to delete history alarms or history autonomous events from the respective Event Lists.

History alarms are alarms with status cleared and acknowledged by the users when latching is enabled. History autonomous events are autonomous events with status cleared.



## Deleting History Events

---

**When to use** To remove unnecessary events from the system. This can be necessary to free disk resources.

**Before you begin** Before performing this procedure consider the following:

- Deleted events cannot be recovered.

**Related information** Related Procedures are:

- Using the Event Lists
- Viewing Event Details
- Acknowledging Events
- Configuring the Event Lists
- Customizing Alarm Summary Filters
- Viewing Alarm Statistics

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]
- Event Display [3-9]

**Procedure** Follow these steps to delete history alarms from the Alarm List. This procedure below describes both how to delete alarms or autonomous events.

---

- 1 Select *Events* -> *Alarm List* from the top level menu to delete an Alarm. Select *Events* -> *Autonomous Event List* from the top level menu to delete an Autonomous Event.

**Result:**

The *EMS - Alarm List* window or *EMS - Autonomous Event List* window is displayed.

---

- 2 To change the NE use the *Selection Dialog Button* to choose another NE.
- 

- 3 Select *History* or *Both* in the Display field.
- 

- 4 Select (highlight) the alarms or autonomous events which are to be deleted.

.....  
**5** To delete all, select *Select All* instead.  
.....

**6** If a mistake is made select *Deselect All* to deselect the alarms again, then start again to select alarms or autonomous events for deletion.  
.....

**7** Click *Delete* under *Operation*.  
.....

**8** Click *Apply* to delete the selected alarms or autonomous events.

**Result:**

The selected alarms or autonomous events are deleted.  
.....

**9** Click *Close*.

**Result:**

The *EMS - Alarm List* window or *EMS - Autonomous Event List* window closes.

.....  
E N D O F S T E P S  
.....



## Section: Configuring the Event Lists

### Overview

---

**Purpose** Use this procedure to configure the Alarm List or Autonomous Event List display. You can apply a set of pre-defined filters on the common alarm page, to view only a restricted set of the available events. Several filter conditions are possible, which are logically 'ANDed'.



## Configuring the Event List

---

**When to use** To restrict the number of events in the alarm list by setting appropriate filters.

**Before you begin** Before performing this procedure consider the following:

- Events are divided into two categories: Alarms (these are also called instantaneous events) and Autonomous events
- If events are described Alarms and Autonomous Events are meant.

**Related information** Related procedures are:

- Using the Event Lists
- Viewing Event Details
- Acknowledging Events
- Deleting History Events
- Customizing Alarm Summary Filters
- Viewing Alarm Statistics

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]
- Event Display [3-9]

**Procedure** Follow these steps to filter out events by any parameter such as slot, NE, connection, time frame etc.:

---

- 1 To filter the Alarm List select *Events -> Alarm List* from the top level menu. To filter the Autonomous Event List select *Events -> Autonomous Event List* from the top level menu.

**Result:**

The respective *EMS - Event List* window is displayed.

---

- 2 Select the Selection Dialog button in the upper right corner of the respective Event List window.

**Result:**

The *EMS - Alarm List Configuration* or *Autonomous Event List Configuration* window is displayed.

- 
- 3 To reset the system defaults (initial settings) select *Reset to System Defaults* and click *Apply*.

---

  - 4 Set the Node Name filter as desired:
    - *All* will display an overview of alarms of all NEs in the network.
    - *Several* will display an overview of alarms of several NEs in the network. If you have chosen for alarms of several NEs you should specify which NE by using the selection dialog button in the Node Name field.

---

  - 5 In the *EMS - Alarm List* window select the *Card/Slot* filter as desired:
    - *All* will display an overview of alarms of all cards and slots.
    - *One* will display an overview of alarms of a card in a specific slot. To select the card use the selection dialog button. When selecting this button the *EMS Slot Selection Dialog* window is displayed.

---

  - 6 To filter on the NE Location select *One* and select the selection dialog button. (The location can be entered when the Node is created.)

---

  - 7 In the Alarm List window specify the filter by selecting options in the fields: *level*, *NE type*, *category*, *source*, *status* and *severity*.

---

  - 8 In the *EMS - Autonomous Event List* window specify the filter by selecting options in the fields: *Level*, *NE type*, *category*, *status* and *severity*.

---

  - 9 Select either *all alarms from now*, *all* or *range* to specify a time range.

---

  - 10 When selecting range, set the appropriate time range by using the selection dialog buttons at the end of the *to* and *from* field.

---

  - 11 To save the current settings as default filter click *Save as Default*.

---

**12** Click **Apply** to update the *EMS - Alarm List* or *EMS - Autonomous Event List* with the filter as set.

---

**13** Click **Close**.

**Result:**

The respective event list window closes.

END OF STEPS



## Section: Customizing Alarm Summary Filters

### Overview

---

**Purpose** Use this procedure to set or view window filter options for Alarm Summary. Alarm filtering makes the information on the alarm list more accessible. You can select, filter and sort alarms on a number of criteria individually or in any combination for each type of alarm log, before they are presented to a user. Using filters does not affect the entries to the current and history alarm logs. The ITM-SC maintains a log of all the current active alarms that are relevant for the area of operation. The log contains a minimum of the alarm date and time, location, type and severity.



## Customizing Alarm Summary Filters

---

**When to use** To change the filter characteristics of the Alarm Summary.

**Before you begin** No prerequisites or precautions are needed when performing this procedure.

**Related information** Related procedures are:

- Using the Event Lists
- Viewing Event Details
- Acknowledging Events
- Deleting History Events
- Configuring the Event Lists
- Customizing Alarm Summary Filters
- Viewing Alarm Statistics

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]
- Event Display [3-9]

Parameters used in this procedure can be found at Parameters for Customizing Alarm Summary Filters [1-74].

**Procedure** Follow these steps to customize the alarm filter summary:

---

- 1 From the ITM-SC menu select Summary Filter.

**Result:**

The EMS - Alarm Summary Filter window is displayed.

---

- 2 Click Edit. The EMS - Edit Alarm Summary Filter window is displayed.
- 

- 3 Select one or more Levels to filter alarm reporting by alarm level.
- 

- 4 Select one or more *Categories*. This will only apply to NE alarms.
- 

- 5 Select one or more *Sources*. This will only apply to NE alarms.
-

- 
- 6 Select a *Status*. Set one or more States to filter alarm reporting by alarm status.

- 
- 7 Select *Severity*. Set one or more Severities to filter alarm reporting by alarm severity.

- 
- 8 Click OK to activate the selected options.

**Result:**

The EMS - Edit Alarm Summary window closes.

- 
- 9 Click Close in the Alarm Summary Filter window to end setting alarm filter options.

**Result:**

The EMS - Alarm Summary Filter window closes to complete the procedure.

END OF STEPS



## Parameters for Customizing Alarm Summary Filters

---

**Introduction** The parameters, as described below, indicate the settings of filters for the Alarm Summary Filter.

**Selecting filters** Filters are selected by selecting the square in front of the filter item. As result the square highlighted and the corresponding alarms are shown on the main ITM-SC window.

**Level** The NE or Element Management System (EMS) where the problem occurred.

**Category** At the Element Level, displays alarms by alarm types:

- Equipment alarms caused by unit failure or laser faults.
- Transmission alarms caused by faults detected in the transmission signal.
- Processing alarms caused by inconsistencies in processing provisioned data.
- Environment alarms caused by malfunctions in external equipment supervised by the ITM-SC.
- Management alarms caused by communication faults between management system and NEs.
- Quality of Service alarms relevant only to ADM155 and PHASE, indicating when the network element PM thresholds have been exceeded.
- User Attention alarms are notifications to the user about abnormal behavior to the ITM-SC or reaching resource limitations, whether enforced by the user or not.

**Source** Select the source of the alarms to be reported:

- Node, Shelf, Slot, Port
- AU, VC, TU
- Timing (Timing Markers), SLM Regen and SLM Line (when reporting to specific ISM NEs is enabled), and Protection (NEs in a Multiplexer Section Protection group), Channel, Supervisory (concerning the supervisory system of the OLS80G), TCM or Ethernet (ADM 16/1 and AM1 only)

Filters

Parameters for Customizing Alarm Summary

Filters

**Status** Alarms by their current status:

- Raised alarms that are not yet acknowledged or cleared on the Alarm List window.
- Cleared alarms whose causes have been removed.
- Acknowledged alarms that are acknowledged and confirmed, but are not yet cleared.

**Severity** Alarms by their severity:

- Prompt requires immediate maintenance because a primary system service is affected.
- Deferred requires maintenance but may wait because no primary system service is affected.
- Information requires no maintenance because no system service is affected.



## Section: Viewing Alarm Statistics

### Overview

---

**Purpose** Use this procedure to view Alarm Statistics of NE alarms. Alarm information displayed includes NE Name, Total alarms, Highest Severity, Total raised and needing acknowledgment. This is an information only window.



## Viewing Alarm Statistics

---

**When to use** To display the number of alarms by NE.

**Before you begin** No prerequisites or precautions are needed when performing this procedure.

**Related information** Related procedures are:

- Using the Event Lists
- Viewing Event Details
- Acknowledging Events
- Deleting History Events
- Configuring the Event Lists
- Customizing Alarm Summary Filters

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]
- Event Display [3-9]

Parameters used in this procedure can be found at Parameters for Viewing Alarm Statistics [1-78].

**Procedure** Follow these steps to view alarm statistics:

---

- 1 Select Events -> Alarm Statistics from the top level menu.

**Result:**

The EMS - Alarm Statistics window is displayed, showing the Alarm Statistics.

---

- 2 Click Close to end viewing Alarm Statistics.

**Result:**

The EMS - Alarm Statistics window closes to complete the procedure.

END OF STEPS

---



## Parameters for Viewing Alarm Statistics

---

<b>Introduction</b>	The parameters described below display information about the NEs under management of the ITM-SC.
<b>NE Name</b>	The name of the NE connected to the ITM-SC.
<b>Total Alarms</b>	The total number of alarms currently on that NE.
<b>Highest Severity</b>	The severity of the highest severity alarm on that NE, either <i>Prompt</i> , <i>Deferred</i> or <i>Information</i> .
<b>Total Raised</b>	The total number of alarms currently raised on the NE. Only persistent and latched alarms are counted in this section.
<b>Unacknowledged</b>	The number of alarms requiring acknowledgment on the NE. These are the latched and persistent alarms. Once they have been acknowledged they will go into the History list.



## Task Cluster: Alarm Storage and Archiving

### Overview

---

**Purpose** The purpose of this section is to group logically related tasks. This section will provide an introduction into storage of alarm data.



## Alarm Storage and Archiving

---

**Introduction** The ITM-SC stores the event information until the storage capacity is reached. If the capacity is exceeded it will delete the oldest events. It can be necessary to store the alarm information externally. Also for analysis purposes it can be necessary to store the data on an external device as well to freeze the current event situation in a report.

**Objective** The purpose of these tasks is to store alarm data in either a report or archive. The latter can be exported to tape.

**Archive tasks available** The table below indicates when to perform a specific archive task.

To..	refer to the task
view the event storage capacity parameters	Viewing Event Storage Capacity [1-82]
generate an Event Report to freeze a specific event situation	Generating Event Reports [1-85]
create an archive of all events stored on the ITM-SC	Create an Event Archive [1-89]
write a created Event Archive to tape	Copy Event Archive to the Default Device [1-91]
cancel a daily made automatic Event Archive	Cancel a Scheduled Archive [1-93]
delete an Event Archive	Delete an Event Archive [1-94]

**Outcome** After performing these procedures the user has stored the event data in a report or outside the ITM-SC.



## Section: Viewing Event Storage Capacity

### Overview

---

**Purpose** Use this procedure to check the event store capacity of the ITM-SC. You can view the used and remaining capacity of current and historical logs. Events both include alarms and autonomous events.



## Viewing Event Storage Capacity

---

**When to use** To display the number of events stored on the ITM-SC in either the current or history event list. To change the settings of the event store capacity please refer to the Setting EMS Alarm Control Information procedure. These parameters can be set by an administrator only.

**Before you begin** No prerequisites or precautions are needed when performing this procedure.

**Related information** Related procedures are:

- Generating Event Reports
- Managing Event Archives

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]
- Event Storage and Archiving [3-10]

Parameters used in this procedure can be found at Parameters for Viewing Event Storage Capacity [1-83].

**Procedure** Follow these steps to view the alarm store capacity.

---

- 1 Select Events -> EMS Event Store Capacity from the top level menu.

**Result:**

The EMS - Event Store Capacity window is displayed.

---

- 2 By selecting Print the information within this window will be put into a report. By means of the report browser a hardcopy print can be made.
- 

- 3 Select Close to end viewing the EMS - Event Store Capacity.

**Result:**

The EMS - Event Store Capacity window closes to complete the procedure.

END OF STEPS

---



## Parameters for Viewing Event Storage Capacity

---

<b>Introduction</b>	The parameters described below indicate information about the number of events stored, the warning threshold and absolute maximum for both the current and history event list.
<b>System notifies when capacity reached</b>	The system automatically notifies you when the event log exceeds a programmed capacity threshold (typically 75% full). Archiving historical information and/or deleting historical events can be performed before log space has been used and information is lost. When the current store reaches its full capacity, an instantaneous alarm is raised. This alarm, when acknowledged, changes its state to "Cleared" and the oldest 15% of the instantaneous and/or cleared latched persistent alarms waiting acknowledgment are automatically moved to the history store. If this occurs in the history store, the oldest 15% are deleted.
<b>Warning Threshold</b>	The number of events that can be stored before a EMS alarm is raised to inform you that the alarm list is nearing capacity. The alarm will only be cleared once the number of alarms has fallen to 75% of this threshold.
<b>Absolute Limit</b>	The maximum number of events that can be stored.
<b>Total Number Present</b>	The total number of events currently stored.
<b>Unacknowledged</b>	The total number of events that are not acknowledged.
<b>% Occupancy</b>	The percentage of the list that has been used.



## Section: Generating Event Reports

### Overview

---

**Purpose** Use this procedure to generate reports from the Alarm List. Reports generated from the list include the following information about the alarm:

- severity
- NE name
- Source (card/slot)
- status
- description



## Generating Event Reports

---

**When to use** To store a list of alarms for future reference.

**Before you begin** Before performing this procedure consider the following:

- Events are divided into two categories: Alarms (also called instantaneous events) and Autonomous events
- If Event are described, Alarms and Autonomous Events are meant.

**Related information** Related procedures are:

- Viewing Event Storage Capacity
- Creating an Event Archive
- Writing an Event Archive to Tape
- Canceling a Daily Event Archive
- Deleting an Event Archive

Related concepts are:

- Events [3-3]
- Event Characteristics [3-6]
- Event Storage and Archiving [3-10]

Parameters used in this procedure can be found at Parameters for Generating Event Reports [1-87].

**Procedure** Follow these steps to generate a report on the filtered events in the Alarm list or Autonomous Event list:

---

- 1 Select *Event -> Alarm List* from the top level menu to create an Alarm report. Select *Event -> Autonomous Event List* from the top level menu to create an Autonomous Event report.

**Result:**

The Alarm List window or Autonomous Event list window is displayed.

---

- 2 Select the list (current, history or both) you want to print.
- 

- 3 Select *Print*.

**Result:**

The *Report-Printing* window is displayed.

---

.....  
**4** To print to printer (hardcopy) directly select **Print to Printer** and select the number of copies.

.....  
**5** To print to report click **Print to File**. Make sure the automatic generated file name is not already present. Files will be overwritten without notice. This report can be viewed via the **Report Browser**.

.....  
**6** Select **OK**

**Result:**

A file/hardcopy will be generated

.....  
**7** Select **Close**.

**Result:**

The *Alarm List* window or *Autonomous Event* window closes.

END OF STEPS



## Parameters for Generating Event Reports

---

**File directory and format** The report can be printed to file. The location of these files are:  
*/var/spool/itm/sc/reports/<ServerName>/* where *<ServerName>* is the name of the server. The format of these file are ASCII.



## Section: Managing Event Archives

### Overview

---

**Purpose** Use this procedure to manage event archives.

**When to perform** Procedures are provided to store events in a file, the event archive, write the archive to tape, stop a daily archive and to delete archives from the ITM-SC.



## Create an Event Archive

---

**When to use** When wanting to store events on the ITM-SC.

**Before you begin** Before performing this procedure consider the following:

- Performing an immediate archive (option now) within 15 minutes of a scheduled Event Archive will postpone the scheduled Event Archive with 15 minutes.

**Related information** The related procedures are:

- Viewing Event Storage Capacity (ITM-SC Maintenance Guide)
- Generating Event Reports (ITM-SC Maintenance Guide)
- Copy archive to the Default Device
- Cancel a Scheduled Archive
- Delete an Archive

The related concept is:

- Event Storage and Archiving [3-10]

Parameters used in this procedure can be found at Parameters for Creating an Event Archive [1-95].

**Procedure** Follow these steps to create an event archive.

---

- 1 Select *Events* -> *Event Archive* from the top level menu.

**Result:**

The *EMS - Event Archive Information* window, showing the current archives, is displayed.

---

- 2 Select the *Create* menu item (under *Archive Menu*) to create an event archive.

**Result:**

The *EMS - Create Event Archive* window is displayed.

---

- 3 Enter the *Archive File Name*.
- 

- 4 Enter the *Archive Description*.

- 
- 5** Set the *Scheduled Archive* time and date.
- Select *Now* to start the archive immediately.
  - Select *Daily at Specified Time* to select a daily time for the archive. If you select this option, you must enter the time in the *Daily Archive Time* field.

- 
- 6** Select *OK*.

**Result:**

If selected the option to create a daily archive, a window will inform you if this request cannot be performed immediately. If so a new scheduled time for execution will be given.

If you submit another request for creating a daily archive before the new scheduled time, the latest request will replace the existing request

When selected the *Now* option the *EMS - Create Event Archive* window will close.

- 
- 7** When necessary select *OK* to finish this procedure

END OF STEPS



## Copy Event Archive to the Default Device

---

**When to use** When wanting to store an archived set of events on the default device.

**Before you begin** No prerequisites or precautions need to be considered when performing this procedure

**Related information** The related procedures are:

- Viewing Event Storage Capacity (ITM-SC Maintenance Guide)
- Generating Event Reports (ITM-SC Maintenance Guide)
- Create an Event Archive
- Cancel a Scheduled Archive
- Delete an Archive

The related concept is:

- Event Storage and Archiving [3-10]

Parameters used in this procedure can be found at Parameters for Creating an Event Archive [1-95].

**Procedure** Follow these steps to copy an archive to the default device.

---

- 1 Select *Events* -> *Event Archive* from the top level menu.

**Result:**

The *EMS - Event Archive Information* window, showing the current settings, is displayed.

---

- 2 Select the Archive you wish to transfer to the device and select the *Write to Device* option from the *Archive Menu* to write an event archive to tape.

**Result:**

A user confirmation window is displayed which prompts you to check that the media is present in the default device and warns that any existing files on the media will be overwritten.

---

- 3 Select OK.
- 

- 4 Wait for the system to finish its data transfer. When writing the archive file to another device the original file remains on the ITM-SC.

- 
- 5 Select *File -> Close* in the *EMS - Event Archive Information* window.

**Result:**

The window will disappear.

END OF STEPS

---



## Cancel a Scheduled Archive

---

**When to use** When wanting to stop the automatic archiving of events.

**Before you begin** No prerequisites or precautions need to be considered when performing this procedure

**Related information** The related procedures are:

- Viewing Event Storage Capacity (ITM-SC Maintenance Guide)
- Generating Event Reports (ITM-SC Maintenance Guide)
- Create an Event Archive
- Copy archive to the Default Device
- Delete an Archive

The related concept is:

- Event Storage and Archiving [3-10]

Parameters used in this procedure can be found at Parameters for Creating an Event Archive [1-95].

**Procedure** Follow these steps to cancel a scheduled archive.

---

- 1 Select *Events* -> *Event Archive* from the top level menu.

**Result:**

The *EMS - Event Archive Information* window, showing the current settings, is displayed.

---

- 2 Select *Archive* -> *Cancel Daily Archive* to cancel the daily event archive.

**Result:**

A confirmation window is displayed.

---

- 3 Select OK to confirm this cancellation.
- 

- 4 Select *File* -> *Close* in the *EMS - Event Archive Information* window.

**Result:**

The window will disappear.

END OF STEPS

---



## Delete an Event Archive

---

- When to use** When an EM Archive is not needed anymore it's better to remove this archive from the system to free disk resources.
- Before you begin** No prerequisites or precautions need to be considered when performing this procedure
- Related information** The related procedures are:
- Viewing Event Storage Capacity (ITM-SC Maintenance Guide)
  - Generating Event Reports (ITM-SC Maintenance Guide)
  - Create an Event Archive
  - Copy archive to the Default Device
  - Cancel a Scheduled Archive
- The related concept is:
- Event Storage and Archiving [3-10]
- Parameters used in this procedure can be found at Parameters for Creating an Event Archive [1-95].
- Procedure** Follow these steps to delete an archive:
- 
- 1 Select *Events* -> *Event Archive* from the top level menu.  
**Result:**  
The *EMS - Event Archive Information* window, showing the current settings, is displayed.
- 
- 2 Select the archive to be deleted and select *Archive Menu* -> *Delete*.  
**Result:**  
A user confirmation window is displayed.
- 
- 3 Select **Yes** to confirm this deletion.
- 
- 4 Select *File* -> *Close* in the *EMS - Event Archive Information* window.  
**Result:**  
The window will disappear.
- END OF STEPS
- 



## Parameters for Creating an Event Archive

---

- Introduction** The parameters needed to create an event archive are described below.
- Archive File Name** Indicates the ID for the archive. Must follow DOS/UNIX naming rules with a maximum of 8 characters.
- Archive File Size** The size of the created event archive will depend on the number of records stored as well as the content of the records. The size is indicated in kBytes. A displayed size of 0 indicates the file is less than 1 kByte.
- Archive Description** Description of the archive. Maximum of 50 characters, including spaces. Must follow DOS/UNIX naming rules.
- Schedule Archive** Selects either an instantaneous archive (now) or a pre-scheduled archive (daily at specified time). This specified time will be rounded up to the nearest 15 minutes (for example: quarter past, half past)
- Daily Archive Time** Specifies the time an archive is made each day.
- File directory and format** The PM Archive will be stored on the ITM-SC server or Stand-alone. It will be stored in twofold in the *var/spool/itm/sc/archive/alarmhist* directory. One file (\*.ARC.txt) will in a tab separated ASCII format while the other (\*.gz) will be in a gz compressed format. The \*.gz file can be decompressed by the UNIX command `uncompress`. Other decompress programmes are widely available.
- When performing the Copy Event Archive to the Default Device [1-91] procedure note that only a copy is made from the compressed archive file.







## 2 Performance Monitoring

### Overview

---

<b>Objectives</b>	To perform customized Performance Monitoring via the ITM-SC. The activities can be divided in three categories: <ul style="list-style-type: none"><li>• <i>Configuration</i>; e.g. configuration of Termination Points (TP), Setting of threshold alerts, resetting counters and baselining</li><li>• <i>Display</i>; show data via current measurements (running measurements) or PM Reports (finished measurements)</li><li>• <i>Archiving and deleting of PM Data</i>; deleting PM Reports and archiving PM data</li></ul>
<b>Definition</b>	Performance Monitoring (PM) is a bundle of features enabling the user to perform pro-active maintenance by using the ITM-SC.
<b>Outcome</b>	A customized monitoring system which is able to detect possible degradation points within the network.
<b>Intended use</b>	This chapter explains the concepts of Performance Monitoring and describes procedures to configure the ITM-SC to obtain performance monitoring measurements of the network. Furthermore it is explained how to display, print and store these measurements.
<b>What is not part of this chapter</b>	Procedures for provisioning termination points are described in the Subnetwork Provisioning Guide (SPG).

**Abbreviations used** When Network Elements OLS 80G, ADM 4/1, ADM 16/1, ADM16/1c, AM 1 (Plus) and TM 1 are described WaveStar®OLS 80 G, WaveStar®ADM 4/1, WaveStar® ADM 16/1, WaveStar® ADM16/1 compact, WaveStar® AM 1 (Plus) and WaveStar® TM 1 are meant.



## Task Cluster: Configuration of PM

### Overview

---

**Purpose** The purpose of this section is to group logically related tasks. This section will provide an introduction to all tasks used to setup Performance Monitoring (PM) and change or reset the PM parameters.



## Configuration of PM

---

**Introduction** Only Termination Points (TP) are able to supply PM data to the ITM-SC. TP points are those points within the network where signals are terminated. This can be for example at the PDH physical interface.

**Objective** Configuration is needed to prepare the ITM-SC for collecting data from the Network. This data will give an indication for the performance of the network.

**Configuration tasks available** The table below indicates when to perform a specific task

To..	refer to the task
enable Termination Points for PM	TP Configuration [2-6]or TP Configuration via Subrack [2-9]
set thresholds for alarm reporting on termination points	Configuring Thresholds for non-OLS 80G NEs [2-16] or Configuring Thresholds for the OLS 80G [2-19]
set the values of all measurement parameters to zero	Reset Digital Counters [2-26]
baseline the optical measurement parameters of the OLS 80G	Baselining of Optical Parameters [2-32]

**Outcome** When configuration tasks are performed the system is able to record PM data and give customized alarm response to crossing of thresholds.



## Section: Configuring Termination Points

### Overview

---

**Purpose** Use this procedure to set performance monitoring (PM) on termination points.



## TP Configuration

---

**When to use** To enable performance monitoring on a termination point (TP). A TP is a point in the SDH network where a signal is terminated.

**Before you begin** Before performing this procedure the following prerequisites must be met:

- Ports to be configured as Termination Point (TP) must be in-service
- The ITM-SC is licensed for PM

Before performing this procedure consider the following:

- No TU-12, TU-2 and TU-3 Connection Termination Points (CTPs) can be configured for PM in the normal *TP Configuration* procedure. The CTPs can only be accessed from the subrack. Refer to the *TP Configuration via Subrack* procedure as provided in this section.
- No TCM Points can be configured via this procedure. To do so refer to the shortcut:*Provisioning->Transmission->Termination Points-> TCM Points* menu.

**Related information** Related procedures are:

- TP Configuration via Subrack
- Configuring Thresholds
- Reset Digital Counters
- Baselineing of Optical Parameters

Related concepts are:

- PM Measurement Points [3-12]
- PM Measurement Methodology [3-15]
- Tandem Connection Monitoring [3-19]
- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]

Parameters used in this procedure can be found at Parameters for Configuring Termination Points [2-12].

**Procedure** Follow these steps to set performance monitoring on NE termination points:

---

- 1 Select *Performance -> Measurement -> TP Configuration*.

**Result:**

The *EMS - PM TP Configuration* window is displayed.

---

- 2 To configure a new TP for PM select the *Select i on Di al og*.

**Result:**

The *EMS - PM NE/Multiple TP Selection* window is displayed.

---

- 3 To monitor Tandem Connection Termination Points, select *Select TCM Points* and select the appropriate *TCM Type* and *TCM Section Monitored* (PHASE only).
- 

- 4 To monitor a primary ISDN mode E1 select either *PDH to SDH* or *SDH to PDH* in the E1 Direction box. (AM 1 Plus only).
- 

- 5 Select an *NE Name* from the NE Name list.

**Result:**

The *TP Id* list is displayed with termination points corresponding to the selected TP type (VC4 at default).

---

- 6 To change the list of TPs select another *TP Type* in the *TP* field. This will act as an filter on the TP Id list.
- 

- 7 Select a *Termination Point* to be monitored from the TP Id list.
- 

- 8 If you select *Select Al l* TPs then all displayed TPs are selected for configuration of PM.
- 

- 9 Select OK in the *EMS - PM TP Selection* window to confirm the selection.

**Result:**

The *EMS - PM TP Selection* window closes. The selected TPs are now available for configuration of PM.

---

- 10 Set the time interval in the *Mew Measurement Period(s)* field on which the performance measurements must be performed.

Performance Monitoring can be disabled by selecting *Off* for all three time intervals.

.....

- 11** Select *Apply* to activate the settings for these Termination Points.

**Result:**

When *On* is chosen the measurement will start now.

.....

- 12** Repeat the procedure from Step 2 to configure other termination points, or go to the next step to complete the procedure.
- .....

- 13** Select *Close*.

**Result:**

The *EMS - PM TP Configuration* window closes to complete the procedure.

END OF STEPS

.....



## TP Configuration via Subrack

---

**When to use** To enable performance monitoring on a termination point (TP) via the subrack. A TP is a point in the SDH network where a signal is terminated.

**Before you begin** The following prerequisites must be met:

- Ports to be configured as Termination Point (TP) must be in-service
- The ITM-SC is licensed for PM

Before performing this procedure consider the following:

- No TCM Points can be configured via this procedure. To do so refer to the shortcut:*Provisioning->Transmission->Termination Points-> TCM Points* menu.

**Related information** Related procedures are:

- TP Configuration
- Configuring Thresholds
- Reset Digital Counters
- Baselineing of Optical Parameters

Related concepts are:

- PM Measurement Points [3-12]
- PM Measurement Methodology [3-15]
- Tandem Connection Monitoring [3-19]
- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]

Parameters used in this procedure can be found at Parameters for Configuring Termination Points [2-12].

**Procedure** Follow these steps to set performance monitoring on NE termination points via the subrack of the NE:

---

- 1 Select *Performance -> Measurement -> TP Configuration via subrack*.

**Result:**

The *EMS - Provisioned NE Subrack* window will display the latest selected subrack (for the very first time this window will be empty.)

- 
- 2 To change the NE select the *Select i on Di al og*. The *NE Selection Dialog* window is displayed to choose the NE desired.

**Result:**

After completing the NE selection the belonging subrack is displayed.

---

- 3 If selecting an Optical Channel (OCH) of an OLS80G NE, select *All* TPs. Otherwise proceed with the next step.

**Result:**

The *PM configured TP Selection* window is displayed to without slot filtering for the selected NE. This enables the selection of OCH TPs.

---

- 4 Select a *slot* in the *EMS - Provisioned NE Subrack* window to configure TPs of the slot.

**Result:**

The *EMS - PM TP Configuration* window is displayed.

---

- 5 To configure a new TP for PM click the *Select i on Di al og* button in the *EMS - PM TP Configuration* window.

**Result:**

The *EMS - PM Multiple TP selection* window pops up.

---

- 6 Set a TP Type in the *TP* field. This will act as a filter on the *TP Id* list.
- 

- 7 Select a Termination Point to be monitored from the *TP Id* list. If *Select All TPs* is selected then all displayed TPs are selected for configuration of PM.
- 

- 8 Click OK in the *EMS - PM Multiple TP Selection* window to confirm the selection.

**Result:**

The *EMS - PM Multiple TP selection* window closes. The selected TPs are now available for configuration of PM.

---

---

**9** Set the time interval in the *New Measurement Period(s)* field on which the performance measurements must be performed. Performance Monitoring can be disabled by selecting *Off* for all time intervals.

---

**10** Click *Apply* to activate the settings for these Termination Points.

**Result:**

When *On* is chosen the measurement will start now.

---

**11** Repeat the procedure from Step 5 to configure other termination points, or go to the next step to complete the procedure.

---

**12** Click *Close*.

**Result:**

The *EMS - PM TP Configuration* window disappears.

---

**13** Click *Close*.

**Result:**

The *EMS - Provisioned NE Subrack* window disappears.

END OF STEPS



## Parameters for Configuring Termination Points

---

**Introduction** Configuring Termination Points (TPs) for Performance Monitoring (PM) can be done via two procedures:

- *TP Configuration* (called the normal TP Configuration)
- *TP Configuration via subrack*

The parameters as described below will enable the user to set configure the Termination Points (TPs) for Performance Monitoring. All parameters appear in the various windows used throughout both procedures.

**NE Name** Name of the NE selected

**NE Type** Type of the NE selected.

**Select TCM Points** If the current NE does not support TCM the Select TCM Points option or if the TP Type selected cannot have TCM points attached the *Select TCM Points* option is greyed out.

Valid TP options are: VC4, VC3, VC12, AU4, TU3, TU2 and TU12. The default value is *unselected*.

**TCM Type** Greyed out if the measurement point is not located on a TCM point. Indicates the nature of the Tandem Connection Monitoring Termination Point. The default value is *Sink*. Both ends of a TC Trail are called *Sink* while an intermediate Termination Point is called *NIM* (Non-Intrusive Monitoring).

**TCM Section Monitored** Greyed out if the measurement point is not located on a TCM point. Indicates the applicable section of the measurements. The default value is *Net*. The tandem connection (TC) trail segment is called the network (*Net*). The other segment which accumulates the values across the path including the TC trail segment is called the outgoing (*Out*) segment.

**E1 Direction** Applicable for AM 1 Plus NEs only. This will indicate whether a quality calculation (CRC-4) is done on the ingoing E1 (PDH to SDH) or on the outgoing E1 (SDH to PDH). This monitoring can be used only in primary ISDN mode.

**TP ID** The IDs of the Termination Point of the selected NE.

**New Measurement Period** The options On, Off and No Change are provided for 15 minutes unidirectional, 24 hours unidirectional and 24 hours bidirectional bins. The 24 hours bidirectional bin is only available on ADM 16/1 NEs.

Select

- On to enable PM for the selected TPs
- Off to disable PM for the selected TPs
- No Change if the status of the TP for that bin does not have to change.

**TP** Displays a list of all TP types. Selecting an option will filter the TP Id list.

**Port Mode** Indicates the current Port Mode (Monitored / Not Monitored / Auto). For VC TTPs on ADM16/1 NEs, this column lists the TP Mode. Not applicable for WDACS.

**Configured** Displays time and date when the TP was enabled for PM

**Measurement Period** Displays which bin was activated for this TP. Can be either 15 minutes unidirectional, 24 hours unidirectional or 24 hours bidirectional (ADM 16/1 only). If a TP is configured for example for both 15 minutes unidirectional and 24 hours unidirectional there will be 2 entries in the list, one for each bin.

When selected a WDACS NE and changing either the 15 minute or 24 hour unidirectional value, the corresponding 15 minute or 24 hour selection will change to the new selection. Both values are coupled together for the WDACS NEs.

**Slot color indication** In the *TP Configuration via subrack* procedure slots are colored according to their status. Slots on the OLS 80G rack will always be colored cream, even if no TPs on any card on that subrack are being monitored.

Color	Meaning
Blue	There are no TPs on this card which can be configured for monitoring. You cannot select this slot.
White	A card is present in this slot, but it does not have any termination points configured for monitoring. You can apply performance monitoring to the slot only if it set up for it during provisioning.
Cream	There are one or more TPs on that card which are being monitored.

**Buttons to use** The following buttons can be encountered during configuration of TPs

Button	Action
Alarms	Will display the alarm list filtered on the selected NE
All TPs	Will display the <i>PM Configured TP Selection</i> window for the selected NE without slot filtering. This will enable selection of OCH TPs.
Auxiliary Units 12NCs	Will display the <i>Auxiliary Units 12 NC Information dialog</i> window. Applicable to PHASE NEs only.
Update System	Will perform a system update. A confirmation window is shown before the update is performed.



## Section: Configuring Thresholds

### Overview

---

**Purpose** This procedure allows you to display and/or configure the threshold values associated with the various measurement parameters for a configured termination point. The Threshold Crossing Alert (TCA) is used to notify the user that the current value of one of the measurement parameters has reached or exceeded a defined threshold value. This can be used to provide an early warning indication for transmission degradation, which may lead to pro-active maintenance.



## Configuring Thresholds for non-OLS 80G NEs

---

**When to use** To enable/customize alarm notifications of TPs which are under PM.

**Before you begin** Before performing this procedure make sure:

- PM is enabled for the TP under examination.

Consider the following

- The TPs of the 24 hours bidirectional measurement period are not subject to threshold settings.

**Related information** Related procedures are:

- Configuring Thresholds for the OLS 80G
- Configuring Termination Points
- Reset Digital Counters
- Baselining of Optical Parameters

Related concepts are:

- PM Data Threshold [3-29]
- PM Measurement Parameters [3-21]

Parameters used in this procedure can be found at Parameters for Configuring Thresholds [2-22].

**Procedure** Follow these steps to configure the PM threshold information for ADM155, ADM 4/1, ADM 16/1 (c), AM1 (Plus), TM1, WDACS and Phase NEs:

---

- 1 Select *Performance* -> *Measurement* -> *TP Threshold Configuration*.

**Result:**

The *EMS - PM Threshold Information* window is displayed.

---

- 2 Click the *Select i o n D i a l o g* button.

**Result:**

The *EMS - PM Configured NE/Multiple TP Selection* window is displayed.

---

- 3 To monitor Tandem Connection Termination Points, select *Select TCM Points* and select the appropriate *TCM Type* and *TCM Section Monitored* (PHASE only).

- 
- 4 To monitor a primary ISDN mode E1 select either *PDH to SDH* or *SDH to PDH* in the E1 Direction box. (AM 1 Plus only).
- 

- 5 Select an *NE* and one or more *TP Ids*.

**Result:**

The options provided in the TP field act as an filter on the TP Id list.

---

- 6 Click OK.

**Result:**

The *EMS - PM Configured NE/Multiple TP Selection* window disappears. In the *EMS - PM Threshold Information* window the first TP is pre-selected and its threshold properties of the measurement parameters are shown.

---

- 7 To view an other TP, select the TP out of the list.

**Important!** Note that no TP selection is allowed from the TP Id list. The configuration entered will be applied to all TPs in the list! The values displayed are those relevant to the first TP.

---

- 8 To configure the threshold properties click Edit.

**Result:**

The *EMS - Edit PM Threshold Information* window is displayed.

---

- 9 For Phase, ADM 4/1 and ADM 155 NEs enable/disable the Threshold Crossing Alert by selecting/de-selecting the toggle box. For ADM 16/1 NEs no individual measurement parameters can be disabled/enabled. Select either *Disable All* or *Enable All*. For ADM 4/1 and ADM 155 NEs this value will be set to *Disabled* when the Threshold Severity is set to Not-Reported. This can be set via *Events -> Event Parameters -> Specific Resource*.
- 

- 10 When enabled change the Threshold values when necessary.
- 

- 11 If applicable to the NE-type set the *Near End SES Declaration Threshold* to the desired value.
-

.....  
**12** If applicable to the NE-type set the *Far End SES Declaration Threshold* to the desired value.  
.....

**13** Click **Apply** to activate the setting.  
.....

**14** Click **Close**.

**Result:**

The *Edit PM Threshold Information* window closes.  
.....

**15** Click **Close** on the *PM Threshold Information* window to complete the procedure.

.....  
E N D O F S T E P S  
.....



## Configuring Thresholds for the OLS 80G

---

**When to use** To enable/customize alarm notifications of TPs which are under PM.

**Before you begin** Before performing this procedure make sure:

- PM is enabled for the TP under examination.

Consider the following

- The TPs of the 24 hours bidirectional measurement period are not subject to threshold settings.

**Related information** Related procedures are:

- Configuring Thresholds for non-OLS 80G NEs
- Configuring Termination Points
- Reset Digital Counters
- Baselineing of Optical Parameters

Related concepts are:

- PM Data Threshold [3-29]
- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]

Parameters used in this procedure can be found at Parameters for Configuring Thresholds [2-22].

**Procedure** Follow these steps to configure the threshold information for the OLS 80G.

---

- 1 Select *Performance* -> *Measurement* -> *OLS80G TP Threshold Configuration*.

**Result:**

The *EMS - PM Optical Threshold Information* window is displayed.

---

- 2 Select the *Select i on Di al og* button.

**Result:**

The *EMS - PM Configured NE/ Multiple TP Selection* window is displayed.

---

- 3 Select an NE and one or more TPs.

**Result:**

The options provided in the TP field act as a filter on the TP list.

---

- 4 Click OK.

**Result:**

The *EMS - PM Configured NE/TP Selection* window disappears. In the *EMS - PM Optical Threshold Information* window the first TP is pre-selected and its threshold properties of the measurement parameters are shown (except the LBC-SU and SPR-SU for the LDA4 telemetry pack).

---

- 5 To view an other TP, select the TP out of the list.
- 

- 6 To configure the threshold properties click Edit.

**Result:**

The *EMS - Edit PM Optical Threshold Information* window is displayed.

---

- 7 Note that no TP selection is allowed from the *TP list*. The configuration entered will be applied to all TPs in the list! The values displayed are those relevant to the first TP.
- 

- 8 Enable/disable the Threshold Crossing Alert by selecting/de-selecting the *toggle box*.
- 

- 9 Change the Threshold values when necessary.
- 

- 10 Click Apply.

**Result:**

The changes are activated.

---

- 11 Click Close.

**Result:**

The *EMS - Edit PM Optical Threshold Information* window disappears.

---

- 
- 12** In the *PM Optical Threshold Information* window select **C**lose to quit viewing OLS 80G threshold information.

END OF STEPS

---



## Parameters for Configuring Thresholds

---

<b>Introduction</b>	The parameters, as described below, give information about the selected TP, and the threshold values of the measurement parameters.
<b>TP</b>	Lists all available TP for the selected NE type. When a TP is not available the option will be greyed out.
<b>Port Mode</b>	Indicates whether the port mode of the current TTP is monitored, not-monitored or set to auto. Not applicable for WDACS NEs.
<b>Configured</b>	Displays the time and date when the TP was enabled for PM.
<b>NE Name</b>	Name of the NE selected
<b>NE Type</b>	Type of the NE selected. This should be ADM 155, AM1, AM1 Plus, TM1, PHASE, ADM 4/1, ADM 16/1, ADM 16/1 compact, WDACS or OLS 80G.
<b>TCM Type</b>	Greyed out if the measurement points are not TCM points.  Indicates the nature of the Tandem Connection Monitoring Termination Point. The value can be either <i>Sink</i> or <i>NIM</i> . Both ends of a TC Trail are called <i>Sink</i> while an intermediate Termination Point is called <i>NIM</i> (Non-Intrusive Monitoring).
<b>TCM Section Monitored</b>	Greyed out if the measurement points are not TCM points.  Indicates the applicable section of the measurements. The value can be <i>Net</i> or <i>Out</i> . The tandem connection (TC) trail segment is called the network ( <i>Net</i> ). The other segment which accumulates the values across the path including the TC trail segment is called the outgoing ( <i>Out</i> ) segment.
<b>E1 Direction</b>	Applicable for AM 1 Plus NEs only. This will indicate whether a quality calculation (CRC-4) is done on the ingoing E1 (PDH to SDH) or on the outgoing E1 (SDH to PDH). This monitoring can be used only in primary ISDN mode. E1 Direction is greyed out if the measurement points are not E1 Termination Points.
<b>Measurement Period</b>	The length of time the measurement was configured for, for the selected TP: 15 minutes unidirectional or 24 hours unidirectional. The measurement period 24 hours bidirectional is not subject to threshold settings.

<b>TP ID</b>	The ID of the Termination Point Selected.
<b>Measurement Parameters</b>	Refer to the concepts of Performance Monitoring for the explanation of the available measurement parameters.
<b>Threshold Crossing Alert Enabled</b>	Indicates if the threshold is enabled, disabled or not applicable for this network element. This field is only available for Phase and ADM 16/1 NEs.
<b>Raise Threshold</b>	When this threshold is reached or exceeded the user will be notified.
<b>Clear Threshold</b>	When the actual value drops below or equals this threshold the notification to the user will be cleared.
<b>Near end SES Declaration Threshold</b>	The number of errored blocks per second used to declare a SES interval (default = 30%). This is applicable to the Near End. This value is read only for ADM 16/1 NEs.
<b>Far end SES Declaration Threshold</b>	The number of errored blocks per second used to declare a SES interval (default = 30%). This is applicable to the Far End.
<b>Optical Measurement Parameter</b>	Parameters which are used to monitor the optical performance of the OLS 80G.
<b>Threshold Crossing Alert Status</b>	Displays whether Threshold Crossing Alert is enabled, disabled or not available for the measurement parameter. This is only applicable for PHASE, ADM 16/1 (compact), AM 1, AM 1 Plus, ADM4/1, ADM155 and WDACS equipment. Values can be either Enabled, Disabled or N/A. For ADM 4/1 and ADM 155 NEs, the value will be set to Disabled if the <i>TCA Severity</i> is set to <i>Not Reported</i> and will be set to enabled otherwise.
<b>Threshold Crossing Alert Threshold</b>	Displays the threshold value of the measurement parameter in integers. If the values are factory configured, FIXED will be displayed. N/A indicates the measure parameter is not available.
<b>Buttons description</b>	The buttons in the windows are:

Button	Description
Select all TPs	Select all TPs of the selected NE only. All configurable TPs are displayed.
De-Select all TPs	De-Select all TPs of the selected NE only. No TPs are displayed for this NE.

Button	Description
Enable All	Enables Threshold Crossing Alert for all Measurement parameters and for all TPs listed in the TP ID field. This button is greyed out for ADM 4/1 and ADM 155 NEs.
Disable All	Disables Threshold Crossing Alert for all Measurement parameters and for all TPs listed in the TP ID field. This button is greyed out for ADM 4/1 and ADM 155 NEs.



## Section: Reset Digital Counters

### Overview

---

**Purpose** This procedure resets the Performance Monitoring digital counters for a provisioned NE. The digital counters can be set to zero upon request.



## Reset Digital Counters

---

**When to use** To remove old data still present in TP counters.

**Before you begin** Before performing this procedure make sure:

- the TP to be reset is configured for PM.

Before performing this procedure consider the following:

- Resetting the digital counters will set all retrieved values to zero. This will affect running measurements.
- Only counters of PHASE, ADM 16/1, AM1 Plus, AM1, TM1, ADM155, ADM4/1, OLS 80G and WDACS can be reset. For OLS 80G, all digital counters for the selected NE are reset at once. For all other NEs the counters for single TP or multiple TPs can be reset upon request.

**Related information** Related procedures are:

- Configuring Termination Points
- Configuring Thresholds
- Baselineing of Optical Parameters

Related concepts are:

- PM Measurement Points [3-12]
- PM Measurement Methodology [3-15]
- Tandem Connection Monitoring [3-19]
- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]
- PM Data Threshold [3-29]

Parameters used in this procedure can be found at Parameters to Reset Digital Counters [2-29].

**Procedure** Use the following procedure to reset the PM digital counters

---

- 1 Select *Performance* -> *Reset Digital Counters*.

**Result:**

The *EMS - PM Reset Digital Counters* window is displayed.

---

- 2 Select the *Select i on Di al og* button.

**Result:**

The *EMS - NE Selection Dialog* window is displaying all NEs which are currently accessible by the ITM-SC.

---

- 3 Select an NE and click OK.

**Result:**

The *NE Selection Dialog* window will disappear. When selected a Phase, ADM 16/1, ADM 155, ADM 4/1, AM1, AM1 Plus, WDACS or TM1 NE, the *EMS - Provisioned NE Subrack* window is displayed.

---

- 4 Select the slot containing the port you wish to reset the counter on

**Result:**

The *EMS-PM Configured (Aperiodic) TP Selection* window is displayed.

---

- 5 When selected an OLS 80G NE, proceed to Step 10.
- 

- 6 Select TP Type to TP to filter the TP Id's.

**Result:**

The list is populated with available TPs.

---

- 7 To monitor Tandem Connection Termination Points, select *Select TCM Points* and select the appropriate *TCM Type* and *TCM Section Monitored*(PHASE only).
- 

- 8 To monitor a primary ISDN mode E1 select either *PDH to SDH* or *SDH to PDH* in the E1 Direction box. (AM 1 Plus only).
- 

- 9 Select the TP IDs you wish to reset. When finished select OK.

**Result:**

The *EMS - PM Configured (Aperiodic) TP Selection* window is closed.

---

- 10 Select Apply.

**Result:**

A confirmation window is displayed.

- .....
- 11** Select *Yes* in the confirmation window to reset the selected digital counters.

END OF STEPS



## Parameters to Reset Digital Counters

---

<b>Introduction</b>	This parameters are displayed while performing the reset of digital counters. This is subject to Phase, WaveStar® OLS 80G and WaveStar® ADM 16/1 NEs only.
<b>Provisioned NE</b>	Name of the NE selected
<b>NE Type</b>	Type of the NE selected. This should be Phase, WaveStar® OLS 80G and WaveStar® ADM 16/1.
<b>TP</b>	Lists all available TP for the selected NE type. When a TP is not available the option will be greyed out.
<b>TCM Type</b>	Greyed out if the measurement point is not located on a TCM point. Indicates the nature of the Tandem Connection Monitoring Termination Point. The value can be either <i>Sink</i> or <i>NIM</i> . Both ends of a TC Trail are called <i>Sink</i> while an intermediate Termination Point is called <i>NIM</i> (Non-Intrusive Monitoring).
<b>TCM Section Monitored</b>	Greyed out if the measurement point is not located on a TCM point. Indicates the applicable section of the measurements. The value can be <i>Net</i> or <i>Out</i> . The tandem connection (TC) trail segment is called the network ( <i>Net</i> ). The other segment which accumulates the values across the path including the TC trail segment is called the outgoing ( <i>Out</i> ) segment.
<b>E1 Direction</b>	Applicable for AM 1 Plus NEs only. This will indicate whether a quality calculation (CRC-4) is done on the ingoing E1 (PDH to SDH) or on the outgoing E1 (SDH to PDH). This monitoring can be used only in primary ISDN mode. E1 Direction is greyed out if the measurement points are not E1 Termination Points.
<b>TP ID</b>	The ID of the Termination Point Selected.
<b>Port Mode</b>	Indicates the current Port Mode (Monitored / Not Monitored / Auto). For VC TTPs on ADM16/1 NEs, this column lists the TP Mode. Not applicable for WDACS.
<b>Configured</b>	Displays the time and date when the TP was enabled for PM.

**Measurement Period** The length of time the measurement was configured, for the selected TP: 15 minutes unidirectional, 24 hours unidirectional or 24 hours bidirectional.



## Section: Baselineing of Optical Parameters

### Overview

---

**Purpose** The measured values of the Total Optical Power Received (TOPR-L), Signal Power per Channel (SPR-C) and Tributary Signal Power Received (SPR-T) can vary during the operation of the optical line system. For example this may be due to the number of wavelengths present, the performance of the system components (i.e. an Optical Amplifier is replaced) and the optical line loss characteristics change (i.e. optical line/connector is replaced). Signal degradation can be measured and baselined (initialized) to a reference value of 80. Baselining enables the user to log a reference point for noting deviations from the 'normal' system operations range.

This procedure is applicable to WaveStar® OLS 80G only.



## Baselining of Optical Parameters

---

**When to use** To obtain new reference values (baselined). This is necessary when the number of wavelengths are changed during the operation of the OLS 80G system.

**Before you begin** Before performing this procedure make sure:

- this procedure is only applicable to WaveStar® OLS 80G
- the TPs within the NE selected are configured for PM

Before performing this procedure consider the following:

- baselining optical parameters on measurements which are finished will mark this data after baselining as invalid. However Invalid data is available to a PM Report but will be displayed in red.

**Related information** Related procedures are:

- TP Configuration
- Threshold Configuration
- Reset of Digital Counters

Related concepts are:

- PM Measurement Points [3-12]
- PM Measurement Methodology [3-15]
- Tandem Connection Monitoring [3-19]
- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]
- PM Data Threshold [3-29]

Parameters used in this procedure can be found at Parameters for Baselining of Optical Parameters [2-34].

**Procedure** Perform the following steps to baseline the optical parameters of the WaveStar® OLS 80G

---

- 1 Select the **Baseline** button in the *Edit PM Optical Current Measurements* window.

**Result:**

The *EMS - PM Baseline Measurements* window is displayed.

- 
- 2 Select an OLS 80G NE by clicking the Selection Dialog button.

---

  - 3 In the *EMS - PM Baseline Measurements* window select an option out of the Optical Line field.

---

  - 4 Click Apply to perform baselining of the chosen optical line.

---

  - 5 Click Close.

**Result:**

The *EMS - PM Baseline Measurements* window disappears.

END OF STEPS



## Parameters for Baselining of Optical Parameters

---

**Introduction** Use these parameters to baseline the optical parameters. These parameters are displayed in the PM Baseline Measurement window.

**Provisioned NE** Name of selected NE. Only provisioned NEs are shown.

**NE type** Type of selected NE.

**Optical Line** Up to four fiber-pairs can be supported in one WaveStar® OLS 80G rack. Values displayed are:

- 1, 2, 3, 4 for end terminals. End terminals do have one OA for transmitting data per fiber-pair.
- 1A+1B, 2A+2B, 3A+3B, 4A+4B for regenerator configurations. This configuration uses 2 OAs per fiber-pair.



## Task Cluster: Displaying PM Data

### Overview

---

**Purpose** The purpose of this section is to group logically related tasks. This section will provide an introduction to all tasks used to display Performance Monitoring (PM) measurements.



## Displaying PM data

---

**Introduction** Once Termination Points are configured for Performance Monitoring data is stored on the ITM-SC. Normally the PM data is ready for display after the measurement period of either 15 minutes or 24 hours has elapsed. However it is also possible to display running PM measurements.

**Objective** Display tasks are meant to present the Performance Monitoring data gathered by the ITM-SC to the user.

**Display tasks available** The table below indicates when to perform a specific display task

To..	refer to the task
view measurement parameters of a TP which measurement period has not finished yet	Displaying Current Measurements [2-38]
view Unavailable Time Logs	Displaying NE Unavailable Time Logs [2-45]
create a PM report in order to enable view measurement parameters of finished measurements	Creating PM Reports [2-50]
view or print PM reports	Displaying and Printing a PM Report [2-56]

**Outcome** The PM data is presented to the user and PM reports are generated by means of the display tasks available on the ITM-SC.



## Section: Displaying Current Measurements

### Overview

---

**Purpose** Use this procedure to display the current counters for a configured termination point. The report can be displayed by type of termination point and a specific monitoring period. This information is intended only as a “snap-shot” of the current situation, for detailed reports it is suggested that a performance monitoring report is generated.

This procedure is not applicable to OLS 80G or RR NEs.



## Displaying Current Measurements

---

**When to use** To display the current values of PM TP measurement parameters.

**Before you begin** Before performing this procedure make sure:

- the Termination Points (TPs) are configured for PM.
- that this procedure is not applicable to OLS 80G or RR NEs

**Related information** Related procedures are:

- Displaying Unavailable Time Logs
- Creating PM Reports
- Displaying and Printing a PM Report

Related concepts are:

- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]

Parameters used in this procedure can be found at Parameters for Displaying Current Measurements [2-41].

**Procedure** Follow these steps to display current measurements:

---

- 1 Select *Performance* -> *Measurement* -> *Current Measurements* for non-OLS80G NEs or select *Performance* -> *Measurement* -> *OLS80G Current Measurements* for OLS80G NEs.

**Result:**

The specific *EMS - PM Current Measurements* window is displayed.

---

- 2 Click *Select i on Di al og*.

**Result:**

The *EMS - PM Configured NE/TP Selection* window is displayed

---

- 3 Select a NE Name from the *NE Name* list.

**Result:**

The list contains the configured Termination Points according the default TP type and default measurement period (VC4 and 24h unidirectional)

- 
- 4 Select a TP type to filter the list.

---

  - 5 Select the measurement period, either *15 Minutes Unidirectional*, *24 Hours Unidirectional* or *24 Hours Bidirectional*.

---

  - 6 To monitor Tandem Connection Termination Points, select *Select TCM Points* and select the appropriate *TCM Type* and *TCM Section Monitored*(PHASE only).

---

  - 7 To monitor a primary ISDN mode E1 select either *PDH to SDH* or *SDH to PDH* in the E1 Direction box. (AM 1 Plus only).

---

  - 8 Select a Termination Point to be monitored from the *TP Id* list.

---

  - 9 Click OK in the *EMS - PM Configured NE/TP Selection* window to confirm the selection.  
**Result:**  
The *EMS - PM Configured NE/TP Selection* window closes and the *EMS - PM Current Measurements* window displays information for the selected Termination Point.

---

  - 10 Click Refresh to update the window with the latest information.

---

  - 11 To print a report of the *EMS - PM Current Measurements* window, click Print in the Current Measurements window.  
**Result:**  
A reports sent to a printer or to file. If it is sent to a file it can be viewed via the report browser.

---

  - 12 If you wish to see the Current Measurements of another Termination Point, repeat the procedure from Step 2, otherwise proceed with the next step.

---

  - 13 Click Close.

**Result:**

The *EMS - PM Current Measurements* window closes to complete the procedure.

END OF STEPS

---



## Parameters for Displaying Current Measurements

---

<b>Introduction</b>	The parameters, as described below, indicate the performance of the selected TP by displaying the values of the counters for each measurement parameter.
<b>TP</b>	The type of termination point.
<b>TCM Type</b>	Only displayed if the measurement point is located on a TCM point. Indicates the nature of the Tandem Connection Monitoring Termination Point. The value can be either Sink or NIM. Both ends of a TC Trail are called Sink while an intermediate Termination Point is called NIM (Non-Intrusive Monitoring).
<b>Measurement Period</b>	The length of measurement period: 15 minutes unidirectional, 24 hours unidirectional or 24 hours bidirectional (ADM 16/1) only.
<b>TCM Section Monitored</b>	Only displayed if the measurement point is located on a TCM point. Indicates the applicable section of the measurements. The value can be Net or Out. The tandem connection (TC) trail segment is called the network (Net). The other segment which accumulates the values across the path including the TC trail segment is called the outgoing (Out) segment.
<b>Period Start Time</b>	The time the measurement interval started.
<b>Elapsed Time</b>	The length of time the measurement interval has been running.
<b>E1 Direction</b>	Will display PDH to SDH or SDH to PDH. Only displayed if the measurement point is an E1 Termination Point.
<b>Near End/Far End (S)ES, BBE and UAS</b>	The sink side of a signal is checked on errors by means of a BIP check. This value is considered near end. The far end is the source of the near end signal. The far end value indicates the errors of the received signal at this side. This value is passed to the near end (the source side) via the M1 or Remote Error Indication Byte (REI). For the explanation of (S)ES, UAS and BBE refer to the concepts in the beginning of this chapter.
<b>PJE high/low</b>	The number of positive/negative pointer justification event counts.
<b>PSC</b>	The number of protection switch counts.

<b>RS-OFS</b>	RS Out of Frame seconds. Provides the number of frames in the data found to be outside the framing pattern in 1 second.
<b>Forward/Backward (S)ES and BBE</b>	On Connection Termination Points (CTPs) the signal is non-intrusively monitored. This kind of monitoring does not terminate the signal but only reads its BIP value. The forward value of (S)ES and BBE is derived from the BIP value stored in the signal. The backward values are derived from the BIP value stored in the bidirectional (opposite) signal. For the explanation of (S)ES, UAS and BBE refer to the <i>Performance Monitoring Concepts</i> in the beginning of this chapter
<b>Bidirectional UAS</b>	The number of Unavailable Seconds for the trail as a whole. When one of the directions does have a UAS this is counted as one UAS. This is only applicable for the 24 hours bidirectional measurement period. This measurement period is only available for the ADM 16/1.
<b>Near/Far end SES Declaration Threshold</b>	The number of blocks required to be in error during one second to produce a severely errored second from the local/remote end to the user.
<b>Kilobytes Received/Transmitted</b>	Indicates the number of kilobytes received and transmitted on Ethernet ports. Applicable for ADM 16/1 compact, AM1 and AM1 Plus only.
<b>Packets Dropped</b>	Indicates the number of packets dropped on Ethernet ports. There are two situations when packets are dropped: <ul style="list-style-type: none"><li>• If insufficient SDH capacity is allocated to carry the data connection. (applicable for ADM 16/1 compact, AM1 and AM1 Plus only)</li><li>• If more data is offered to the LAN port than the Committed Information Rate (CIR) and the policy mechanism set to <i>Strict Policing</i>. (Applicable for ADM 16/1 compact and AM1 Plus NEs only)</li></ul>
<b>TOPR-L</b>	the total optical power received.
<b>SPR-C</b>	the signal power received. Only applicable when the in 2OA configuration.
<b>SPR-T</b>	the signal power received from the tributary.
<b>OPT-T</b>	the optical power transmitted. Only applicable when tributary signal is routed via a OC48 OTU.

**LBC** the laser bias current. Only applicable when tributary signal is routed via an OC48 OTU.

**CV** the number of code violations from the regenerator section

**SPR-SU** the signal power received from the supervisory channel. This is not monitored by the LDA4 telemetry pack.

**LBC-SU** the laser bias current from the supervisory channel. This is not monitored by the LDA4 telemetry pack.

**CV-SU** the number of code violations from the supervisory channel

**(S)ES-SU** the number of (severely) errored seconds from the supervisory channel.

**UAS-SU** the number of unavailable seconds from the supervisory channel

**Button description** Use these buttons to perform related actions.

Button	Description	NE type
Refresh	Updates the window with the latest information	All
UAT	Displays the Unavailable Time (UAT) logs	Phase, ADM 16/1
Baseline	Calibrate optical parameters	OLS-80G



## Section: Displaying NE Unavailable Time Logs

### Overview

---

**Purpose** Use this procedure to view the 6 most recent periods of unavailable time.

This procedure is valid for PHASE, ADM 16/1, ADM 16/1 compact and AM1 Plus NEs only.



## Displaying NE Unavailable Time Logs

---

**When to use** To display the recent periods of unavailable time.

**Before you begin** Before performing this procedure make sure:

- the Termination Points (TPs) are configured for PM
- that this procedure is valid for PHASE, ADM 16/1, ADM 16/1 compact and AM1 Plus NEs only.

**Related information** Related procedures are:

- Displaying Current Measurements
- Creating PM Reports
- Displaying and Printing a PM Report

Related concepts are:

- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]

Parameters used in this procedure can be found at Parameters for Displaying NE Unavailable Time Logs [2-47].

**Procedure** Follow these steps to display Phase NE Unavailable Time Logs.

---

- 1 Select *Performance* -> *Measurement* -> *Current Measurements*

**Result:**

The *EMS - PM Current Measurements* window is displayed.

---

- 2 Click the *Select i on Di al og*.

**Result:**

The *EMS - PM Configured NE/TP Selection* window is displayed

---

- 3 Select an NE Name from the *NE Name* list.

**Result:**

The list contains all configured Termination Points for this NE.

---

- 4 Select a TP type to filter the list.
- 

- 5 Select a Measurement period.
-

.....  
**6** Select a Termination Point to be monitored from the *TP Id* list.

.....  
**7** Click OK in the *PM NE Configured NE/TP Selection* window to confirm the selection.

.....  
**8** The *EMS - PM Configured NE/TP Selection* window closes and the *EMS - PM Current Measurements* window displays information for the selected Termination Point.

.....  
**9** Click UAT Logs in the *EMS - PM Current Measurements* window.

**Result:**

The *EMS - UAT Logs* window is displaying the 6 most recent unavailable time periods.

.....  
**10** Click Cl ose.

**Result:**

The *EMS - UAT Logs* window disappears.

.....  
**11** Click Cl ose.

**Result:**

The *EMS - PM Current Measurements* window closes to complete the procedure.

.....  
E N D O F S T E P S



## Parameters for Displaying NE Unavailable Time Logs

---

<b>Introduction</b>	The parameters, as described below, indicate the performance of NEs regarding the unavailable time.
<b>Definition</b>	A period of unavailable time starts whenever 10 consecutive seconds are declared as Severely Errored Seconds (SES). The period will end whenever in 10 consecutive seconds no SES is detected.
<b>NE Name</b>	NE chosen from the list of configured NEs by using the selection dialog button.
<b>NE Type</b>	Displays the type of NE.
<b>TP ID</b>	TP chosen from the list available TPs by using the selection dialog button.
<b>TCM Type</b>	<p>Greyed out if the measurement point is not located on a TCM point.</p> <p>Indicates the nature of the Tandem Connection Monitoring Termination Point. The value can be either <i>Sink</i> or <i>NIM</i>. Both ends of a TC Trail are called <i>Sink</i> while an intermediate Termination Point is called <i>NIM</i> (Non-Intrusive Monitoring).</p> <p>Only applicable to PHASE NEs.</p>
<b>TCM Section Monitored</b>	<p>Indicates the applicable section of the measurements. The value can be <i>Net</i> or <i>Out</i>. The tandem connection (TC) trail segment is called the network (<i>Net</i>). The other segment which accumulates the values across the path including the TC trail segment is called the outgoing (<i>Out</i>) segment.</p> <p>Greyed out if the measurement point is not located on a TCM point.</p> <p>Only applicable to PHASE NEs.</p>
<b>Near End Start/Stop Time</b>	Start/stop time for near end unavailable period. A period of unavailable time starts whenever 10 consecutive seconds are declared as Severely Errored Seconds (SES). The period will end whenever in 10 consecutive seconds no SES is detected. The near end is the local end to the user. The near end unavailable period is the data received by the NE at the incoming direction and forwarded to the ITM-SC.

Logs

Parameters for Displaying NE Unavailable

Time Logs

**Far End Start/Stop Time** Start/stop time for near end unavailable period. A period of unavailable time starts whenever 10 consecutive seconds are declared as Severely Errored Seconds (SES). The period will end whenever in 10 consecutive seconds no SES is detected. The far end is the remote end to the user. The received data can be relayed back from the Far End to the Near End if there is a bi-directional connection between the nodes.

**Refresh** This button will update the screen with the latest information.



## Section: Creating PM Reports

### Overview

---

**Purpose** Use this procedure to create performance monitoring reports. Information has to be entered about which counters must be measured, on which termination point the measurement should take place and in which period these measurements should occur.



## Creating PM Reports

---

**When to use** To evaluate the performance monitoring data of a TP.

**Before you begin** Before performing this procedure make sure:

- the Termination Points (TPs) are configured for PM
- the measurement are finished

When performing this procedure consider:

- the ITM-SC is able to store up to 50 PM Reports. To prevent the ITM-SC from filling up, and so to prevent a possible slowdown, the maximum amount of PM Reports is set to 50.

**Related information** Related procedures are:

- Displaying Current Measurements
- Displaying Unavailable Time Logs
- Displaying and Printing a PM Report

Related concepts are:

- PM Measurement Points [3-12]
- PM Measurement Methodology [3-15]
- Tandem Connection Monitoring [3-19]
- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]
- PM Data Threshold [3-29]

Parameters used in this procedure can be found at Parameters for Creating PM Reports [2-53].

**Procedure** Follow these steps to create PM Reports:

---

- 1 Select *Performance -> Report List*.

**Result:**

The *EMS - PM Report List* window is displayed.

---

- 2 Select in the *EMS - PM Report List* window *Report -> Create*.

**Result:**

The *EMS - PM Report Create* window is displayed.

- 
- 3 Enter the name of the report in the field *Report Name*. The name can be up to 32 characters long including spaces.
- 

- 4 Click the *Select i on Di al og* in the *Measurement Point 1 Selection* field.

**Result:**

The *Provisioned NE Subrack* window displays the latest subrack selected. ( the very first time this window will be empty)

---

- 5 To change the NE select *Selection Dialog*, select a *NE*, and click OK to confirm the selection.
- 

- 6 Select the slot from *EMS - Provisioned NE Subrack* window that contains Termination Points that are monitored (these slots appear in cream on the subrack layout).

**Result:**

The *EMS - PM Configured NE/TP Selection* window is displayed.

---

- 7 Select the Measurement Period, either *15 Minutes Unidirectional*, *24 Hours Unidirectional* or *24 Hours Bidirectional* (ADM 16/1 only).
- 

- 8 Set the TP Type in the *TP* field which acts as a filter on the *TP Id* field.
- 

- 9 Select a Termination Point to be monitored from the list in the window, and click OK to confirm the selection.

**Result:**

The window closes and the *EMS - PM Report Create* window is updated.

---

- 10 When including a second Measurement Point make sure it is of the same measurement period, same type and on the same type of NE.
- 

- 11 Enter or change the time interval in the *Report Timing* field over which the report should be generated. To specify this field, enter the

First Measurement Period and the Last Measurement Period date and time for the report.

---

- 12** Click **Apply** in the *EMS - PM Report Create* window to validate the report data.

**Result:**

If the report data is invalid, the validation is halted and you are informed. If the validation is successful, then the report is submitted.

---

- 13** Click **Close** to exit the *EMS - PM Report List* window
- 

- 14** Select in the *EMS - PM Report List* window: *File -> Close*.

**Result:**

The *EMS - PM Report List* window closes to complete the procedure.

END OF STEPS

---



## Parameters for Creating PM Reports

---

**Introduction** The parameters, as described below, are used to create PM Reports.

**Background** Performance history can be useful to assess the recent performance of transmission networks. Such information can be used to classify faults and to locate sources of intermittent errors.

**Report filters** You can filter the reports displayed by either the user who created them and their state by using the options in the Report Viewing and Report State sections:

- Use All Users for all reports, or User Reports for your own reports.
- Use Compiling, Completed or Aborted filter reports by the current state.

Please note that these filter settings are accumulative, i.e. ITM-SC will filter reports based on the setting in both fields.

**TCM Type** Greyed out if the measurement point is not located on a TCM point. Indicates the nature of the Tandem Connection Monitoring Termination Point. The value can be either *Sink* or *NIM*. Both ends of a TC Trail are called *Sink* while an intermediate Termination Point is called *NIM* (Non-Intrusive Monitoring).

**TCM Section Monitored** Greyed out if the measurement point is not located on a TCM point. Indicates the applicable section of the measurements. The value can be *Net* or *Out*. The tandem connection (TC) trail segment is called the network (*Net*). The other segment which accumulates the values across the path including the TC trail segment is called the outgoing (*Out*) segment.

**Report State** For each report the report state is displayed. There are three different states:

State	will indicate..
Completed	the report is generated successfully and it can be printed or viewed.
Compiling	the report is currently being generated. You should wait until the report has been completed before attempting to view this report.

<b>State</b>	<b>will indicate..</b>
Aborted	the report failed during compilation. If a report has been aborted, the reason for the failure will be given in the Report Status field.

**Report Status** For each report, a Report Status is also displayed. This shows any errors that are associated while the report was created. The following errors can appear.

<b>Error Message</b>	<b>Meaning</b>
No Measurements For Selected Period	The termination point selected has no data for the selected measurement period. Enter another measurement period.
File System Is Full	There is insufficient disk space to create the report. Free space by deleting unused reports. If the problem persists, contact the system administrator.
Invalid Termination Point Included	An invalid termination point was entered during the report creation. Enter a valid termination point.
Report File Retrieval Failed	The report file could not be accessed. Ask the system administrator to check the setting of the EMSREPORTDIR environment variable.
Report File Could Not Be Opened	The report could not be created. Ask the system administrator to check the setting of the EMSREPORTDIR environment variable.
Unable To Read Database	The ITM-SC was unable to access its database. Contact the system administrator immediately.
Unknown Reason For Report Failure	The operation failed for an unknown reason. Contact the system administrator immediately.



## Section: Displaying and Printing a PM Report

### Overview

---

**Purpose** This procedure describes how to select PM reports to display and in what format these reports are to be displayed.



## Displaying and Printing a PM Report

---

**When to use** To evaluate the data of a PM Report.

**Before you begin** Before performing this procedure make sure:

- the PM Report is created

Before performing this procedure consider the following:

- For the OLS 80G the measurements parameters SPR-SU and LBC-SU are not monitored for the LDA4 telemetry pack.

**Related procedures** Related procedures are:

- Displaying Current Measurements
- Displaying Unavailable Time Logs
- Creating PM Reports

Related concepts are:

- PM Measurement Parameters [3-21]
- Optical PM Measurement Parameters [3-28]

Parameters used in this procedure can be found at Parameters for Displaying and Printing a PM Report [2-58].

**Procedure** Follow these steps to display and print a report:

---

- 1 Select *Performance -> Report List*.

**Result:**

The *EMS - PM Report List* window is displayed.

---

- 2 Highlight the type of reports you want by selecting options out of the Report Viewing field.
- 

- 3 Select the name of the report to view
- 

- 4 Select *Report -> Display*.

**Result:**

The *EMS — PM Report Display* window is displayed.

---

- 5 Set the Display Format according the required presentation of the performance data. This can be *Graphical* or *Tabular*.
-

- 
- 6** Choose *Stats* to display the maximum, minimum and mean readings for the counters. Choose *Y Lines* to display the y-axis on the graphical report.

- 
- 7** To print the PM report select *Print* in the *EMS - PM Report Display* window. Otherwise go to Step 10.

**Result:**

The *PM Report Print* window is displayed.

- 
- 8** When no printer Name is displayed the default printer is not set up. Choose the printing format: Graphical or Tabular and click *Apply*.

**Result:**

The printing starts.

- 
- 9** Click *Close*.

**Result:**

The *EMS - PM Print* window closes.

- 
- 10** Click *Close* in the *EMS - PM Report Display* window to return to the *EMS - PM Report List* window.

**Result:**

The *EMS - PM Report Display* window closes.

- 
- 11** Select *File -> Close*.

**Result:**

The *EMS - Report List* window closes to complete the procedure.

END OF STEPS



## Parameters for Displaying and Printing a PM Report

---

**Introduction** The parameters, as described below, give information about the data of a PM Report displayed.

**Display Format** The user is able to choose between the graphical layout where lines connect the consecutive data point and the tabular format where all data point are displayed within a spreadsheet.

**Report Name** Displays the report name as indicated when the report was created.

**Report Interval** Indicates the measurement period for the measurement point(s) displayed. This can be either 15 Minute Unidirectional, 24 Hour Unidirectional or 24 Hours Bidirectional.

**Report Type** Indicates the TP selected when this PM Report was created.

**Requester** This indicates the name of the user who created this PM Report.

**Started** This indicates the start time of the displayed measurement

**Finished** This indicates when the displayed measurement was finished.

**TCM Type** Indicates the nature of the Tandem Connection Monitoring Termination Point. Greyed out if the measurement point is not located on a TCM point The value can be either Sink or NIM. Both ends of a TC Trail are called Sink while an intermediate Termination Point is called NIM (Non-Intrusive Monitoring).

**TCM Section Monitored** Indicates the applicable section of the measurements. This is greyed out if the measurement point is not located on a TCM point. The value can be Net or Out. The tandem connection (TC) trail segment is called the network (Net). The other segment which accumulates the values across the path including the TC trail segment is called the outgoing (Out) segment.

**PM Data in the graphical and tabular chart** Conventions used on the window are:

Indicator	Color	Description
T or TRUNCATED	Yellow	Data read from the network element has exceeded the maximum number of error counts. The data has been truncated.

Section: Displaying and Printing a PM Report  
Parameters for Displaying and Printing a PM Report

<b>Indicator</b>	<b>Color</b>	<b>Description</b>
U or UNAVAIL	Green	Data for this period was unavailable. The Unavailable indicator is reported when the network element has no data for this interval. This could be caused by a loss of association between PM and the NE, or that the data upload being halted by the supervisor.
I or INVALID	Red	Data for this period was invalid.



## Task Cluster: Archiving and Deleting PM Data

### Overview

---

**Purpose** The purpose of this section is to group logically related tasks. This section will provide an introduction to all tasks used to store or delete Performance Monitoring (PM) data



## Archiving and Deleting PM Data

---

**Introduction** The ITM-SC stores the raw PM data (as sent by the NE) for any TP configured. This data will be stored for a maximum of 31 x 24 hours for each TP. Archiving the PM data outside the ITM-SC enables the user to use the PM data after this period.

**Objective** The archive tasks are meant to store the PM data on an external device. The deletion task is meant to remove selected PM data from the ITM-SC.

**Archive and Deleting tasks available** The table below indicates when to perform a specific archive and deleting task

To..	refer to the task
delete a PM Report	Deleting a PM Report [2-63]
create a PM archive	Create a PM Archive [2-65]
delete a PM archive	Delete a PM Archive [2-67]
write/copy an archive to an external device	Copy a PM Archive to Default Device [2-69]

**Outcome** The PM Data is archived according to the maintenance philosophy and/or PM Data is being removed from the ITM-SC.



## Section: Deleting a PM Report

### Overview

---

**Purpose** Use this procedure to delete PM reports.



## Deleting a PM Report

---

**When to use** To delete PM Reports. Whenever reports are not needed any more or when the file system is full it is advised to delete old reports.

**Before you begin** Before performing this procedure consider the following:

- The deletion process is irreversible. It is *not* possible to regain deleted PM Reports.

**Related information** The related procedure is

- Archiving PM Report

**Procedure** Follow these steps to delete performance monitoring reports:

---

**1** Select *Performance -> Report List*.

**Result:**

The *EMS - PM Report List* window is displayed.

---

**2** Select the report to be deleted from the list in the window.

---

**3** Select the type of reports to be listed in the Report List by selecting one of both options in the *Report Viewing* field.

---

**4** Select *Report -> Delete*.

**Result:**

A confirmation window is displayed.

---

**5** Click *Yes* to confirm the selection

**Result:**

The confirmation window disappears.

---

**6** Select *File -> Close*.

**Result:**

The *EMS - PM Report List* window closes to complete the procedure.

END OF STEPS

---



## Section: Archiving PM Data

### Overview

---

**Purpose** The archiving of history data allows the user to obtain a long term, global view of the managed transport network. This data can be used for planning preventative maintenance strategies and assist in customer quality of service reports.



## Create a PM Archive

---

**When to use** When wanting to store PM data for later use.

**Before you begin** Before performing this procedure make sure:

- the measurement, to store the PM data from, is finished.
- the place where the PM Archive data will be archived must be connected and operational (this place is defined at installation time)

Before performing this procedure consider the following precautions:

- It is not possible to create a PM Archive within 30 minutes of a scheduled Event Archive.
- When the previous prerequisites are not met, the procedures can still be performed up to a certain step but error notification is displayed.

**Related information** The related procedures are:

- Delete a PM Archive
- Copy a PM Archive to Default Device

Related concepts are:

- PM Data Storage and Recovery [3-30]
- PM Data Archiving [3-33]

Parameters used in this procedure can be found at Parameters for Archiving PM Data [2-71].

**Procedure** Follow these steps to create a PM Archive :

---

**1** Select *Performance -> Archive List*.

**Result:**

The *EMS - PM Archive List* window is displayed.

---

**2** Select *Archive -> Create*.

**Result:**

The *PM Archive Create* window is displayed.

---

**3** Select the *Archive Filename* field and type the archive file name.

.....  
**4** Select the *Description* field and type a description of the archive file.  
.....

**5** Select the *Select i on Di al og* button.

**Result:**

The *EMS - NE Multiple Selection Dialog* window is displayed.  
This window shows a list of nodes to select.  
.....

**6** Select the Nodes for which data has to be archived.  
.....

**7** In the PM Archive Create Window select the *Measurement Period*.  
This can be either *15 Minute Unidirectional*, *24 Hour Unidirectional*  
or/and *24 Hour Bidirectional*.  
.....

**8** Select the archive timing of the data to be archived by entering *First Measurement Period* and *Last Measurement Period*.  
.....

**9** Select the *TP* and *TP* and/or *TCM* in the *Measurement Point* box to filter the list  
.....

**10** Click *Appl y*.

**Result:**

If no *TPs* are selected a warning screen is displayed. The Archive is created.  
.....

**11** Click *Cl ose* to stop creating archives. To close the *EMS -PM Archive List* window select *File -> Close*.

END OF STEPS  
.....



## Delete a PM Archive

---

**When to use** When a PM Archive is not needed anymore it's better to remove this archive from the system to free disk resources.

**Before you begin** Before performing this procedure make sure:

- the PM archiving procedure is completed. Do NOT delete a Performance Monitoring Archive while the archive operation (archive to device) is still in progress

**Related information** The related procedures are:

- Create a PM Archive
- Copy a PM Archive to Default Device

Related concepts are:

- PM Data Storage and Recovery [3-30]
- PM Data Archiving [3-33]

Parameters used in this procedure can be found at Parameters for Archiving PM Data [2-71].

**Procedure** Follow these steps to delete a PM Archive :

---

**1** Select *Performance -> Archive List*.

**Result:**

The *EMS - PM Archive List* window is displayed.

---

**2** Select the Archive to *delete*

**Result:**

The archive to delete is highlighted

---

**3** Select *Archive -> Delete*

**Result:**

A confirmation window is displayed.

---

**4** Click *Yes*.

**Result:**

The Archive is removed from the ITM-SC and the confirmation window disappears.

- 
- 5** To close the *EMS -PM Archive List* window select *File -> Close*.

END OF STEPS

---



## Copy a PM Archive to Default Device

---

**When to use** When wanting to export the PM data from the ITM-SC to the default device.

**Before you begin** Before performing this procedure make sure:

- the device name has been defined (see procedure Changing Default Device Names in the Subnetwork Administration Guide (SAG))
- the device is operational

**Related information** The related procedures are:

- Create a PM Archive
- Delete a PM Archive

Related concepts are:

- PM Data Storage and Recovery [3-30]
- PM Data Archiving [3-33]

Parameters used in this procedure can be found at Parameters for Archiving PM Data [2-71].

**Procedure** Follow these steps to write an archive to a device :

---

**1** Select *Performance -> Archive List*.

**Result:**

The *EMS - PM Archive List* window is displayed.

---

**2** Select the archive which must be written to the external device

**Result:**

The archive to move is highlighted

---

**3** Select *Archive -> Write to Device*

**Result:**

A confirmation window is displayed.

---

**4** Click *Yes*.

**Result:**

The Archive is copied from the ITM-SC to the external device and the confirmation window disappears.

- 
- 5 Wait for the system to finish its data transfer. A transfer of around 200 Mb will take 2 minutes. To close the *EMS -PM Archive List* window select *File -> Close*.

END OF STEPS



## Parameters for Archiving PM Data

---

<b>Introduction</b>	The parameters, as described below, give information about the PM Archives.
<b>Network data logged</b>	Performance Monitoring data for a TP is stored for a maximum of 31 days (31 bins of 24 hours are available) for later analysis and statistics.
<b>Archive File Name</b>	The user can choose an archive file name up to 32 characters and conform to DOS/UNIX naming rules.
<b>Archive Description</b>	A description can be added up to 50 characters and conform to DOS/UNIX naming rules.
<b>Archive Size</b>	Indicates the compressed size of the Archive file in Mbytes. A displayed size of 0 indicates the file is less than 1 Mbytes. This value is automatically generated
<b>File directory and format</b>	<p>The PM Archive will be stored on the ITM-SC server or Stand-alone. It will be stored in twofold in the <i>var/spool/itm/sc/pm_archive</i> directory. One file (*.ARC.txt) will in a tab separated ASCII format while the other (*.gz) will be in a gz compressed format. The *.gz file can be decompressed by the UNIX command <code>uncompress</code>. Other decompress programmes are widely available.</p> <p>When performing the Copy a PM Archive to Default Device [2-69] procedure note that only a copy is made from the compressed archive file.</p>
<b>Measurement Parameter</b>	The list contains the measurement parameters available. By default all the counters are selected.
<b>Archive Timing</b>	<p>The current time/date rounded backwards to the nearest reporting interval (15 minutes or 24 hours, depending on Measurement Period type) minus the database retention period.</p> <p>For Normal Performance Monitoring the default Retention Date/Times are:</p> <ul style="list-style-type: none"><li>• 1 day for 15 minutes</li><li>• 31 days for 24 hour monitoring</li></ul> <p>For Extended Performance Monitoring the Retention Date/Times are:</p> <ul style="list-style-type: none"><li>• 7 days for 15 minutes monitoring</li><li>• 62 days for 24 hour monitoring</li></ul>

The date is displayed according: dd:mm:yy and the time according hh:mm.

**Measurement Period** For all NEs except the ADM 16/1 the 24 Hours Bidirectional option is greyed out For ADM 16/1 NEs, both the Unidirectional and Bidirectional options will be available. If the user attempts to deselect the only valid option it will remain selected.

**TP** Displays all available TP points for the selected NE. This selection can be any combination from 1 to all.

**Measurement Points** The user is able to select TP and TCM points. At default is both types of measurement points are selected.





# 3 Concepts

## Overview

---

**Purpose** In this chapter Event management and Performance Monitoring concepts are explained.

**Section** Each section describes one of more concepts of each previous chapter.

**Abbreviations used** When Network Elements OLS 80G, ADM 4/1, ADM 16/1, ADM16/1c, AM 1 (Plus) and TM 1 are described WaveStar®OLS 80 G, WaveStar®ADM 4/1, WaveStar® ADM 16/1, WaveStar® ADM16/1 compact, WaveStar® AM 1 (Plus) and WaveStar® TM 1 are meant.



## Section: Event Management

### Overview

---

**Purpose** This section will give the reader a detailed introduction into Event Management

**Intended use** A reader not familiar with Event Management (EM) is advised to read this entire section. For specific information refer to the table below.

<b>For information about</b>	<b>refer to the concept</b>
the origin an flow of an event occurrence	Events
configuration abilities	Event Characteristics
display of event information	Event Display
Storage of event data	Event Storage and Archiving



## Events

---

**Event Management** Maintenance can be performed by using the ITM-SC. Two groups of maintenance activities are provided: *preventive* and *corrective* activities. ITM-SC's provides a bundle of corrective maintenance features that are described all together as *Event Management*. Corrective maintenance identifies a failure after it occurs. It is necessary to locate the failure as soon as possible to solve the problem or to prevent (further) signal disruption. The user is supplied with information about the location, nature, probable cause and severity of the event. All these parameters will determine the strategy of solving the problem.

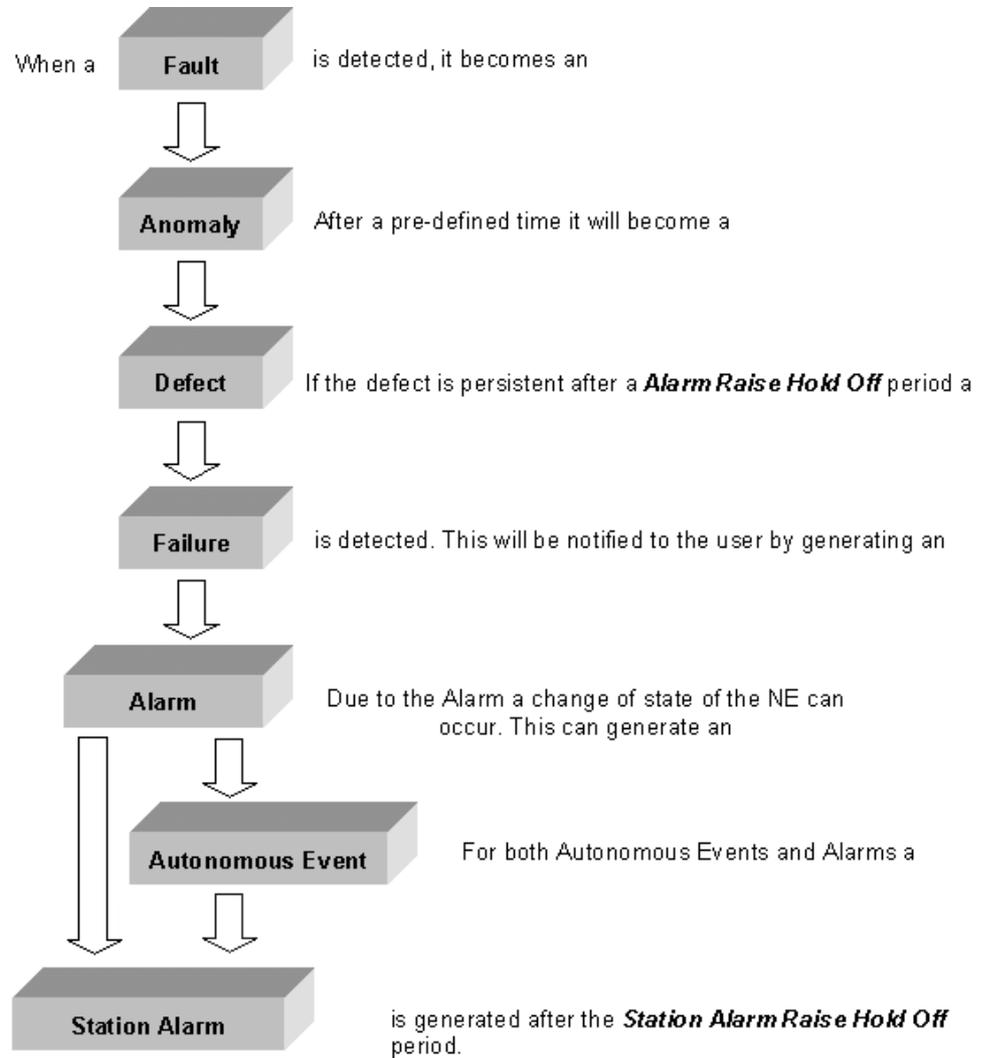
**Introduction** An event can be all kind of defects, failures and alarms on Network Elements, lines or paths, unit insertion or removal, etc. The ITM-SC is to support the collection of alarm/fault information from each individual NE, and provide capabilities for maintaining the ITM-SC view in line with the NE status. NE alarm notifications are forwarded to the Network Level (NL) immediately after being received. The information transferred to the NL includes all alarm information available in the ITM-SC.

**Events** The description of the events are stated below

Event	Description
Fault	Something has broken or degraded to the point where some requirements can not be met. Faults exist whether we detect them or not.
Anomaly	The smallest discrepancy we can observe in the working of some item. Maintenance actions are not initiated on a single occurrence of anomalies. Anomalies are used as input for defect detections.
Defect	The density of an anomaly is increased to a level where the ability to perform a required function is interrupted. A defect may result in consequent actions.
Failure	The defect persisted long enough to have confidence that the condition is permanent. This implies by definition that there is a fault which we have now detected. A failure is defined as the detected termination of the ability to perform a required function, so it is an event, not a state.

<b>Event</b>	<b>Description</b>
Alarm	A human observable indication that draws the attention to a detected failure. Alarms may be delayed after the detection of failures. These are also called instantaneous events.
Autonomous Event	An autonomous event is an event that does not interfere with the network performance. For example the crossing threshold of the event storage can be an autonomous event.
Station Alarm	Discrete contact on the NE to enable a physical warning such as bell or light on the NE or within the vicinity.

**Flow of events** The events stated before succeed each other in the flow chart below. Both Raise Hold off periods can be adjusted by the user. The station alarm is a visual or audible indication near the NE itself.



**Persistent or Instantaneous alarms**

Alarms can be persistent or instantaneous. Persistent means that a fault condition exists until the fault is cleared in the system. An instantaneous alarm is a one-off events and does not have a persisting fault condition and so does not have an associated severity. Instantaneous alarms are for example protecting switch events.

□

## Event Characteristics

---

**Introduction** In order to bring the alarm behavior in line with the maintenance philosophy all alarms can be configured. The characteristics of an alarm will determine:

- *if* an alarm or autonomous event will appear
- *when* the alarm or autonomous event will appear
- *how* the alarm or autonomous event will appear
- *how* the alarm or autonomous event will disappear when the problem is *solved*.

**Event Status** Alarms/autonomous events can have three different statuses. These are described below.

Status	Description
Raised	The event is still present. It has not yet been acknowledged.
Acknowledged	The event has been noticed and confirmed by the user but the cause of the alarm may not yet have been removed.
Cleared	The cause of the event has been removed.

**Report State** Whether the alarm/autonomous event will be notified to the user depends on the alarm report state.

Report State	Description
Reported	Raised events will be reported on the ITM-SC.
Not Reported	Raised events will not be displayed on the ITM-SC, you will be unaware of the occurrence of these alarms.

**Severity** Events are classified according to their impact on the service of the Network Element or the ITM-SC (management alarms) itself. The attribute which defines the class of an event is called severity. At the management system the alarm severity of events can be set. The NE alarm severity settings are sent to the selected Network Element. The initial definitions of the available alarm severities are detailed in the

table below.

<b>Severity</b>	<b>Initial definition</b>
Prompt	Immediate maintenance action is required because a primary system service is being affected.
Deferred	Maintenance action is required but may be deferred because no primary system service is being affected.
Info	Maintenance information: no maintenance action is required at this NE.

An instantaneous alarm is a one-off events and does not have a persisting fault condition and so does not have an associated severity. Instantaneous alarms are for example protecting switch events.

**ADM 155c & ADM4/1 Severities**

The ADM 155c and ADM4/1 NEs have a different set of severities. These specific severity levels are mapped into the standard manager severity definitions (Prompt, Deferred, Info) according the table below..

<b>Then ADM 155c / ADM 4/1 severity...</b>	<b>is displayed on the ITM-SC as..</b>
Critical	Prompt
Major	Prompt
Minor	Deferred
Warning	Info
Indeterminate	Info
Not alarmed	Not Reported

**Alarm Control**

When a defect is detected within an NE or ITM-SC the user will be notified of this defect via an alarm after the Raise Hold Off period. This period is used to make sure the defect really exist within the NE or ITM-SC. When the defect is solved the alarm will be cleared after the Clear Hold Off period. This period is used to make sure the problem is solved and prevents the alarm reporting to blink on and off repetitively.

**Alarm latching**

When latching is enabled the alarm/autonomous event must be acknowledged before the alarm moves to the history list upon clearance. When alarm latching is not enabled acknowledgement is still possible. But these alarms/autonomous events will go directly to the history list upon clearance whether acknowledged or not.

**Clearance Acknowledgement**

When Clearance Acknowledgement is licensed an alarm or autonomous event, which is initially latched, can only go to the history list after its clearance has been acknowledged. The alarms which have been acknowledged in the raised state remain after clearance in the current alarm list; they only go to the history list when their clearance has been explicitly acknowledged by the user.

**Alarms latched on default**

All alarms (instantaneous events) are latched on default. This is to make sure the alarm will be notified by the user. So they are moved to the History List only after they have been acknowledged.

**Acknowledgments effective only on ITM-SC**

Acknowledgments are only effective on the ITM-SC. Interaction with the network element or the NL is not expected or required in order to acknowledge alarms. Acknowledgment of alarms applies to the ITM-SC and NE created alarms.

**Maintenance Philosophy**

Within Event Management many parameters can be customized. It is expected to bring these parameters in line with the maintenance philosophy. Please obtain a consistent implementation of this philosophy in order to avoid confusion about solving problems within the transmission network.

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## Event Display

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**Introduction** When alarms or autonomous events are raised in an NE or ITM-SC they are brought to the attention of the user by autonomous reports. These reports are displayed on several windows on the ITM-SC. The several display types are described below.

Display type	Displays...
Network Map	the highest severity of all alarms on a NE by means of the NE icon turning into a color.
Alarm List	all alarms (instantaneous events) available. This list can be customized by a filter.
Autonomous Event List	all autonomous events available. This list can be customized by a filter
Alarm Summary	displays last alarm or autonomous event arrived as well as the total amount of alarms sorted out by severity and raised/acknowledged status. This list can be customized by a filter.
Alarm Statistics	the amount of NE alarms per NE

**Filtering** A raised event, for example a card is pulled out, normally causes an immediate alarm notification on the alarm message display line of the management system. It is possible however (by means of the alarm filter option) to filter out various alarm/autonomous event messages from the alarm message display line. For example the user may not be interested in summary messages for alarms of the “INFO” severity class. The user may filter alarm messages for display by alarm severity, type and acknowledgment status. Note that this filtering only affects immediate alarm reporting. The total number of alarms for each severity is updated whatever the setting of the alarm filter, and alarms are entered into the current alarm list. This number can be viewed at any time.

**Events can be sorted** Alarms in alarm or autonomous events can be sorted in their respective lists by the following parameters: number, alarm time, severity, probable cause, NE type, NE name and card type. Two sorting keys are available to provide a sorted list which is first sorted by another parameter. The settings can be stored as default.

**Alarm acknowledgment information** When an alarm/autonomous event has been acknowledged, the Operator ID and the Acknowledgment time and date are added to the event record. This can be seen in the Details window.



## Event Storage and Archiving

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**Introduction** All alarms and autonomous events present on the ITM-SC will be stored in either the current event list or history event list. Eventually every alarm or autonomous event in the current event list will end up in the history event list upon clearance.

**Reports** Selections of the current and/or history event list can be printed to a report. This report can be viewed by the report browser. This can be used to store a specific situation.

**Storage** Because events in the history list are not automatically deleted the amount of alarms have to be controlled. A warning signal is given when a certain threshold is exceeded. It is possible to delete the events automatically after they have resided in the history list after a configurable time.

**Archiving** It is possible to store all the alarm and autonomous event data into an Event Archive. An Event Archive can be written to an external device such as tape or disk for further analysis.

**Scheduled archive** It is possible to select either an instantaneous archive or a scheduled archive. This scheduled archive will be performed daily at a the specified time. This specified time will be rounded up to the nearest 15 minutes (for example: quarter past, half past).

**Scheduled versus manual archiving** When a scheduled archive is set for a specific time, manual initiated creation of event archives (instantaneous archive) can be performed up to 15 minutes before the scheduled archive. When the manual creation is performed within these 15 minutes the scheduled archive will be postponed 15 minutes accordingly.

Furthermore it is not possible to create an PM Archive within 30 minutes before a scheduled Event Archive. Because the creation of an PM Archive can take a maximum of 30 minutes to complete. The request will be rejected with the message: Not authorized by archive broker.

**File directory and format** The PM Archive will be stored on the ITM-SC server or Stand-alone. It will be stored in twofold in the `var/spool/itm/sc/archive/alarmhist` directory. One file (\*.ARC.txt) will in a tab separated ASCII format while the other (\*.gz) will be in a gz compressed format. The \*.gz file can be decompressed by the UNIX command `uncompress`. Other decompress programmes are widely available.

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## Section: Performance Monitoring

### Overview

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**Purpose** This section will give the reader a detailed introduction into Performance Monitoring.

**Intended use** A reader not familiar with Performance Monitoring (PM) is advised to read this entire section. For specific information refer to the table below.

<b>For information about</b>	<b>refer to the concept</b>
<i>where</i> the quality of a path is measured	PM Measurement Points [3-12]
<i>how</i> the quality of a path is measured	PM Measurement Methodology [3-15]
<i>how</i> the quality of a path which runs through multiple networks is measured	Tandem Connection Monitoring [3-19]
<i>what</i> is measured	PM Measurement Parameters [3-21]
<i>what</i> is measured on the OLS80G	Optical PM Measurement Parameters [3-28]
<i>how</i> the user is being notified of unacceptable quality	PM Data Storage and Recovery [3-30]
<i>how</i> PM Data is exchanged between NE and EMS and how PM Data is stored on ITM-CIT and SC.	PM Data Threshold [3-29]
<i>how</i> PM Data is archived on the ITM-SC	PM Data Archiving [3-33]



## PM Measurement Points

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**Purpose of PM** In performance monitoring, the integrity of a signal is continuously verified as it is carried along the fiber. The results of this measurement is analyzed, compared against predefined threshold values for errors, stored on the NE and displayed on the ITM-CIT or ITM-SC as performance monitoring data. The thresholds must be defined according to your maintenance policy and then configured on the ITM-CIT or ITM-SC.

**Where to measure PM** The quality of the transmission in the network is measured at a termination points (TP) A termination point is a point where a signal is terminated in the network element.

In general we can distinguish 6 types of TPs

- *Trail Termination Points (TTP)*: points where VCs, RSOH or MSOH are terminated. Information derived from these points will indicate the quality of the (entire) end-to-end path.
- *Connection Termination Points (CTP)*: points where SDH paths pass the quality is monitored non-intrusively. Information derived from CTPs will indicate the quality of a *segment* of a path.
- *Tandem Connection Trail Termination (TC TT)*: supervising a segment of a path which stretched through multiple domains with multiple operators. Information derived from TC TTs will indicate the quality of the path within the operators domain.
- *Optical Ports*: In Optical systems like the OLS80G it is possible to measure the performance of optical elements like laser bias current and received optical power.
- *Ethernet Ports*: An Ethernet port can indicate how many packets are dropped at its interface. This will be an indication of the quality of the end-to-end Ethernet path.
- *PDH Ports*: When a E1 signal complies with the primary ISDN mode format, the E1 can be monitored using the E and A bits (included in the ISDN signal).

Please refer to the table at Available TPs [3-13]to check which TPs are available on each NE.

**Available TPs** The table below details the available TPs per NE as well as the maximum number of TPs available on a specific NE.

NE \ TP Type	ISM	SLM	RR	ADM155	ADM 4/1	PHASE	ADM 16/1	ADM 16/1 compact	OLS 80G	AM1	AM 1 Plus	TM1	WDACS
<b>TTP</b>													
MS-0							v						v
MS-1	v	v		v	v	v	v	v		v	v	v	v
MS-4	v	v			v	v	v				v		v
MS-16		v				v	v	v					v
RS-0													v
RS-1			v			v			v				v
RS-4		v				v							
RS-16		v				v	v	v	v				v
VC-11							b	b			b		
VC-12	v			v	v	v	b	b		v	b	v	
VC-3	v			v	v	v	b	b		v	b		
VC-4	v	v		v	v	v	b	b		v	b	v	v
<b>CTP</b>													
TU-12						v	b						
TU-2						v							
TU-3						v	v						
AU-4						v	b	b					v
AU-4-4c							b	b					v
AU-4/PJE						v							
<b>TCTT</b>													
TCM Sink						v							
TCM NIM						v							
<b>Optical Ports</b>													
OPL									v				
OCH									v				
OPT in/out									v				
SU									v				
<b>Ethernet Ports</b>													
LAN								v		v	v		
WAN								v		v	v		
<b>PDH Ports</b>													
E1								v			v		
Maximum number of TPs	138	38	16	170	170	150	250/600 <sup>1</sup>	600	36/196 <sup>2</sup>	36	150	18	3072

v unidirectional only  
b bidirectional possible (24h measurement period only)  
1 :250 with SC, 600 with SC2 card  
2 :36 for regenerators, 196 for a 2 lines system

**Maximum number of TPs** It is possible to simultaneously monitor a number of termination points . The maximum is limited by the number of counters that can be simultaneously enabled. The maximum number of TPs is indicated in the last row of the table in Available TPs [3-13].

**Important!** Bidirectional monitoring processes may count as two monitoring points.

**ITU-T compliant** Performance monitoring as implemented by Lucent Technologies is in accordance with ITU-T G.826 and G.784



## PM Measurement Methodology

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- Measurement methods** The NE uses various measurement tools to determine the quality of the signal:
- performing a Bit Interleaved Parity (BIP) check on TTPs, CTPs and TC TTs.
  - measuring optical parameters at optical ports. (e.g. measuring the optical signal received)
  - measuring the amount of packets dropped at Ethernet ports (on LAN ports)
  - performing a CRC-4 check on ISDN signals (at the E1 interface)

**Important!** It will depend on the type of NE which measurement methods are deployed.

**BIP** *Even Bit Interleaved Parity (BIP)* is the method used to measure performance of a signal on a TTP, CTP or TC TT. The signal integrity is indicated by bit errors in the interface signal.

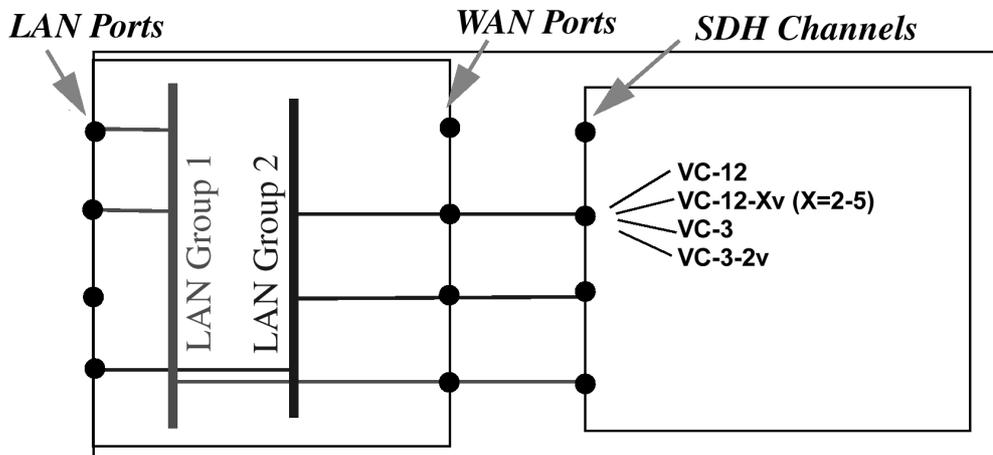
This method looks at the content of the signal. When a signal is transmitted a BIP check is performed on each STM frame. In this check, the amount of “1” and “0” of the payload is calculated. If the result is an even number, then a “0” is put in the B-Byte of the overhead section of the STM-n next frame. Otherwise if the result is an odd number, then a “1” is put in the B-Byte. At the termination point, a BIP check is performed again on the payload of the received signal and the outcome is compared to the value at transmission.

If there is a discrepancy between the two readings, an error is concluded. Proactive maintenance events are called Threshold Crossing Alerts and are typically raised when too many errored seconds (number of errored frames in one second) are being detected. Parity violations are counted to derive performance data in 15 minutes, and 24 hours measuring intervals, called bins .

**LAN port Monitoring** The Ethernet (10/100 BaseT IEEE 802) interfaces are connected to the SDH channels via LAN, LAN Groups and WAN ports. The LAN ports are connected via a LAN Group to a WAN port. A LAN Group acts as a virtual LAN which connect several segments of a physically separated, but logically the same LAN. One or more WAN ports are connected to a LAN group to form a multipoint connection. Finally each single WAN port is connected to one SDH channel. Each SDH channel is mapped in a VC-12 or VC-3 containers or a virtual concatenated variant to obtain the necessary capacity. This is detailed in the graphic below.

Both LAN and WAN ports can give information about the connected data signal like received/transmitted kilobytes and dropped packets.

PM on LAN/WAN is only available for ADM 16/1 compact, AM1 and AM1 Plus NEs.



### Bidirectional Monitoring

The AM 1 Plus, ADM 16/1 and ADM 16/1 compacts NEs have the capability, not only to handle unidirectional, but also handle bidirectional performance monitoring. By setting two termination points at both ends of the path, end-to-end monitoring can be done.

When activating bidirectional performance monitoring only the 24h measurement period can be used.

### Near End / Far End Monitoring

In certain applications, it may be desirable to provide performance monitoring data related to both directions of transmission (transmitted/received) from a single end. The received data can be relayed back from the remote end to the local end if there is a bidirectional connection between the nodes. End-to-end bidirectional monitoring processes consist of two termination points (TPs): one at the local side and one at the remote side.

The Near End is the local end to the user. The Near End performance parameter is the data received by the network element at the incoming direction and forwarded to the managing system. The Far End is the remote end to the user.

The table below identifies where the BIP check is performed during monitoring.

TP	Description
Near End	The BIP is calculated on the received signal and compared with the B or V5 byte (VC-12).

TP	Description
Far End	The BIP is calculated on the sent signal, but at the remote end of the transmission, and compared with the B or V5 byte (VC12).

In Near-End monitoring, the BIP check indicates the quality of the signal transmitted from the remote side to the local side.

In Far-End monitoring, the B values is compared with the BIP calculation if an error is detected on the remote side. An REI is then transmitted upstream. The received REI at the local side indicates the quality of the signal transmitted from the local side to the remote side.

### Forward and Backward Monitoring

On connection termination points (CTPs) the signal is non-intrusively monitored. This kind of monitoring does not terminate the signal but only reads its REI value.

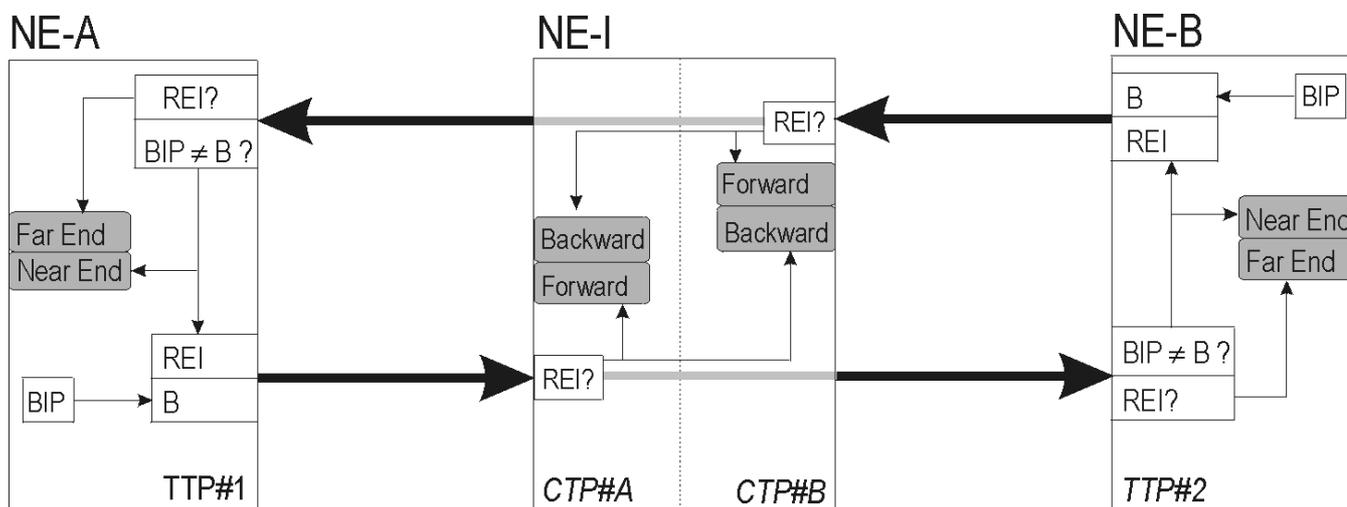
This kind of monitoring is only available on PHASE, ADM16/1, ADM16/1 compact and WDACS NEs.

For CTP with a bidirectional path two types of measurements parameters are available:

Measurement Parameters	Description
Forward	A transmission direction that is referred to when the signal is ingressing the NE at that point. The REI is read from the incoming signal. This will indicate the quality of the end to end (TP to TP) path in the opposite direction.
Backward	A transmission direction that is referred to when the signal is egressing the NE at that point. The REI is read from the incoming signal on the other side of the NE. This will indicate the quality of the end to end (TP to TP) path in forward direction.

**Example of Near End/Far End Forward/Backward Monitoring**

The graphic below describes Near End/Far end Forward/Backward monitoring. The termination point (TP) at network element-A is monitored on the receiving end, or Near End where the B-bytes are verified for parity. If there is an error, an REI is sent upstream. The TP at network element-B is monitored on its receiving end, and since it is distal from NE-A, it is referred to Far end .



Because the path is terminated in NE-A and NE-B these monitoring points are termination points (TPs). In a TP the BIP value is recalculated and compared to the value stored in the received B byte. If an error is detected an REI will be sent to its originating source and the error will be declared as Near End PM data. The REI received will be declared as Far End PM data.

In network element-I the REI value is read and is be declared as Backward or Forward PM data of the Connection Termination Points. For example in CTP#1 the Forward PM data consists of the REI transmitted from A to B (and so indicating the quality of the path in the direction from B to A). The Backward PM data in CTP#1 consists of REI transmitted from B to A (and so indicating the quality of the path in the direction from A to B).

□

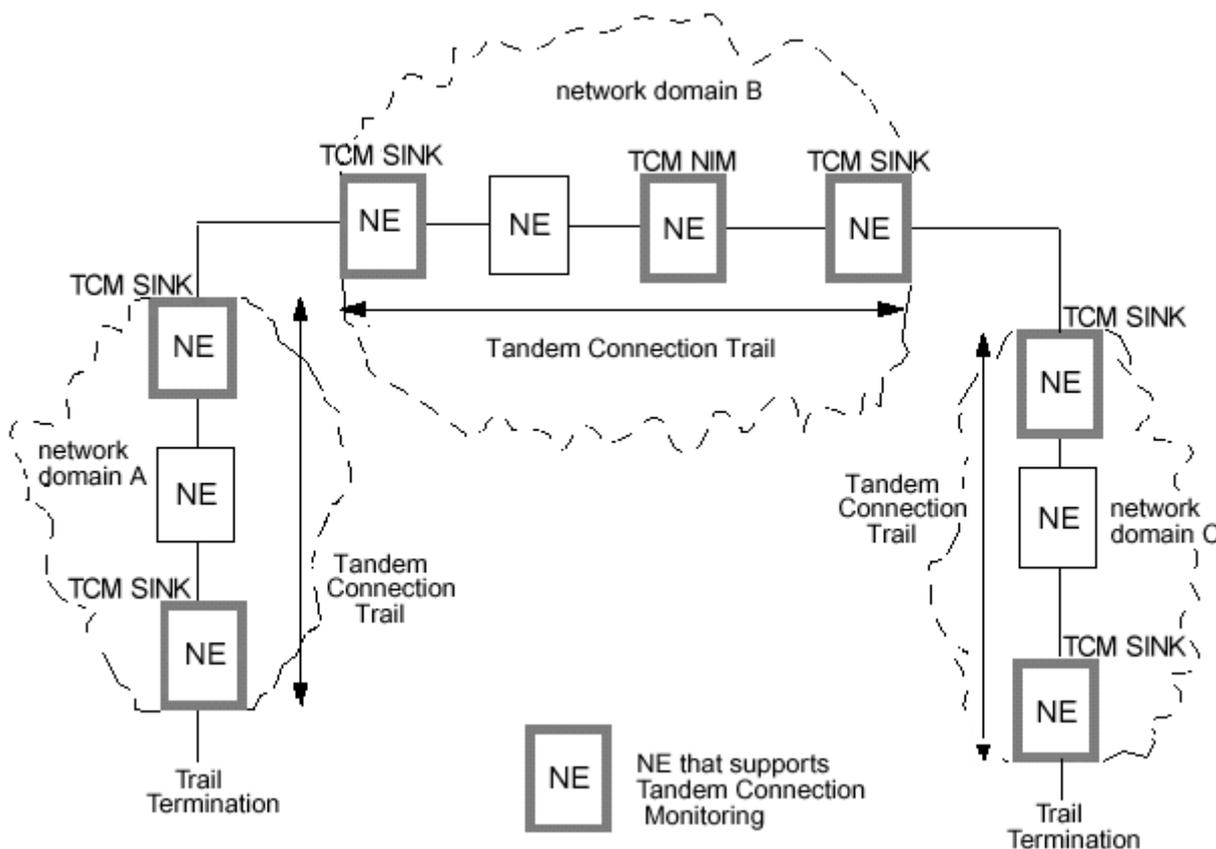
# Tandem Connection Monitoring

**Overview** Tandem Connection Monitoring (TCM) is a means of supervising a segment of a trail within a end to end path. Typically a segment is the part of the trail within a single operator’s network domain where the operator does not cover the whole path. TCM allows an operator to independently assess the quality of the service on that segment and the affects of faults and degradations on the parts of the trail outside the operator’s network domain.

Three different operator domains are indicated in the graphic below.

**Location TCM Trail Termination**

The Tandem Connection Trail Terminations (TC TT) are located at the boundary of the operator domain. These point are shown in the diagram below. Because only the end side of the TC trail can offer information about the quality of service these points are called TCM Sink.



**TCM Non-Intrusive Monitoring**

The Tandem Connection Trail can also be monitored at an NE which is located in the TC Trail between the TC TTs. This monitoring is non-intrusive. These points are called TCM NIM (Non-Intrusive Monitoring). This point is shown in network domain B of the diagram above.

**Measurement Parameters**

The information available from the Tandem Connection Trail Termination points (TC TT) is the quality of service provided in two segments. The segment which is monitored by the TCM is called the network (net). The other segment which accumulates the values across the path including the tandem connection segment is called the outgoing (out) segment.

The net values are used to assess the quality of service on the TC trail. The out values are used to assess the affects of faults and degradations on the parts of the path trail outside the operator's domain.

Both near and far values are available at the TCM SINK termination points.

**Domain related restrictions**

Tandem Connection (TC) trails have to be set up in series. It is not possible to set up a TC trail that overlaps another TC trail or is nested inside another TC trial. Cascading of TC trails is not allowed within an NE.

**Specific PHASE Equipment only**

Currently TCM is only available on the PHASE LXC-4/1 and LXC-16/1 NEs. To enable TCM the LXC-4/1 needs to be equipped with the CMU-1T and MCU-3C cards. The LXC-16/1 needs to be equipped with the CMU-1(64)T cards and can use all MCU cards. All CMU cards in an NE must support TCM otherwise it is not possible to support TCM at all at that NE.

Typically only the NEs on the boundary of a network domain need to be upgraded to support TCM. Intermediate NEs where TCM is not required don't have to be upgraded to TCM supporting NEs.

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## PM Measurement Parameters

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**Introduction** Performance parameters are measured on a continuous basis at the TPs.

The TTPs, CTPs and TC TTs provide the *SDH Measurement Parameters* like:

- ES — Number of Errored Second
- SES — Number of Severely Errored Second
- BBE — Number of Background Block Errors
- UAS — Unavailable Second
- BiDirUAS — Bidirectional Unavailable Second
- (BiDir)UAPcount — (Bidirectional) Unavailable Period Count
- Count of pointer justification and protection switch
- Out of frame seconds

The Ethernet ports provide *LAN Measurement Parameters* like

- Bits per second
- Errored packets
- Dropped packets

The E1 port can provide the following *E1 Measurement Parameter*.

- Near-end Block Errors

Many of these parameters do have a threshold. The threshold can be set according to the maintenance philosophy. If no thresholds are manually input, the network element will apply the default threshold values for each parameters. In the event that a measurement parameter exceeds this user-set threshold, the system generates an alarm. For more information refer to PM Data Threshold [3-29]

**Definition** The Errored Block is the entity used to determine the SDH Measurement Parameters.

**Errored Block (EB)** A block having one or more errors. This is determined by the comparing the outcome of the BIP check done before and after transmission. (see note below this table) The number of blocks per second depends on the signal itself. A VC-12 has 2000 blocks/s while an STM-N does have 8000 blocks/s.

**SDH Measurement Parameters** Each of the measurement parameters has an associated counter. Performance monitoring results are displayed on screen by means of these counters.

The table below describes each performance monitoring measurement parameters:

Measurement Parameters	Description
ES	A period of 1 second having one or more errored blocks.
SES	A period of one second having more than x % of its blocks in error. The value of x is called the SES Declaration Threshold. This threshold is default 30 (%). The number of blocks per second depends on the signal itself. A VC-12 has 2000 blocks/s while an STM-N does have 8000 blocks/s. An SES is also counted as an ES.
BBE	An errored block, that does not occur as a part of a Severely Errored Second (SES). Not applicable to OLS80G NEs.
CV	A Code Violation occurs when the received signal cannot be decoded to a valid data byte specified by the SDH rules. Only applicable to OLS80G NEs
UAS	An Unavailable Second (UAS) is declared whenever 10 consecutive seconds are declared as SES. A second will be declared not-unavailable whenever in 10 consecutive seconds no SES is detected. An UAS is not counted as ES or SES.
BiDirUAS	Declaration of an UAS in both directions on a bidirectional path. BiDirUAS is counted separately from UAS as it relates to both near and far end data.
(BiDir)UAP	Represents a period of consecutive (bidirectional)UAS.

(BiDir)UAPcount	Represents the number of Unavailable Periods (UAPs) during a measurement period.
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**UAP log** The *UAP log* is an additional storage method. This log is a register that holds data of the 6 most recent Unavailable Periods (UAPs). The UAP log timestamps each period of unavailability with a UAP begin and UAP end time. A period of UAP starts at the first second of a first UAS occurrence (see *UAS*, in SDH Measurement Parameters). UAP is implicitly provisioned as soon as a uni— or bidirectional termination point is configured. An operator can view the UAP log, maintain a log of last month and use the NE data to synchronize the ITM-CIT data.

If during an UAP period the NE clock is reset, the current UAP period shall end with a timestamp of the old time and a new UAP period shall be started with a timestamp of the new time.

**UAP Counter** A *UAP counter* , called *BiDirUAPcount* , tracks the number of unavailable periods. This counter can be viewed and reset by the operator.

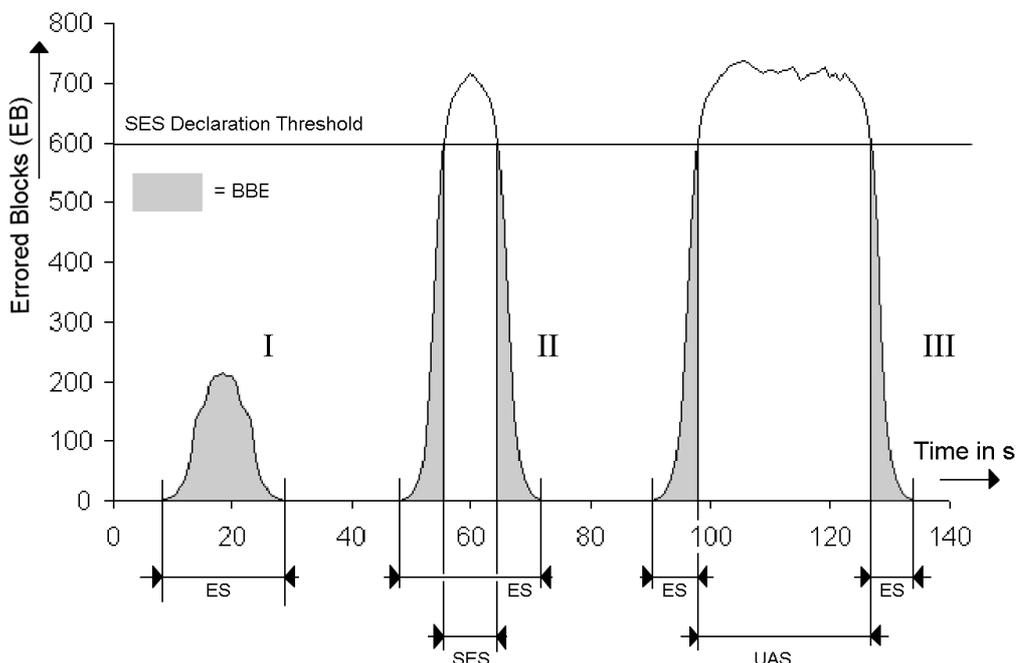
**Pointer Justification Event (PJE)** A Pointer Justification Event (PJE) is reported when a justification indication is generated at the transmitted end. Both positive and negative justification events are counted in PJE high and PJE low respectively.

**Protection Switch Count (PSC)** A Protection Switch Count (PSC) is the accumulated number of protection switch events.

**Regenerator Section Out Of Frame Seconds (RS-OFS)** Provides the number of frames in the data found to be outside the framing pattern in a second interval.

**Example on SDH Measurement Parameters** In the figure below an example is given how ES, SES, UAS and BBE are computed. The number of errored blocks are plotted against time.

In the following figure, three different regions are noticeable. The grey shaded indicate the BBE.



The SES Declaration Threshold is set to 30%, which result in 600 errored blocks, as the maximum tolerable level of BBE for that type of signal. Since a VC-4 signal has 8000 frames per second and a VC-12 has 2000 frames per second, the 30% threshold for a VC-12 signal is lower than for a VC-4 and corresponds to 30% x 2000 or 600 BBE.

In the following figure, three different regions are noticeable.

- REGION I: In the first (I) region the SES Declaration Threshold is not reached and therefore only ESs are detected. Since there is no SES in this region, there is no UAS either.
- REGION II: In the second (II) region the SES Declaration Threshold is exceeded and several SESs are detected. An SES is also counted as an ES so the total period is also counted as ES. The SES is declared at the beginning of the stretch where the threshold is passed for longer than 10 seconds in a row.
- In the third (III) region the amount of SES lasts for more than 10 consecutive seconds, so UAS is detected. However an UAS is not detected as ES or SES.

The table below indicates the amount of ES, SES, BBE and UAS for each region.

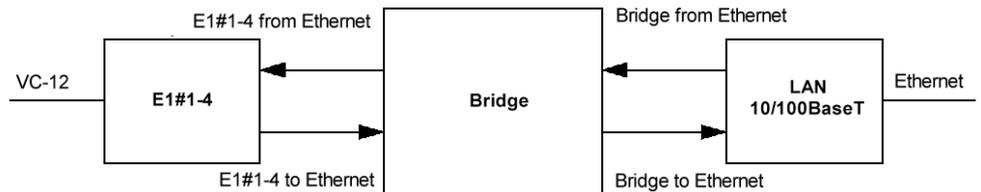
Measurement Parameter	Region I	Region II	Region III
ES	20	21	7 + 7
SES	-	8	-
BBE	2116	1200 + 1280	1276 + 1270
UAS	-	-	29

**LAN Measurement Parameters for ADM16/1**

Since SDH uses STM-n signals and that LAN uses packets, a different measurement parameters are used to monitor a LAN. LAN monitoring for ADM16/1 NEs provides the following parameters:

LAN Measurement Parameters	Available on link
Bits per second	Bridge from/to Ethernet E1#1-4 from/to Ethernet
Errored packets	Bridge from/to Ethernet E1#1-4 from/to Ethernet
Dropped packets	Bridge from/to Ethernet

The graphic below will indicate the functional components LAN PM on the ADM16/1.



Data is stored in a log, also referred to as a bin. The duration of data collection is referred to as a measurement period. Please refer to PM Data Storage and Recovery [3-30] for more information on these bins.

**LAN Measurement Parameters non ADM16/1**

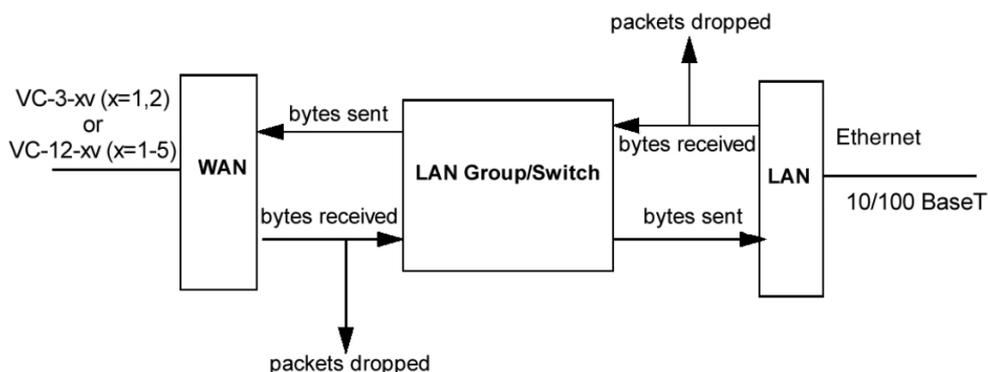
The following is only applicable to ADM16/1 compact, AM1 and AM1 Plus NEs.

LAN monitoring for these specific NEs provides the following parameters:

LAN Measurement Parameters	Available on link
Bytes Sent	LAN to Switch WAN to Switch
Bytes Received	Switch to LAN Switch to WAN
Dropped packets	WAN to Switch LAN to Switch

For each LAN group (is equal to Switch), the total Bytes Sent of all LAN ports plus the total bytes of all packets dropped of LAN ports is equal to the total Bytes Received of all LAN. The same counts for WAN ports.

Refer to the graphic below for the functional components on ADM16/1 compact, AM1 and AM1 Plus LAN PM.



**E1 Measurement Parameters**

When a 2 Mbit/s (E1) signal complies with the primary ISDN mode format, this signal can be monitored. The near-end information can be derived from CRC-4 violations and checks. Far-end information can be derived from the E and A bits (included in this type of signal). Both directions (PDH to SDH and SDH to PDH) can be measured at a E1 port. Applicable for AM 1 Plus NEs only.

**Directionality** For a given measurement period, the SDH measurement parameters can be tracked in one direction (unidirectional) or both (bidirectional). It is possible to monitor simultaneously:

- unidirectional 15 minutes,
- unidirectional 24 hours
- bidirectional 24 hours.

**Important!** Bidirectional monitoring is only available on ADM16/1, ADM16/1 compact and AM1 Plus NEs. Refer to Available TPs [3-13] in PM Measurement Points [3-12].

**Measurement Periods** Measurement Parameter data is accumulated over a period of time which is referred to as the measurement period. There are two possible measurement periods:

- 15 minutes
- 24 hours



## Optical PM Measurement Parameters

---

**Introduction** While conventional SDH NEs can monitor their performance by using the SDH, Ethernet and E1 Measurement Parameters, OLS systems can be transparent for their payload. This means that OLS systems sometimes won't terminate nor interfere with their payload, they just amplify the optical signal. However monitoring these so-called transparent channels can be done via the electrical properties of the OLS optical elements. When OTUs (Optical Translator Units) are used, the payload of a channel is terminated and SDH Measurement Parameters can be derived.

Because the OLS80G uses an separate SDH supervisory channel (SU) for management purposes, it is possible to measure the ES, SES, CV and UAS of this Supervisory Channel. Because the SU channel is multiplexed (via DWDM) together with the payload channels, these SDH Measurement Parameters can give an indication of the quality of the payload. Refer to PM Measurement Parameters [3-21] for more information on SDH Measurement Parameters.

**Total Output Power Received (TOPR)** This parameter indicates the power of the received line signal. This is measured by the OA and can only be measured if the line is in 2 Optical Amplifier (2 OA) configuration. Normalized TOPR values are between 0 and 100.

**Signal Power Received (SPR)** The SPR indicates the signal power received:

- for all channels (suffix *-C*) measured by the OA
- per tributary (suffix *-T*) measured by the OTU. The SPR-T can only be measured if the tributary signal is routed via OC48 OTU.
- for the Supervisory Channel (suffix *-SU*).

Normalized SPR values are between 0 and 100.

**Optical Power Transmitted (OPT)** OPT-T indicates the transmitted optical power by a tributary card (OTU).

**Laser Bias Current (LBC)** LBC indicates the laser bias current for

- Tributary (no suffix). This can only be measured if the tributary signal is routed via OC48 OTU.
- Supervisory Channel (suffix *-SU*). This can only be measured if the Telemetry pack is not an LDA4.

□

## PM Data Threshold

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**Purpose** By means of the setting a threshold on the PM Measurements the user is notified when a value of one of the measurement parameters has exceeded the predefined threshold value. This can provide an early warning indication of transmission degradation, which may lead to proactive maintenance.

**Measurement Parameters Thresholds** The thresholding functionality is applicable for unidirectional monitoring only.

A prerequisite for the system to apply those thresholds and alert maintenance personal that they have been crossed, is to enable the thresholding functionality. Once the thresholding functionality is enabled, the specific values for the thresholds can be input on the ITM-CIT or ITM-SC. If no specific values are entered, the system reverts to using default values.

The values allocated for those various thresholds are kept on the respective management system, ITM-CIT or ITM-SC.

**Threshold Types** There are two types of thresholds:

- *Raise Threshold* (RT) : This value causes a threshold crossing event. When this maximum is reached, the system raises the associated alarm if the prerequisite have been applied (see Prerequisite to get an Alarm ). The minimum value for RT is 1 (one).
- *Reset Threshold* (RTR on the ITM-CIT) or *Clear Threshold* (ITM-SC): This value causes a resetting of the event. When this threshold is reached, the Reset or Clear Threshold clears the associated alarm. The Reset or Clear Threshold value is usually lower than the RT value. The minimum value for Reset or Clear Threshold is 0 (zero).

Both thresholds can be provisioned per termination point and accumulation period independently for a given performance monitoring parameter.

**Threshold Range and Maximum**

Each measurement parameter has a range for the acceptable values for TR. The lower limit for this threshold can never be zero to avoid an alarm storm from the NE to the management system.

The maximum allowable TR is dependant on:

- the parameter being measured
- where performance is measured (meaning the TP)
- and the binning (measurement) period.

□

## PM Data Storage and Recovery

---

**Bins** Once the data is collected over the selected accumulation periods (15 minutes, or 24 hours) and that directionality is selected for a given termination point, the system stores the performance results in registers, called bins.

A bin contains performance data information for each termination point such as:

- Timestamp;
- Elapsed time;
- Suspect indication which is a data flag to indicate that the data stored in the bin is incomplete or invalid.

Resetting the NE clock has no effect on the timestamp of the recent 15 minutes and 24 hour bin.

Each TP can have two current bins, one for a 15–minutes measurement period and one for a 24 hour measurement period. The latter can be either uni- or bidirectional, when applicable for the specific NE.

When a measurement period has elapsed, the data will be moved from the current bin on an NE to a so-called historic bin on the NE.

The number of historic bins depend on the NE type, as is displayed below.

NE type	Number of 15 minutes unidirectional historic bins	Number of 24 hours unidirectional historic bins (or bidirectional when applicable)
ADM 155C	15	1
OLS80G	32	6
any other NE	16	1

The unidirectional and bidirectional 24 hours bins store performance data over a span of a current 24 hours period. At the end of the current 24 hours period, the data is timestamped and sent to the 24 hours historic bin, and the current 24 hours bin is reset to zero. The 24h measurement period will always start at the next full hour. The 15–minutes measurement period will always start at the next full quarter.

The unidirectional 15 minutes bins accumulates performance data over a span of 15 minutes periods. At the end of a current 15 minutes period, the data is timestamped and transferred to the first of the

fifteen available 15–minutes historic bins. When all the 15 minutes history bins are full, the eldest history bin is overwritten by the new information to be transferred.

**Viewing Current bins**

Via both the ITM-SC and ITM-CIT the values of the currently running PM measurements can be displayed.

On the ITM-SC refer to the procedure *Displaying Current Measurements*.

**Interval (Bin) suppression**

In the event that the current bin data is all zero and that the system indicator is not set, while the actual number of consecutive suppressed intervals is lower than the maximum number of consecutive suppressed intervals, then the current interval can be suppressed. This means that the data would not be transferred to the next available, or recent bin. The default value for the maximum number of consecutive suppressed intervals is zero, but can be provisioned per termination point for each accumulation period.

Interval (Bin) suppression is only available at the ITM-CIT.

**Reset of PM counters**

The ITM-CIT as well as the ITM-SC offer the possibility to reset the parameters counter for uni— and/or bidirectional monitoring in order to assist with maintenance activities. When the management system sends this request to the NE, the bin content is reset for the current 15 minutes bins and the content of the current 24 hours bins associated with a termination point.

Resetting the counters has the following consequences:

- Elapsed time is reset to zero
- PM counters value (BBE, ES, SES, UAS, UAP) are reset to zero
- UAPlog counter is NOT affected
- Suspect indication is set.

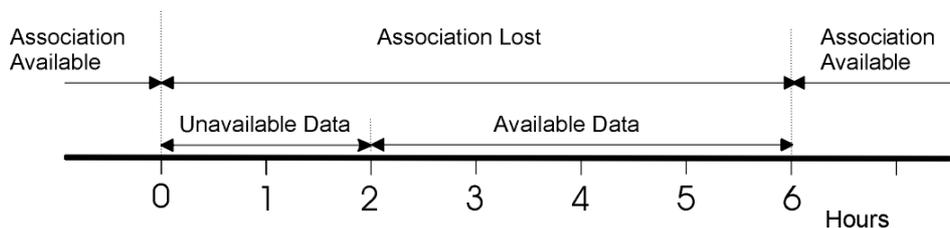
Refer to the procedure *Reset Digital Counters* on the ITM-SC.

**Data Recovery Following Loss of Association**

If the association between ITM-CIT or ITM-SC and the NE fails, the CIT/SC regains information about the lost time by reading the NE bins for the relevant interval. If the association fails for a longer period of time the NE may not be able to store sufficient information for a full recovery.

**Example of Loss of Association**

In the example below the association with the management system has been lost for 6 hours. Because this NE does have sixteen 15 minutes unidirectional bins only 4 hours of data can be recovered.



**On connection**

While performance monitoring is active the network element will store its most recent data in its bins. On connection with the ITM-CIT and ITM-SC will retrieve all data as present in the bins.

□

## PM Data Archiving

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### ITM-SC Storage capacity

ITM-SC will have the ability to store the raw (the data as sent by the NE) PM data for any configured termination points. This information can be passed on to the ITM-SNM on request. The storage and pruning of data takes place with no intervention from the user.

The volume of data stored depends upon the variation of data generated by the monitored NEs.

Under full network loading the amount of data that can be stored per TP, as a *minimum* is indicated in the table below. To enable the extended storage feature the ITM-SC has to be licensed accordingly.

PM Measurement Period	Number of measurements (bins) stored	Total time stored
<i>Default Storage</i>		
15 minutes (unidir)	96	24 hours
24 hours (uni/bidir)	31	31 days
<i>Extended Storage</i>		
15 minutes (unidir)	672	7 days
24 hours (uni/bidir)	62	62 days

### Archiving of PM Data

Because the amount of PM data stored on the ITM-SC is limited (for example 1 month for the 24 hours unidirectional measurement period, without an extended storage license), it is possible to transfer the stored PM data to tape. The archiving of history data allows the user to obtain a long term view of the managed network.

Note that only historic PM data can be archived. The current bins are not available for archiving but can be viewed by using the *Displaying Current Measurements* procedure.

### File directory and format

The PM Archive will be stored on the ITM-SC Server or Stand-alone. It will be stored in twofold in the *var/spool/itm/sc/pm\_archive* directory. One file (\*.ARC.txt) will be in a tab separated ASCII format while the other (\*.gz) will be in a gz compressed format. The \*.gz file can be decompressed by the UNIX command `uncompress`. Other decompress programmes are widely available.

**Important!** It is not possible to create a PM Archive within 30 minutes of a scheduled Event Archive. This is due to the fact the PM Archive creation process can take a maximum of 30 minutes.







# 4 Using the ITM-SC Interface

## Overview

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- Purpose** Using the ITM-SC interface provides information on how to use the Integrated Transport Management-Subnetwork Controller (ITM-SC).
- Objectives** To customize or change settings of the ITM-SC Interface according to the users needs.
- Outcome** Be able to work with the ITM-SC Interface.
- Intended Use** This chapter contains four sections. The first section described the HP-View specific subjects. The other sections describe the subjects which are more ITM-SC specific, such as Module description, general ITM-SC tasks and the Network Map.
- Each section starts with a conceptual explanation and, if available, this is followed by a procedure.



## Section: HP-Vue Specific Subjects

### Overview

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- Purpose** This section describes the more HP-Vue specific subjects such as:
- Buttons and Mouse usage.
  - The general software modules.



# Front Panel

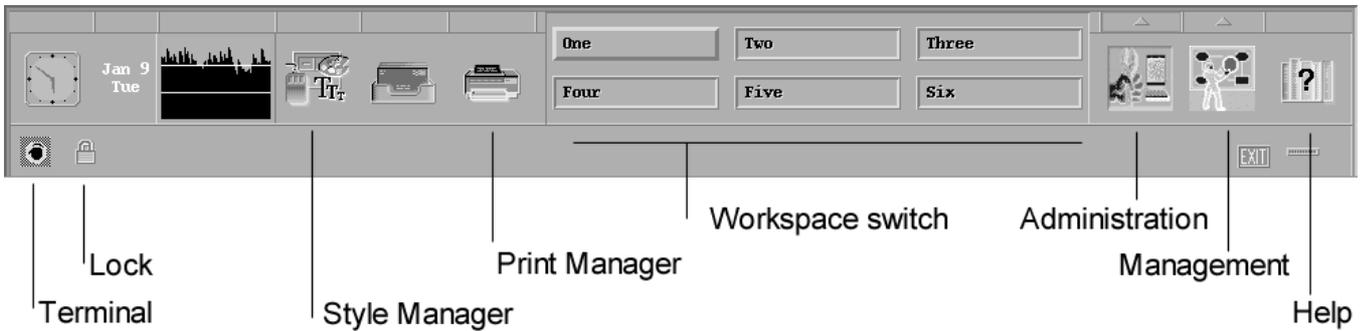
**About the ITM-SC Front Panel**

To navigate and control the ITM-SC application, the HP graphical user interface (GUI) displays a front panel. Depending on the user class, a number of different icons on the front panel give access to the different modules of the application. The procedure to open or close a module is explained and a short description of the modules is given.

The front panel window is different for administrator, supervisor and operator.

**System Administrator Front Panel**

The front panel of the system administrator is shown below.



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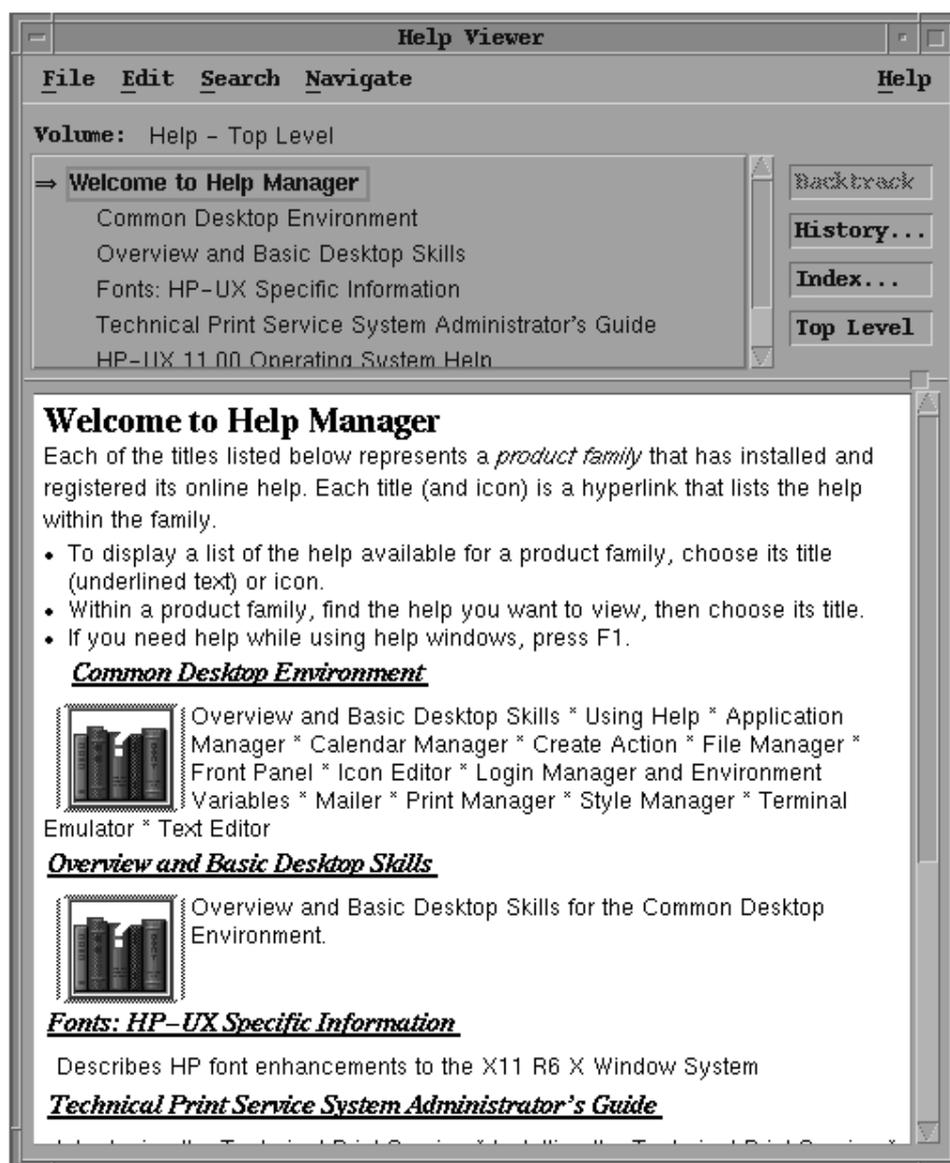
## General Modules

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**Purpose** General modules available to each user are described below. For more information about the general modules can be found in the on-line documentation via the Help button. Refer to System Administrator Front Panel to locate the buttons and modules.

**Help Manager** The Help Manager provides access to online help for HP-VUE. This information includes coverage of workstation controls and tool use.

The Help Manager menu is shown below.

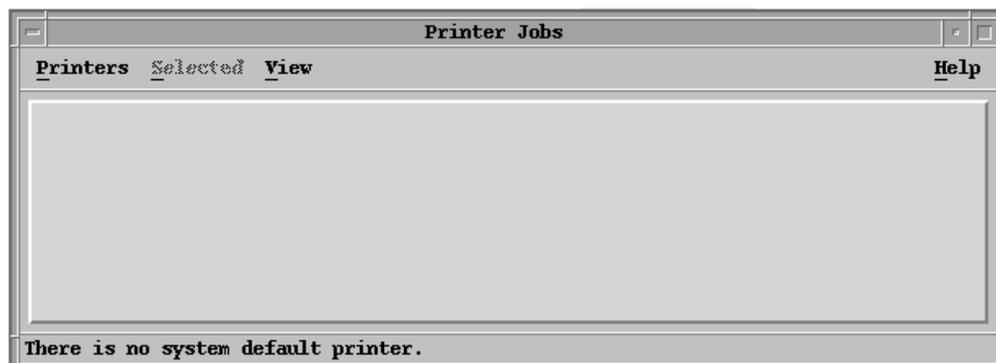


**Print Manager** The Print Manager makes it possible to:

- Check the status of a print job.
- Cancel a print job.

The Print Manager Menu differs depending on the printers that are defined with the System Administration Manager (SAM). (Refer to the Subnetwork Installation Guide).

The Print Manager icon gives access to a menu of available printers.



**Workspace Switch** The Workspace Switch provides greater workspace flexibility by using a virtual window on which multiple windows can be created.

Several workspaces can be selected on the workstation, however only one of these is shown on the physical window at a time.

**Style Manager** The Style Manager makes it possible to customize visual elements and the workstation behavior. Select the Style Manager icon to access the menu for customizing.

Icons on the Style Manager menu are described below:

Menu Option	Function
<i>Color</i>	Sets workspace colors and palettes.
<i>Font</i>	Sets HP-VUE font sizes.
<i>Backdrop</i>	Sets workspace backdrop pattern.
<i>Keyboard</i>	Sets keyboard click volume and character repeat settings.

Menu Option	Function
<i>Mouse</i>	Sets mouse left or right handed control, button click settings, double click speed, pointer acceleration and pointer movement threshold.
<i>Audio</i>	Sets beeper volume, tone and duration.
<i>Screen</i>	Sets number of minutes before the window times out to prevent burn out of the monitor, and set password protection at time out.
<i>Window</i>	Sets the way windows are opened and activated.
<i>Startup</i>	Sets the start up and ending of a session.

### Screen Saver Options

A screen saver will protect the terminal window from burned-in images and enhances security by blanking the screen. Note that a screen saver does not password protect the screen. When requiring a password lock activate the screenlock as well.

The Screen Saver is invoked when no keyboard or mouse activity occurs after a predetermined time. Applications active when the Screen Saver is invoked remain open. However, those applications are subject to their time-out restrictions.

Screen Saver properties can be set only when the user is logged in as root. The ITM-SC Administrator as well as the other ITM-SC users do *not* have the rights to change these settings.

The Screen Saver time-out can be set from 1 minute to 120 minutes. Options for the screen saver are described below:

Option	What It Does
<i>Time-out</i>	Specifies the time interval (from 1 to 120 minutes) from the last mouse move or keystroke to when the window times out. The slider control decreases or increases the number of minutes.
<i>Full Screen Cover</i>	Determines whether or not to completely cover the window when Lock is used from the front panel.

### Terminal Window

The Terminal icon provides access to a terminal window.

A terminal window is a screen that allows HP-UX commands to be executed.



## Buttons and Mouse Movement

---

### Button Names and Functions

The ITM-SC guides the user through the system by means of windows. These windows can contain the following buttons:

Button	Function
Apply	Executes the changes made. The window remains open to permit similar action.
OK	Accepts or executes changes and closes the window.
Edit	Provides the option to change data in shown data entry fields. A different window can be displayed.
Close	Closes the window and resumes normal operation of the application, without changes.
Print	Prints the information to the selected output.
Help	Provides additional information through the context-sensitive on-line help.
Cancel	Cancels the selected action or changes.

### Using the Mouse

Mouse movements are described in the table below:

Movement	Function
Select	Select an object or menu item, click the left button (default) on the mouse with the pointer on the object.
Drag	<p>To move an object to an other location, select the object by using the left button (default). Then click it with the middle mouse button and hold that button down, while moving the mouse.</p> <p>To move a group of objects to another location, use the left button to define a box over the group of objects and move the box.</p> <p>Moving of a group can also be done by pressing <b>Ctrl + left mouse button</b> to select each object of the group. Then click it with the middle mouse button and hold that button down, while moving the mouse.</p>
Menu	To display a menu that is associated with the pointer location or the selected object, click the right button (default) of the mouse.



## Section: ITM-SC Specific Modules and Windows

### Overview

---

**Purpose** This section describes subjects which are more ITM-SC specific. Subjects described in the section are:

- ITM-SC specific modules
- General ITM-SC windows
- Main EMS menu window



## Accessing the ITM-SC Specific Modules

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- Module Icons** Some of the modules on the frontpanel have submenus for accessing one or more applications. The Management and Administration module both contain several applications.
- Opening a Module** Select the triangle just above the modules to open the modules.
- Closing a Module** Modules can be closed by selected closing the window (or **ALT-F4**) or by selecting the triangle at the bottom of the menu.



# Management Module

**Purpose** Through the Management Module the operator has the choice to:

- Start the network element management.
- Monitor a number of ITM-SCs for raised alarms.

**Management Menu** The Management menu provides options for managing network elements.



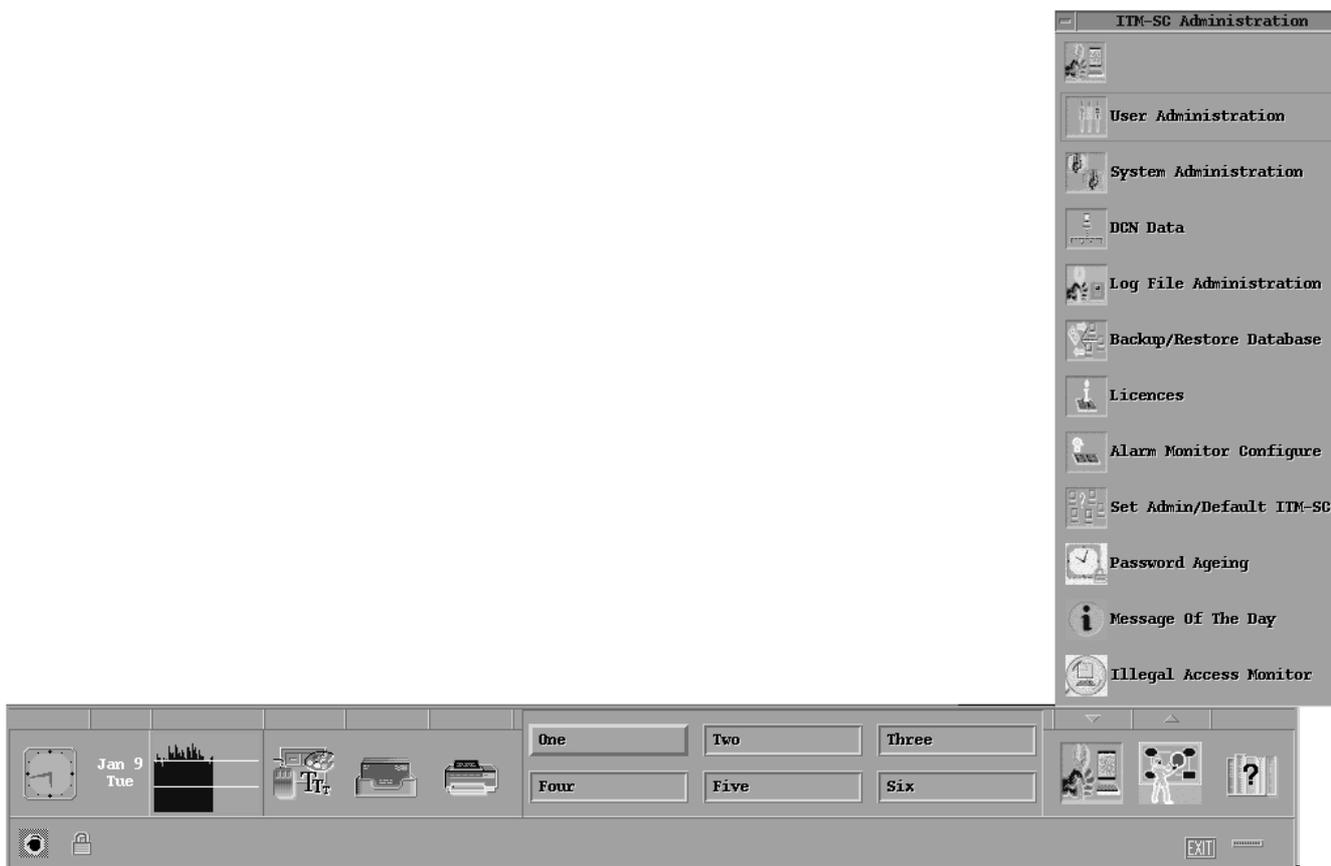
**Menu Options** Selections on the Management menu are described below:

Menu Option	Function
<i>Default ITM-SC NE Management</i>	Default ITM-SC NE Management allows the user to access the default ITM-SC server.
<i>Any ITM-SC NE Management</i>	Any ITM-SC NE Management allows the user to access any ITM-SC server.
<i>Alarm Monitor</i>	Alarm Monitor to configure, start and stop the monitoring of listed ITM-SCs for raised alarms. This is only relevant for a multi-server configuration.
<i>Set Admin/Default ITM-SC</i>	Set Admin/Default ITM-SC allows the user to change the default ITM-SC server.
<i>Change Password</i>	Change password allows to change the ITM-SC password of the user currently logged in.

## Administration Module

**Purpose** The Administration Module is only accessible when the administrator is logged in. This module gives access to the ITM-SC administration tasks.

**Administration Menu** The Administration menu is shown below:



**Menu Options** The Administration menu options are described below:

Menu Option	Function
<i>User Administration</i>	Add, delete or modify user logins.
<i>System Administration</i>	Start or stop the ITM-SC application.
<i>DCN Data</i>	Manage the Data Communications Network data.
<i>Log File Administration</i>	View or delete ITM-SC logins.
<i>Backup/Restore Database</i>	Backup or restore the application database.

<b>Menu Option</b>	<b>Function</b>
<i>Licences</i>	Enter or change licence information.
<i>Alarm Monitor Configure</i>	Configure a selected server to provide system alarm monitoring information.
<i>Set Admin/Default ITM-SC</i>	Select the server to which the subsequent administration commands are applied to.
<i>Password Ageing</i>	Enable/disable the password ageing parameters.
<i>Message Of The Day</i>	Enable/disable the message of the day parameters.
<i>Illegal Access Monitor</i>	Enable/disable the illegal access monitor parameters.



## General ITM-SC Windows

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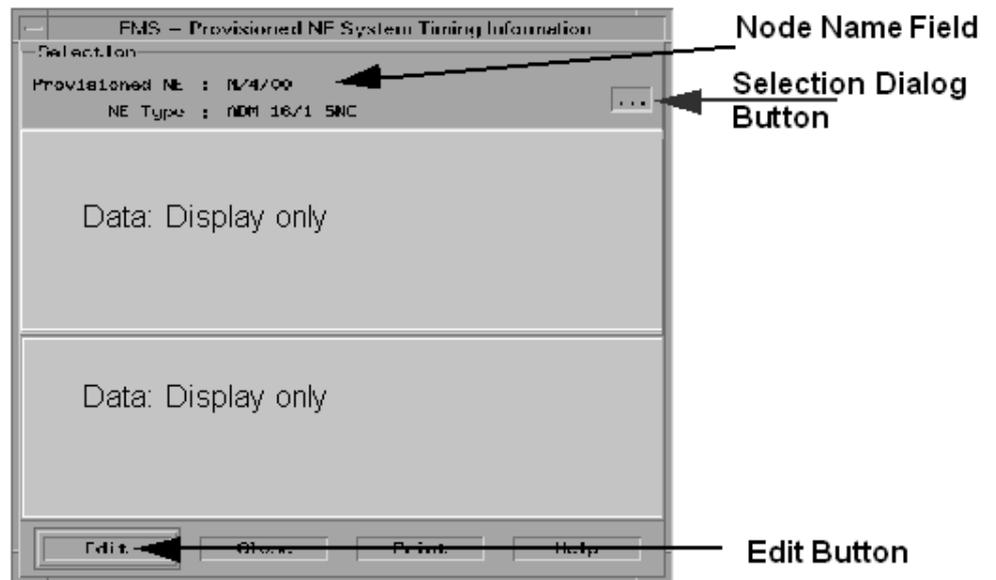
**Introduction** The Element Management System (ITM-SC) contains four types of windows:

- EMS-Menu.
- Selection Dialog window.
- Information window.
- Edit window.

**Button Names and Functions** The ITM-SC guides the user through the system by means of windows. These windows can contain the following buttons:

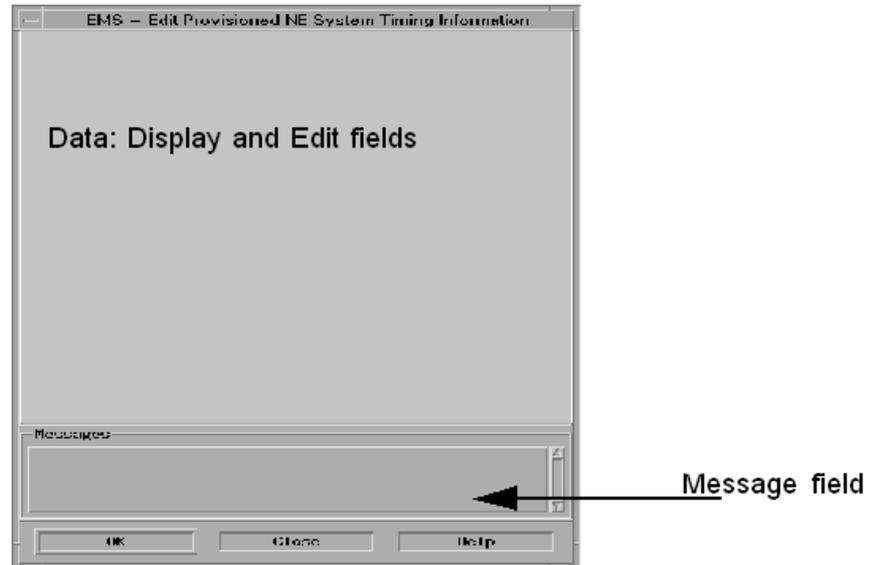
Button	Function
Apply	Executes the changes made. The window remains open to permit similar action.
OK	Accepts or executes changes and closes the window.
Edit	Provides the option to change data in shown data entry fields. A different window can be displayed.
Close	Closes the window and resumes normal operation of the application, without changes.
Print	Prints the information to the selected output.
Help	Provides additional information through the context-sensitive on-line help.
Cancel	Cancel the selected action or changes.

**Information Window** An Information window makes it possible to change or view information of a component (for instance a node).



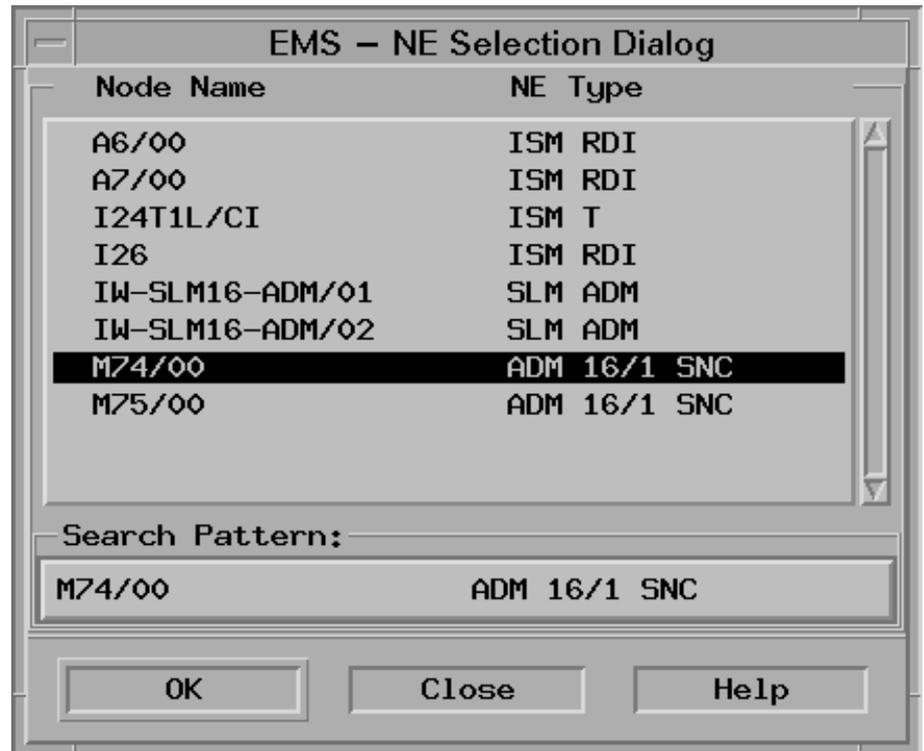
It is possible to click on the selection dialogue button to select a specific NE. When clicking the selection dialogue button a list with node names appears. From this list a node can be selected to edit or view the nodes information.

**Edit Window** An Edit window makes it possible to edit the data of a network element. The message field will display information about the action performed by the ITM-SC.



**Selection Dialog Window** The Selection Dialog window makes it possible to select a NE, slot, port, termination point, time, date etc. out of a list. The chosen items will be used to edit the characteristics of the item or filter lists by means of the item.

This example window below provides a list of network elements.



To speed up the search for an item the Search Pattern can be used. When using the Search pattern and when a match for the typed selection is found, the found item is highlighted in the list. When more than one match is found, the first match is marked with a diamond symbol.

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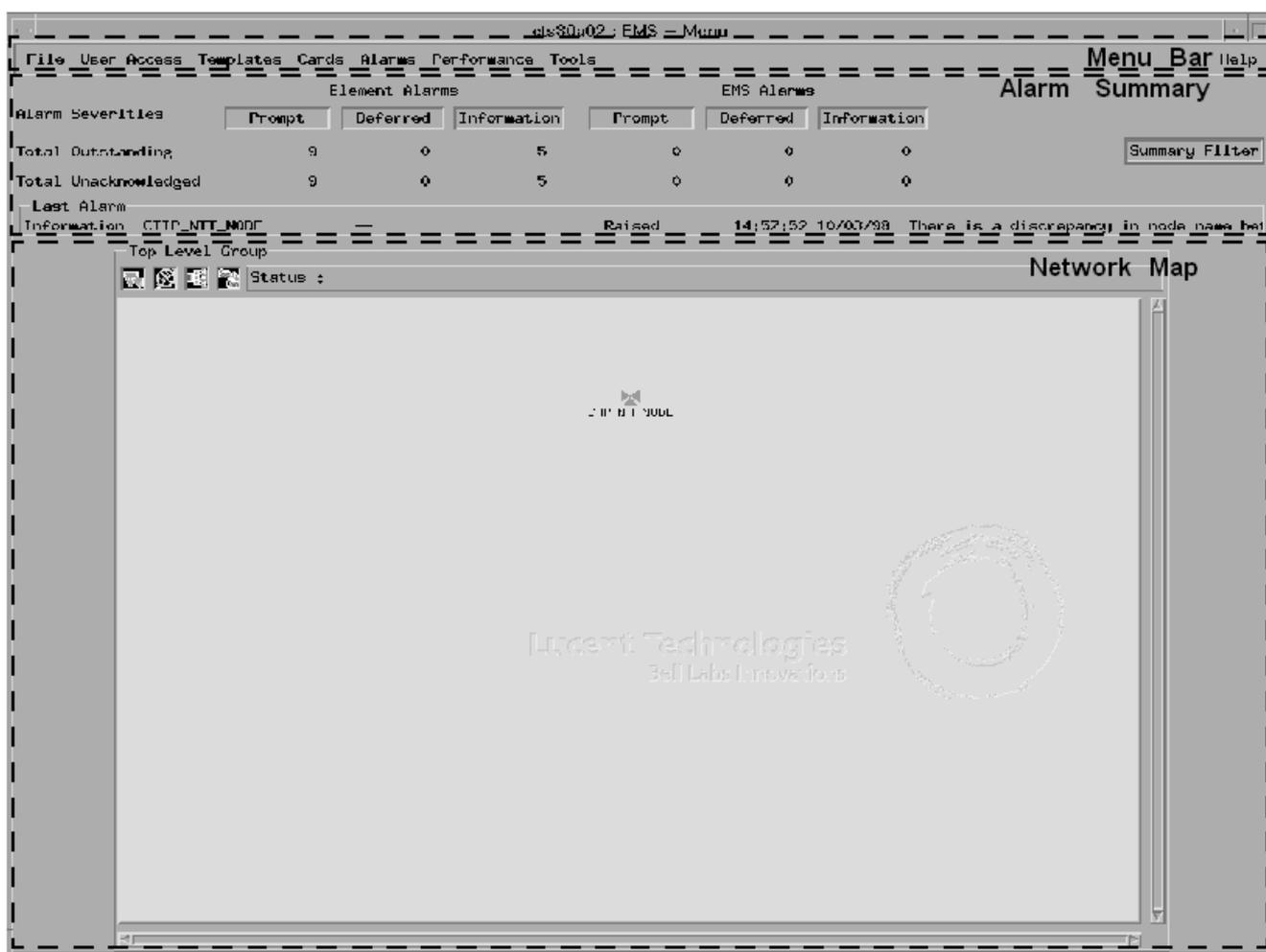
## Main EMS—Menu Window

**Introduction** The EMS - Menu window is the main window of the ITM-SC application. The EMS - Menu contains several fields that either provide information about the current status of the network element, or that can be used to manage the network element.

**Parts of the EMS - Menu** The EMS - Menu can be divided into three parts:

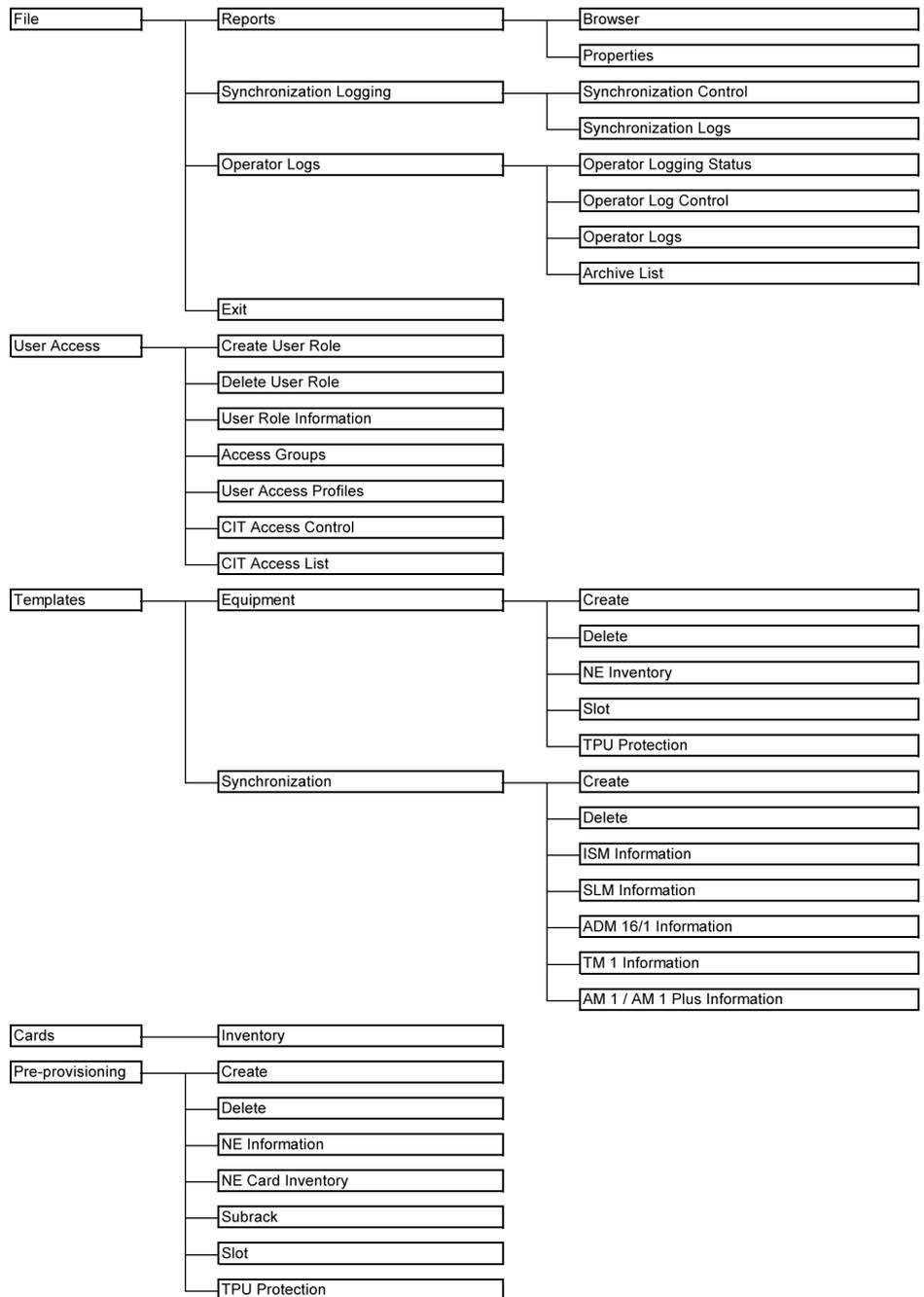
- Menu Bar.
- Alarm Summary.
- Network Map.

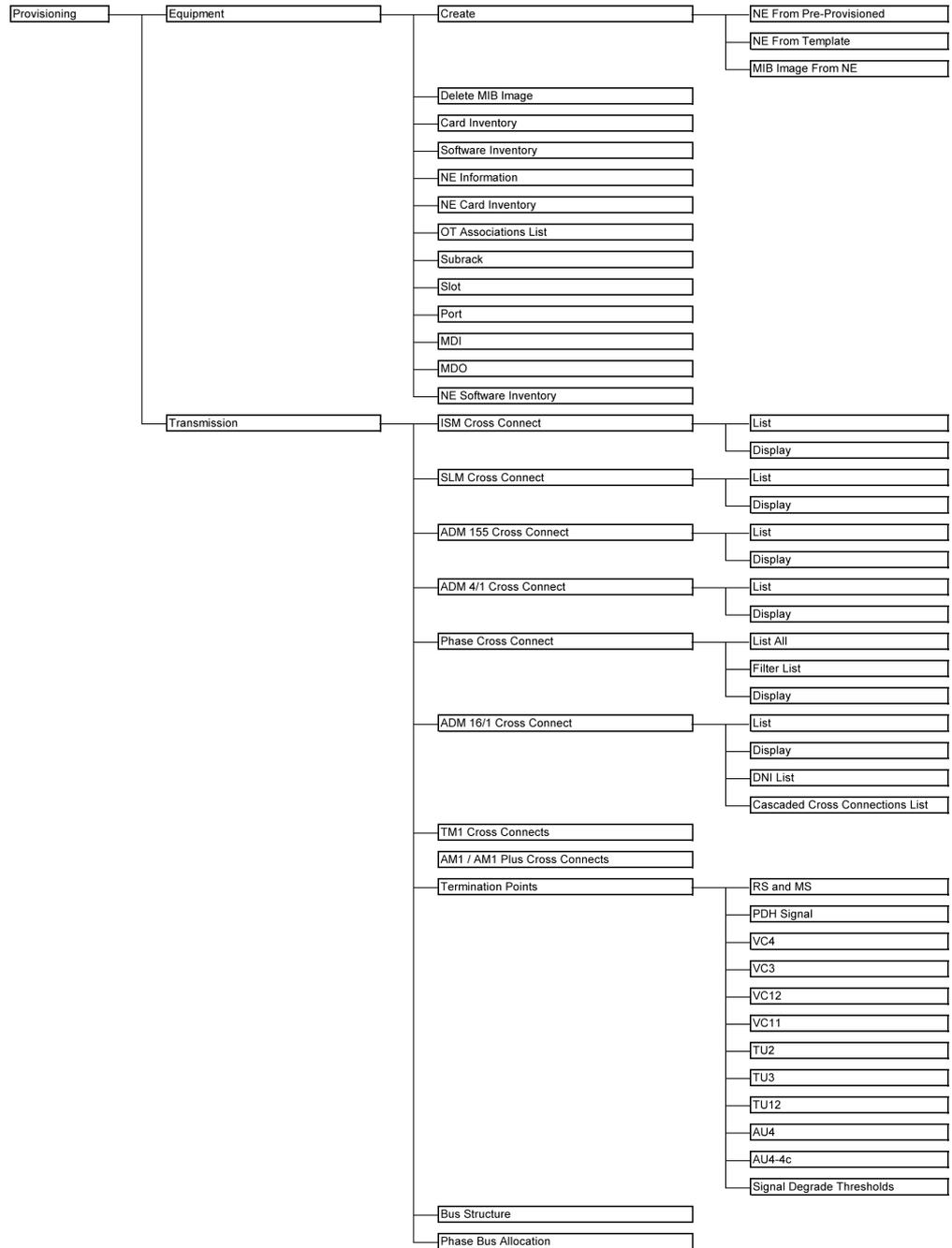
The picture below distinguishes the 3 parts.

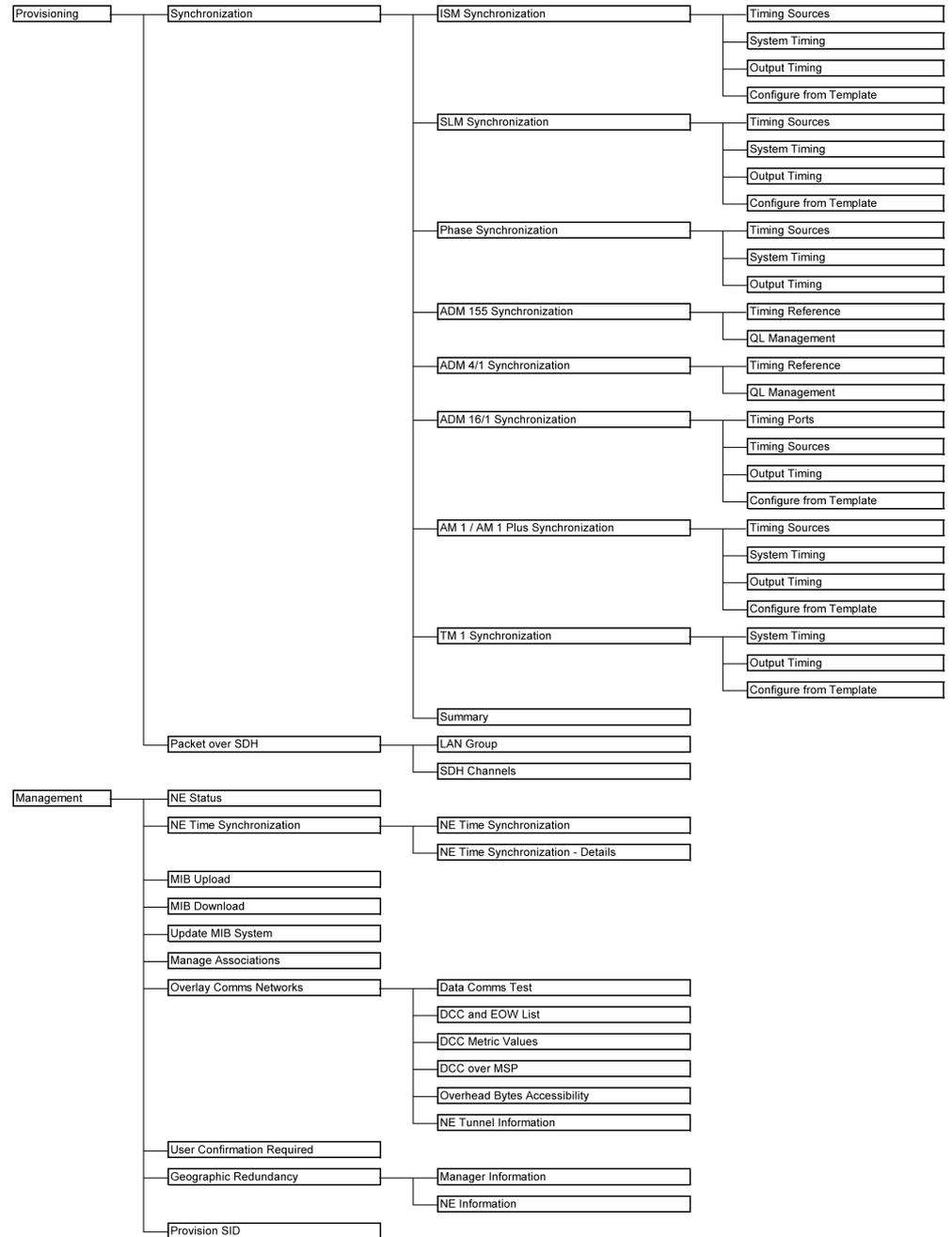


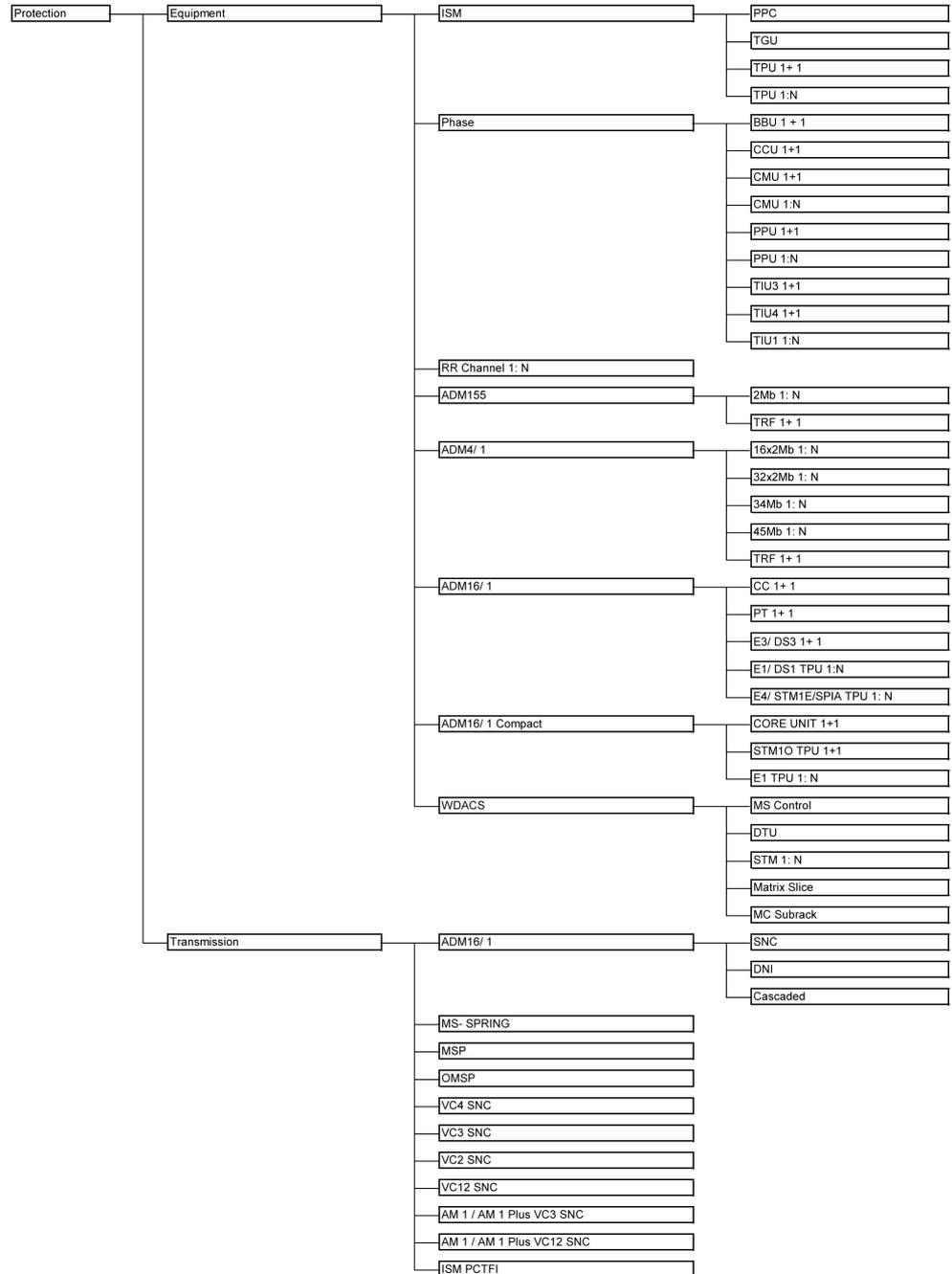
**Menu Bar** Via the Menu Bar it is possible to manage the network element. It consist of several buttons that have one or more submenus attached to it. By clicking a menu bar button, the submenus will scroll down and the submenu that is required can be selected. These submenus can, on their part, contain several sub-submenus as well.

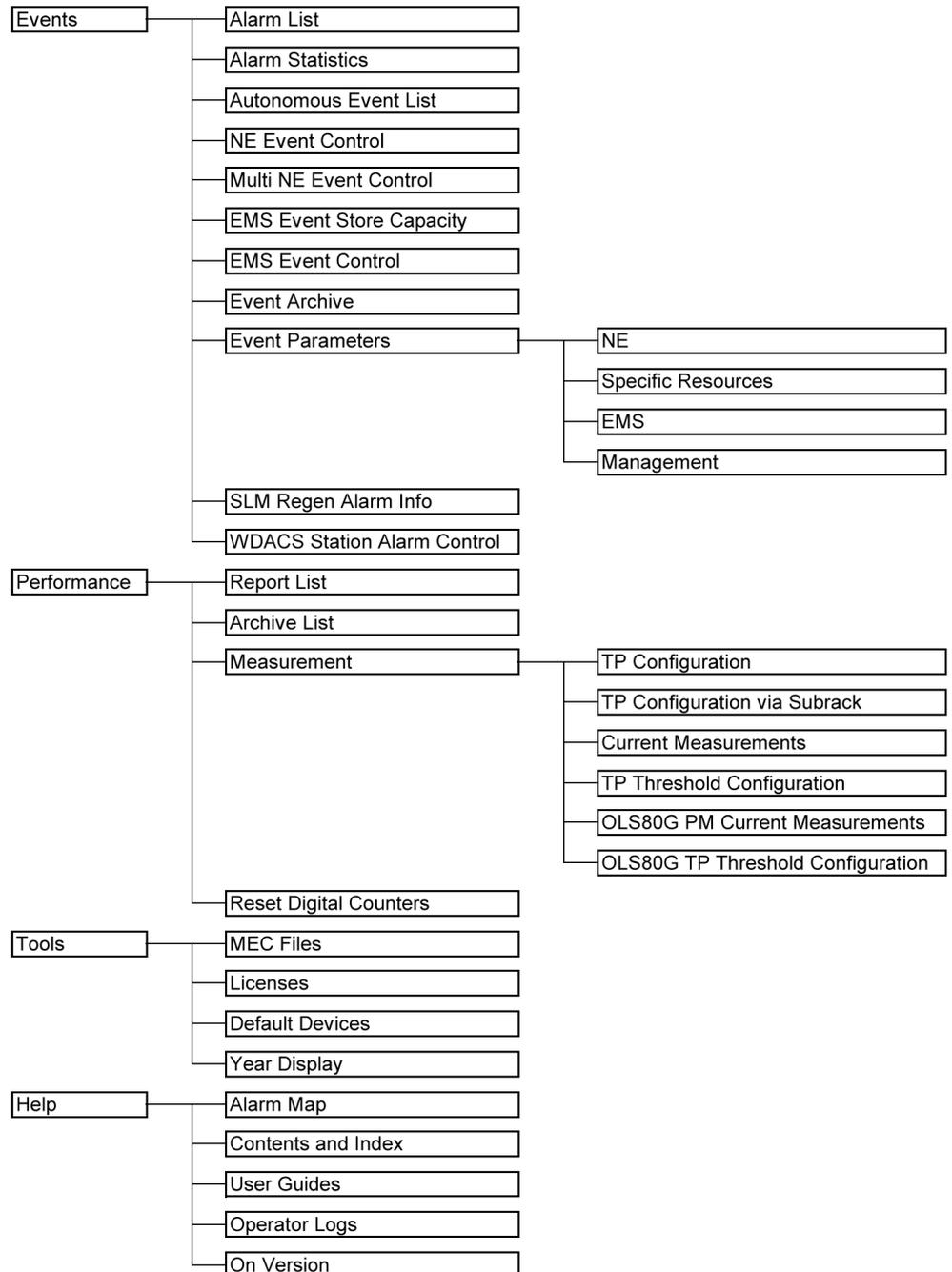
**Menu bar structure** The structure underlying the menu bar is as follows:











**Alarm Summary** The Alarm Summary provides an overview of the alarms risen on both the NEs and the NE management system. A more detailed description of the alarm summary can be found in the chapter “Event Management”.

**Network map** The Network Map is the main window for managing all NEs within the subnetwork and gives direct information about NEs their status. A more detailed description of the Network Map can be found in the section “Network Map” of this chapter.



## Section: ITM-SC General Tasks

### Overview

---

**Purpose** This section describes subjects which are ITM-SC related such as:

- Accessing the ITM-SC.
- Changing of ITM-SC passwords.
- ITM-SC Reports
- Log out of the ITM-SC.



## Parameters for Accessing the ITM-SC

---

**Login** Before the ITM-SC application can be started the user needs to login.

**Window to use** The following window is used to login into the ITM-SC.



**Login and Password** The login or user name has up to 8 alphanumeric characters (a..z, A..Z, 0..9). The Password requires a minimum of 6 characters (a..z, A..Z, 0..9 and other printable characters e.g. - \* +) with at least 2 alphabetic characters and at least 1 non alphabetic character.

**Button Description** Buttons on the window are described below:

Button	Function
OK	Confirms the start of the login after filling in the “Login” and “Password” fields.
Start Over	Removes data from the “Login” and “Password” fields. Lets the user begin the login procedure again, without registering a login attempt. Clear is quicker than backspacing, which can also be used.
Options	Displays a menu containing Restart Server, Copyright, Fail-safe Session, HP-VUE Lite Session, HP-VUE Session and Languages. These items are HP specific and control features of the workstation and what happens after login. For more information about the selectable items, refer to the HP system documentation.
Help	Provides information on how to login.



## Accessing the ITM-SC

---

**Purpose** To login in to the ITM-SC.

**Related information** For more information on the parameters used refer to:

- Parameters for Accessing the ITM-SC

**Procedure** Perform the following procedure to Log in to the ITM-SC.

---

**1** Enter Login (user name) and click OK or press **ENTER**.

---

**2** Enter password. Click OK or press **ENTER**.

**Result:**

If the login is successful, an HP copyright message appears.  
After this the Front Panel appears.

An “Incorrect Login” message appears when the login or password entered is incorrect. Press **ENTER** or click OK when this message appears. After this the login process can be restarted.

END OF STEPS

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## Changing Password

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**Purpose** To increase the security of the ITM-SC and its network managed the user is able to change his/her own ITM-SC password.

**Before you begin** In this procedure a shell window is provided to change the password. A script will guide the user through the change of password.

**Related information** Related procedures are:

- Modifying ITM-SC User Information
- Configuring Password Ageing.

**Procedure** Follow the script below to change the ITM-SC password.

---

- 1 Open the *ITM-SC Management* menu and select the *Changing Password* icon.

**Result:**

A shell window appears asking the user for the current password.

---

- 2 Enter the current password. Press **ENTER**.

**Result:**

The user is asked to enter a new password.

---

- 3 Enter a new password. Press **ENTER**.

**Result:**

The user is asked to re-enter the new password.

---

- 4 Re-enter the new password. Press **ENTER**.

**Result:**

If the new password is accepted the following message will appear: Password has been updated successfully. The shell window will disappear automatically.

END OF STEPS

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## Report Concepts

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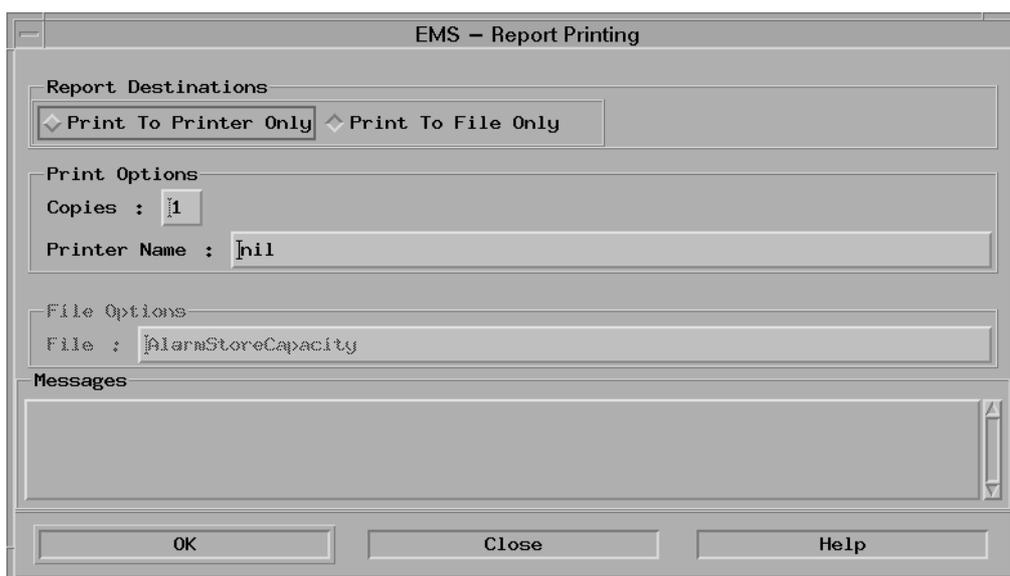
**Background** When selecting anywhere in the ITM-SC the **Print** button, system information that is shown in that window, can be sent to two different outputs. It can be printed directly to a printer or to a file (a report). A report will be stored on the ITM-SC for later use.

**File directory and format** If a report is created a file, representing the report, is stored on the ITM-SC.

The location of these files is: `/var/spool/itm/sc/reports/<ServerName>/` where `<ServerName>` is the name of the server. The format of these files are ASCII.

**Limited printing capacity** When printing long reports, only the first 2000 lines will be printed. The user will be notified if the report is not printed entirely.

**Report Printing window** The Report Printing window allows the user to decide which type of output is generated.

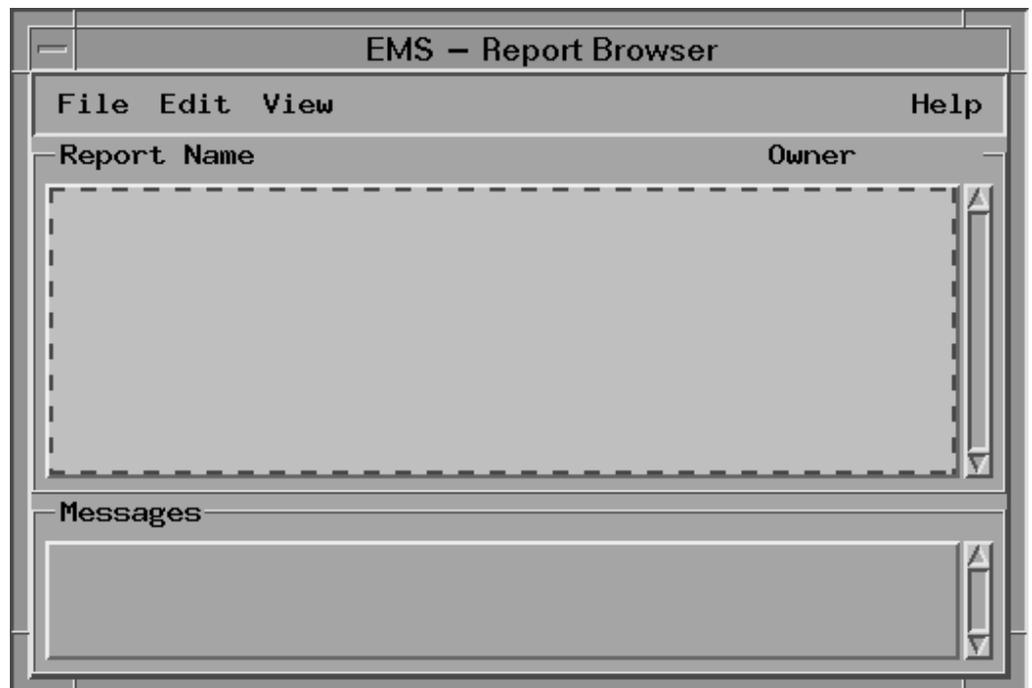


**Fields to Use** Use these fields to determine the print output:

Field	Description
<i>Report Destinations</i>	Shows the possible outputs: Printer or File. <i>Print to Printer Only</i> is the default setting.

Field	Description
<i>Print Options</i>	Is only highlighted if <i>Print to Printer Only</i> is selected. The Printer Name is the name of the default printer, but if an other printer is required, its name can be entered. The number of copies can also be entered.
<i>File Options</i>	Is only highlighted if <i>Print to File Only</i> is selected. The name of the file to print to can be entered. Note that if the entered file name already exists, the old file will be overwritten!

**Report Browser window** The Report Browser window is used to view the reports stored on the ITM-SC system.



- Report Options** Use the *File* menu of the Report Browser to:
- Browse online or hardcopy a report.
  - Rename a report.
  - Copy a report to another device, such as computer disk.
  - Delete a report.
  - View the report names of all the users.



## Printing a Report

---

**Purpose** To store or print all kinds of system data for evaluation.

**Related information** The related concept is:

- Report Concepts

**Procedure** Perform the following procedure for printing data by a selected printer.

---

**1** Click on the **Print** button in the information window from which the data is to be printed.

---

**2** Select the desired output device.

If the output device is a printer, enter the number of copies and, if needed the name of the printer.

If the output device is a file, enter the file name.

---

**3** Click OK.

**Result:**

The report will be printed. Note that the only the first 2000 lines will be printed of reports which exceed this limit.

END OF STEPS

---



## View a Report

---

**Purpose** Use this procedure to view the information that has been printed to files.

**Related information** The related concept is:

- Report Concepts

**Procedure** Follow these steps to browse a report:

---

- 1 Select *File -> Reports -> Browser*.

**Result:**

The Report Browser window appears.

---

- 2 Select the Report Name from the list of report names. When no reports are shown select View and All or User successively.
- 

- 3 Execute the desired operation.
- 

- 4 After operating on the file select *File -> Close* to complete the procedure.

END OF STEPS

---



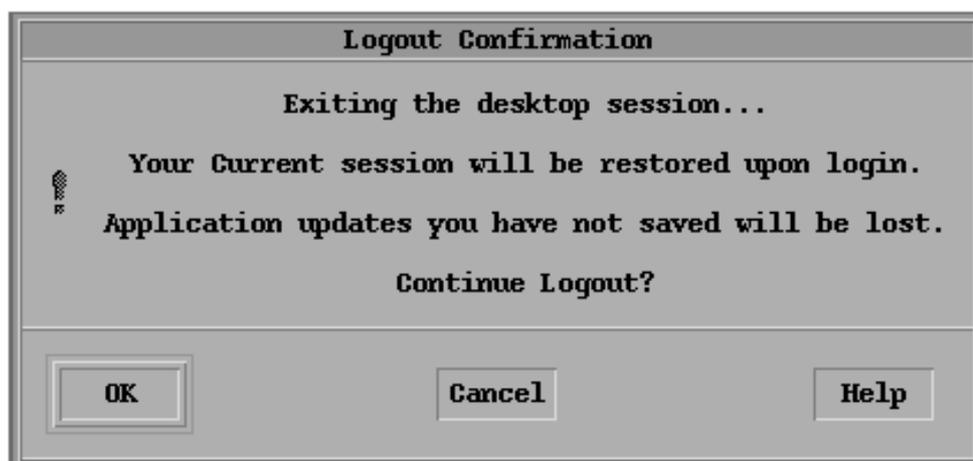
## Logout of the ITM-SC

---

**Background** When the user has completed his work on the ITM-SC, he or she can log out of the Graphical User Interface. Then unauthorized users will not be able to access the ITM-SC.

**Security** In the style manager the administrator can enable logout confirmation, so an accidental logout can be prevented. Furthermore, an administrator is the only user that can make lasting changes in the style manager. Any changes to settings made by other users are lost at logout.

**Windows to Use** To log out of the system, the Logout icon and the Logout Confirmation window (optional) are used.



□

# Logout

---

**Related information** The related concept is:

- Logout of the ITM-SC

**Procedure** To logout perform the following procedure:

---

- 1 Click on the Logout icon.

**Result:**

If provisioned, the Logout confirmation window appears. A confirmation is then requested to make sure that the session has to be ended.

---

- 2 Click OK.

**Result:**

After confirming, the login window is displayed until the workstation time-out threshold is reached, then the screen saver appears and the log out procedure is completed.

END OF STEPS

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## Section: ITM-SC Network Map

### Overview

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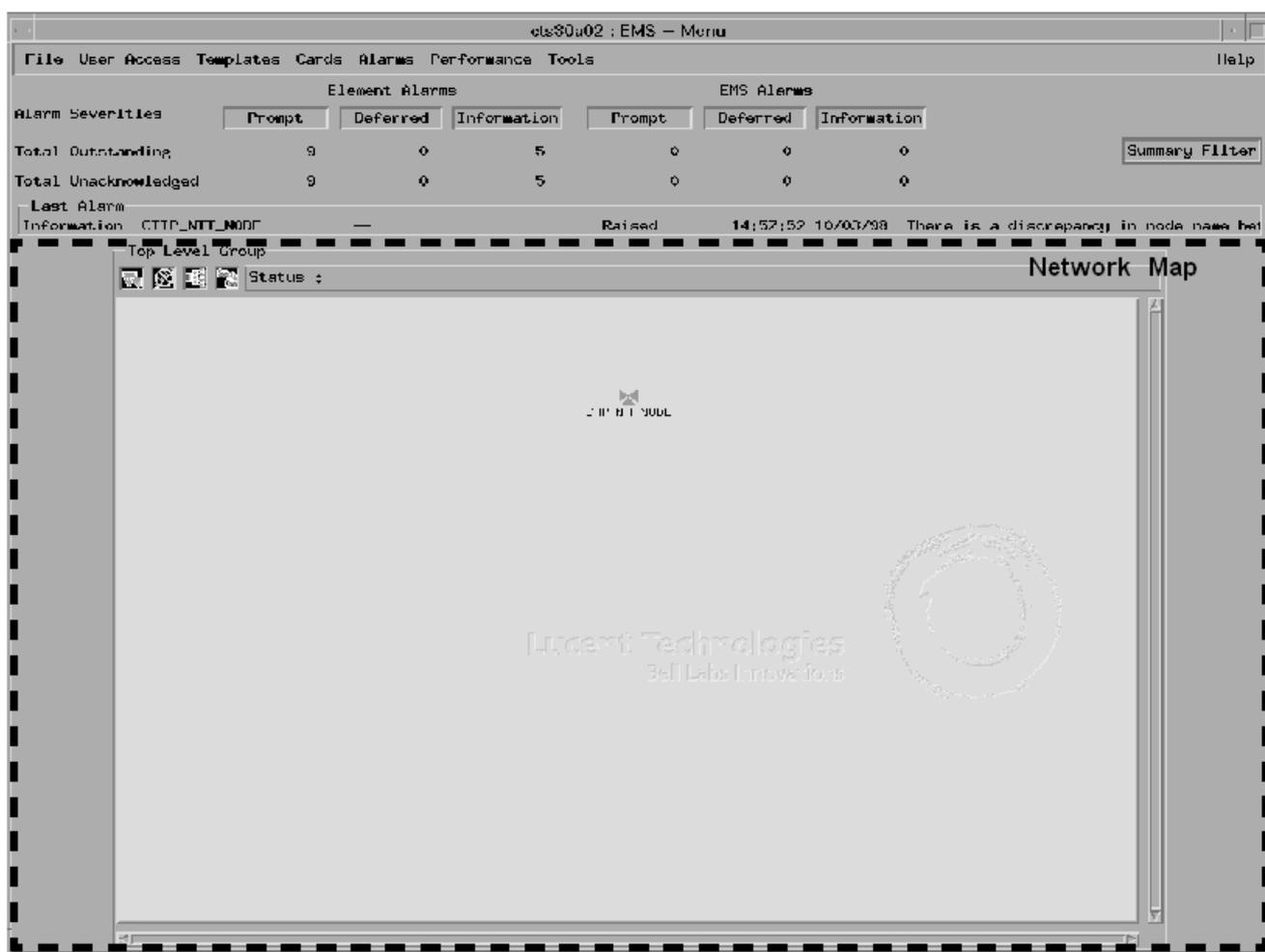
**Purpose** This section will give an description of the features and use of the Network Map as well as provide some tasks to manage the Network Map.



## ITM-SC Network Map Concepts

**Introduction** After activating Network Element Management from the Management Module, the Subnetwork Map window is displayed. This window is the main window for managing all network elements within the subnetwork and gives direct information about network elements, their status and Map groups.

**Example of Network Map** An example of the Network Map is shown below.



**Network Map Icons** The Network Map icons are described in the table below:

Icon	Name	Description
	Up	To go up a group from the current group (unless at top-level already). Changes the display to show the group.

Icon	Name	Description
	Connections	This button will toggle the display of the RR connectivity lines. Note: only applicable for Radio Relay NEs.
	Display groups	Toggles the display between the contents of groups and the group icon. This also can be done by pressing control (CTRL) and selecting the Group or NE.
	Modify groups	Used to modify the grouping of network elements. This also can be done by selecting and NE or Group together with the right mouse button. Select from the pop up menu Modify Map Grouping of Nodes

**Network Element Icons** The following icons represent the different types of network elements in different statuses.

	Add/Drop Multiplexer STM 1	Ring Drop & Insert 2 Mb	Regenerator	Terminator	Dual Facing Terminator	Cross Connect
Normal						
Geographic Redundancy						
Lining Up						
Lining Up + Geographic Redundancy						

**Map Group** A Map Group is a group of NEs which are put together because they are geographically or functionally related.

**Group Icon** The following icon represents a group of nodes:



**NE Status** The color of each icon on the window represents the current status of the network element or connection. If two conditions exist for the same network element or connection, the network element icon or line is colored to indicate the condition with the highest severity. All alarms of the entire subnetwork are shown in one window; this is sometimes called the Alarm Map.

**Colors of Alarms** The list below describes alarm colors and severity or status.

Color	Meaning
White	The NE or Connection is currently selected.
Grey	No current 'associations' exist with the NE or Connection. An association exist when there is communication between an ITM-SC and an NE.
Red	A 'Prompt Alarm' is currently on the NE or Connection.
Yellow	A 'Deferred Alarm' is currently on the NE or Connection.
Orange	An 'Information Alarm' is currently on the NE or Connection.
Green	No alarms currently on the NE or Connection.
Blue	The node has been pre-provisioned.

**Additional Alarm Information** Additional information about an alarm can be given by the flashing square or "outlined" icon:

Action	Description
Flashing square	The alarm is not acknowledged yet. This is valid to each NE type but not for connections.
Outline	The network element is protected under Geographic Redundancy by this ITM-SC, but is not managed currently by this ITM-SC. This ITM-SC is not associated with this network element, so the outline is shown in grey. Valid for each NE type.
Short Beep	Indicates the arrival of a new alarm.

**Specific Actions on the Network Map** Information about network elements or connections can easily be obtained using the Network Map. The alarms display can be filtered in such a way that only alarms of the selected network element or connection are shown.

To ..	Do this ..
-------	------------

Select an NE or group of NEs	Click once on the specific item.
Select multiple NEs	Press shift and draw using the cursor to make a rectangle over all NEs to select. This can also be done by pressing Ctrl and clicking with left mouse button on the desire NEs
Clear all selections	Click once on the Network Map outside any node or group.
Retrieve the alarm list of a NE or connection	Double click left-button on the specific NE or connection.
Drag selected nodes/groups	select nodes/groups and hold middle mouse button and drag to new position.

**Pop-up Menus** The following pop-up menus can be accessed via selecting an item using the right mouse button.

Selecting item	provides shortcut to
NE	Alarm List Shelf Display
background	Change the Groupings



## Customizing ITM-SC Network Map Concepts

---

**Introduction** To prevent the Network Map from appearing cluttered when several network elements occupy a small space, those network elements can be grouped together into a map group which is represented by a single icon. For example network elements can be grouped in a geographical or functional way. It is possible that a map group contains another map group.

**Customizing Features** In order to customize the Network Map three procedures are provided:

- Creating of Map Groups.
- Modifying of Map Groups.
- Placing NEs in Map Groups.

These procedures can be found in this section under Managing Map Groups Procedures.

### Icons for Customizing the Network Map

Four icons are provided to customize the Network Map. When network elements are mentioned, this is irrespective of network element type or whether the network element is associated or not. Non-associated network elements are called nodes. Within Map Groups nodes are treated in the same way as network elements.

Icon	Name	Description
	Up	To go up a group from the current group (unless at top-level already). Changes the display to show the group.
	Connections	This button will toggle the display of the RR connectivity lines. Note: only applicable for Radio Relay NEs.
	Display groups	Toggles the display between the contents of groups and the group icon. This also can be done by pressing control (CTRL) and selecting the Group or NE.
	Modify groups	Used to modify the grouping of network elements. This also can be done by selecting a NE or Group together with the right mouse button. Select from the pop up menu Modify Map Grouping of Nodes

**Moving icons** To move a node or Map Group icon, select the node/group icon and drag the icon to the new position while holding the middle mouse button.



## Parameters for Managing Map Groups

---

**Old Group Name** Displays the old name of a group. This field is grayed out when creating a map group.

**New Group Name** When creating a group: this is the name of the group to be created.  
When modifying a group: this is the new group name.

**Parent Group Name** This is the name of the group's parent in the hierarchy.  
When creating a group: specifies where in the hierarchy the group appears.  
When modifying a group: provides a mechanism for moving the group to a different parent.

**Background Image File** This is the name of the background GIF filename used for the background image when the group is displayed. By default for a new group, it will be the Lucent logo file. The files available are the files in the directory: *../lib/map\_data*. To display a new file, this file must be present in this directory.



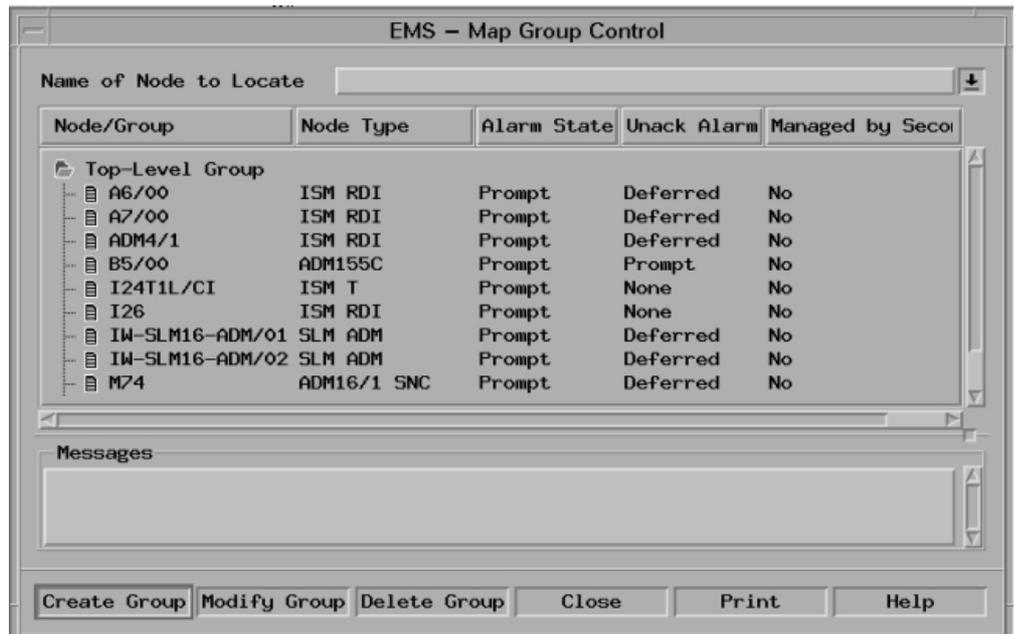
## Windows for Managing Map Groups

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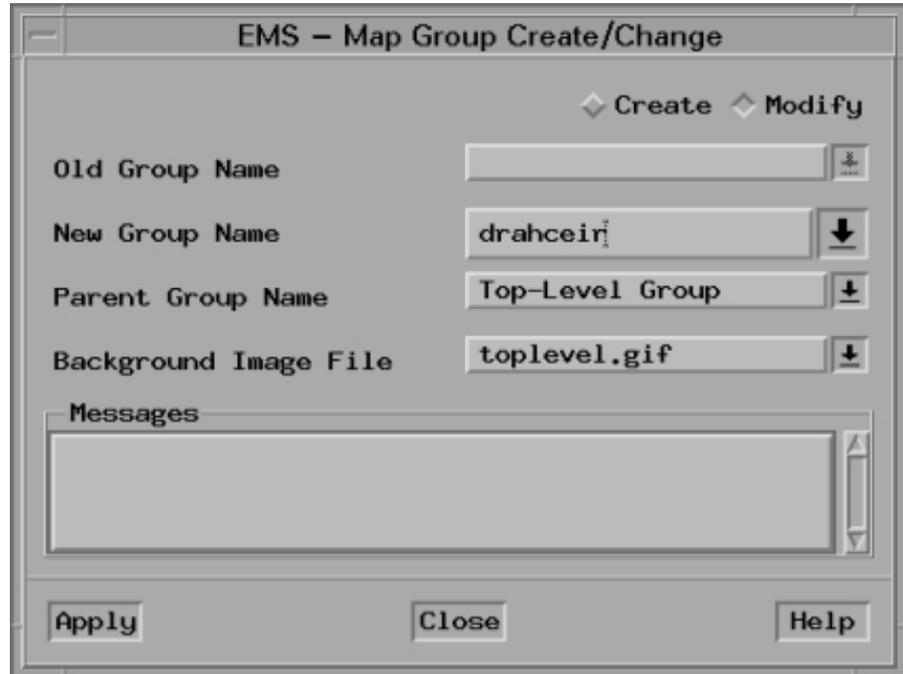
**Windows to use** The windows to be used to managing the Map Groups and their contents are:

- *EMS - Map Group Control.*
- *EMS - Map Group Create/Change.*

### EMS - Map Group Control



**EMS - Map Group  
Create/Change**



□

## Managing Map Groups Procedures

---

- Purpose** Three procedures are provided to:
- create new map groups
  - modify existing map groups
  - Place/insert NEs into a map group
- Before you begin** Before performing this procedure make sure:
- The background image file is present in the *.../lib/map\_data* directory.
- Before performing this procedure note the following:
- There is no correlation between Map Groups and Access Groups. Map groups only re-arrange the graphical presentation of NEs and Nodes on the Network Map. Access Groups are groups of NEs created for user security.
- Related information** Related concepts are:
- ITM-SC Network Map Concepts
  - Customizing ITM-SC Network Map Concepts
- Create Map Groups** Follow these steps to create a network element group and apply a background image file:
- 
- 1** Click with the right mouse button on Network Map (NOT on a node!) or click on the Modify groups icon.
- Result:**
- When using the first option the Network Map Background pop-up menu appears.
- When using the Modify groups icon the *EMS - Map Group Create/Change* window appears. Proceed with step 3!
- 
- 2** Select Change the Groupings.
- Result:**
- The *EMS - Map Group Control* window appears, showing a hierarchical view of the Network map's Map Groups.
- 
- 3** Select Create Group.

**Result:**

The *EMS - Map Group Create/Change* window appears.

---

- 4 Fill in New Group Name.
- 

- 5 Select the Parent Group Name when the created group has to be placed in a other Map Group.
- 

- 6 Select the appropriate filename in Background Image File and click Apply.

**Result:**

A new Map Group is created and is displayed in the *EMS - Map Group Control* window. Double click on the Map Group to display the content of the Map Group with the selected background image file as background.

---

- 7 Click on the Close button.

**Result:**

The *EMS - Map Group Control* window appears. It is possible to continue to modify Map Groups.

---

- 8 Click the Close button in the *EMS - Map Group Control* window when the Map Groups modifications is completed.

**Result:**

The *EMS - Map Group Control* window disappears.

END OF STEPS

---

**Modify Map Groups** Follow these steps to modify network element groups:

---

- 1 Click with the right mouse button on Network Map (NOT on a node!) or click on the Modify groups icon.

**Result:**

When using the first option the Network Map Background pop-up menu appears.

When using the Modify groups icon the *EMS - Map Group Create/Change* window appears. Proceed with step 3!

- 
- 2 Select Change the Groupings.

**Result:**

The *EMS - Map Group Control* window appears. This window provides a hierarchical presentation of the Network map's Map Groups.

---

- 3 Select a Map Group.
- 

- 4 Click the Modify Group button.

**Result:**

The *EMS - Map Group Create/Change* window appears.

---

- 5 Select the Map Group to modify, enter the modifications and click Apply to activate the changes.
- 

- 6 Click Close.

**Result:**

The *EMS - Map Group Control* window appears.

---

- 7 Click Close in the *EMS - Map Group Control* window.

**Result:**

The changes made are activated and accessible and the Map Groups are updated with the changes to complete the procedure.

END OF STEPS

---

**Place NEs in Map Groups**

Follow these steps to rearrange network elements in network element groups:

---

- 1 Click with the right mouse button on Network Map (NOT on a node!) or click on the Modify groups icon.

**Result:**

When using the first option the Network Map Background pop-up menu appears.

When using the Modify groups icon the *EMS - Map Group Create/Change* window appears. Proceed with step 3!

- 
- 2 Select Change the Groupings.

**Result:**

The *EMS - Map Group Control* window appears. This window provides a hierarchical view of the network map's Map Groups. All NEs, whether or not a member of a Map group, are shown.

---

- 3 To add an NE to a group, use the mouse to drag the node to the hierarchy display. Select an NE with the left mouse button, and drag it with the middle mouse button to the group. Release the button.
- 

- 4 When an NE is difficult to find, select the NE number or name in the *Name of Node to Locate* field.

**Result:**

The requested node is highlighted.

---

- 5 Continue to move the nodes until they are arranged within the Map Groups as wanted.
- 

- 6 Click Close.

**Result:**

Modifications are activated for the Map groups and the procedure is completed.

END OF STEPS

---





# Glossary

# **5ESS**

Number 5 Electronic Switching System

**5TAD**

Five Tributary Add Drop subrack (WaveStar® ADM 16/1)

**9TAD**

Nine Tributary Add Drop subrack (WaveStar® ADM 16/1)

**12 digit Numerical Code (12NC)**

Used to uniquely identify an item or product. The first ten digits uniquely identify an item. The eleventh digit is used to specify the particular variant of an item. The twelfth digit is used for the revision issue. Items with the first eleven digits the same, are functionally equal and may be exchanged.

---

**A AAU**

Alarm Adapter Unit (RR)

**AC**

Alternating Current

**ACU**

Alarm Collection Unit (RR)

**ADM**

Add-Drop Multiplexer

**Add-Drop Multiplexer 155 Mbit/s Compact Subrack (ADM-155C)**

A network multiplexer that is designed to flexibly multiplex plesiochronous and STM-1 tributary port signals into STM-1 line port signals.

**Administrative Unit (AU)**

Carrier for TUs.

**Administrative Unit Pointer (AU PTR)**

Indicates the phase alignment of the VC-n with respect to the STM-N frame. The pointer position is fixed with respect to the STM-N frame.

**Administrator**

See ITM-SC System Administrator.

**Agent**

Performs operations on managed objects and issues events on behalf of these managed objects. All SDH managed objects will support at least an agent. Control of distant agents is possible via local "Managers".

**Alarm**

The notification (audible or visual) of a significant event. See also Event.

**Alarm Adapter Unit (AAU)**

Radio Relay circuit pack that is used for collection of external alarms and remote control of external equipment.

**Alarm Collection Unit (ACU)**

Radio Relay circuit pack that performs collection of equipment alarms, analogue measurement from internal monitoring points and calculating data.

**Alarm Indication Signal (AIS)**

Code transmitted downstream in a digital Network that shows that an upstream failure has been detected and alarmed if the upstream alarm has not been suppressed. Also referred to as All OneS.

**ALS**

Automatic Laser Shutdown

**Alarm Severity**

An attribute defining the priority of the alarm message. The way alarms are processed depends on the severity.

**Aligning**

Indicating the head of a virtual container by means of a pointer, i.e. creating an Administrative Unit (AU) or a Tributary Unit (TU).

**Alternate Mark Inversion (AMI)**

A line code that employs a ternary signal to convert binary digits, in which successive binary ones are represented by signal elements that are normally of alternative positive and negative polarity but equal in amplitude and in which binary zeros are represented by signal elements that have zero amplitude.

**American Standard Code for Information Interchange (ASCII)**

A standard 8-bit code used for exchanging information among data processing systems and associated equipment.

**Anomaly**

A difference between the actual and desired operation of a function.

**ANSI**

American National Standards Institute

**Assembly**

Gathering together of payload data with overhead and pointer information (an indication of the direction of the signal).

**APS**

Automatic Protection Switching

**AS**

Alarm Suppression assembly

**Association**

A logical connection between manager and agent through which management information can be exchanged.

**Asynchronous**

See Non-synchronous.

**ATC**

Auxiliary Transmission Channel

**ATM**

Asynchronous Transfer Mode

**ATPC**

Automatic Transmit Power Control

**AU**

Administrative Unit

**AU4AD**

Administrative Unit 4 Assembler/Disassembler

**AUG**

Administrative Unit Group

**AUTO**

Automatic

**Automatic Transmit Power Control (ATPC)**

Reduces the transmitter power output level during normal propagation conditions, and increase the power output to maximum level during fading periods trying to maintain nominal receiver input level.

**Autonomous Message**

A message transmitted from the controlled Network Element to the ITM-SC which was not a response to an ITM-SC originated command.

---

**B B3ZS**

Bipolar 3-Zero Substitution

**B8ZS**

Bipolar 8-Zero Substitution

**BBTR**

Backplane Bus TRansceiver

**BC**

Board Controller

**BCC**

Board Controller Complex

**BIN**

BINary

**BIP**

Bit Interleaved Parity

**BISDN**

Broadband Integrated Services Digital Network

**Bit Error Ratio (BER)**

The ratio of bits received in error to bits sent.

**Bit Interleaved Parity (BIP)**

A method of error monitoring using a specified number of bits (BIP-8)

**BLD OUT LG**

Build-Out Lightguide

**Board Controller Local Area Network (BC-LAN)**

The internal local area network that provides communications between the Line Controller circuit pack and board controllers on the circuit packs associated with a high speed line.

**Branching**

Interconnection of independent line systems.

**Broadband Communication**

Voice, data, and/or video communication at greater than 2 Mbit/s rates.

**Broadband Service Transport**

STM-1 concatenation transport over the SLM for ATM applications.

**BUSTR**

BUS Transmitter and Receiver

---

**C CAS**

Channel Associated Signalling

**CAT**

CATastrophic

**CC**

Cross-Connection Cross-Connect (WaveStar® ADM 16/1)

**CCIR**

See ITU-R.

**CCITT**

See ITU-T.

**CCS**

Common Channel Signaling

**CEPT**

Conférence Européenne des Administrations des Postes et des Télécommunications

**Channel**

A sub-unit of transmission capacity within a defined higher level of transmission capacity, e.g. a CEPT-4 (140 Mbit/s) within a 565 Mbit fiber system.

**Circuit**

A combination of two transmission channels permitting bi-directional transmission of signals between two points, to support a single communication.

**CIT**

Craft Interface Terminal

**Clear Channel (Cl. Ch.)**

A provisionable mode for the 34 and 140 Mbit/s tributary outputs that causes parity violations to not be monitored or corrected before the 34 and 140 Mbit/s are encoded.

**Client**

Computer in a computer network that generally offers a user interface to a server. See also Server.

**CMI**

Coded Mark Inversion

---

**CO**

Central Office

**Concatenation**

A procedure whereby a multiplicity of Virtual Containers is associated one with another with the result that their combined capacity can be used as a single container across which bit sequence integrity is maintained.

**Configuration Management (CM)**

Subsystem of the ITM-SC that, among other things, configures the network and processes messages from the network.

**CONN PCB**

Connector Printed Circuit Board

**Container (C)**

Carries plesiochronous signal, the "payload".

**Co-resident**

A hardware configuration where the ITM-SC and ITM-NM applications can be active at the same time independently on the same hardware and software platform without interfering each others functioning.

**Common Object Request Broker Architecture (CORBA)**

CORBA allows applications to communicate with one another no matter where they are located or who has designed them.

**CP**

Circuit Pack

**Craft Interface Terminal (CIT)**

Local manager for SDH Network Elements.

**CRC**

Cyclic Redundancy Check

**Cross-Connect Map**

Connection map for an SDH Network Element; contains information about how signals are connected between high speed timeslots and low speed tributaries. See also Squelch Map.

**Cross Polarization Interference Cancellation**

This feature permits both orthogonal polarizations of one Radio Frequency carrier to be used simultaneously, thus achieving greater spectral efficiency.

**CV**

Code Violation

---

**D DACS**

Digital Access & Cross-connect System

**DACScan-T**

See Integrated Transport Management Network Manager.

**Database Administrator**

A user who administers the database of the ITM-SC application. See also User Privilege.

**Data Communication Channel (DCC)**

The embedded overhead communication channel in the SDH line. This is used for end-to-end communication and maintenance. It carries alarm, control, and status information between Network Elements in an SDH network.

**Data Communication Equipment (DCE)**

Provides the signal conversion and coding between the data terminating equipment and the line. The DCE may be separate equipment or a part of the data terminating equipment.

**Data Terminating Equipment (DTE)**

Originates data for transmission and accepts transmitted data.

**DC**

Direct Current

**DCF**

Data Communications Function

**DCN**

Data Communications Network

**DCS**

Digital Cross-connect System

**DDF**

Digital Distribution Frame

**Dedicated Protection Ring (DP-Ring)**

A protection method used in ISM Network Elements.

**Defect**

A limited interruption of the ability of an item to perform a required function. It may or may not lead to maintenance action depending on the results of additional analysis.

**Demultiplexing**

A process applied to a multiplexed signal for recovering signals combined within it and for restoring the distinct individual channels of these signals.

**Digital Link**

A transmission span such as a point-to-point 2 Mbit/s, 34 Mbit/s, 140 Mbit/s, VC12, VC3 or VC4 link between controlled Network Elements. The channels within a digital link are insignificant.

**Digital Section**

A transmission span such as an STM-N or 565 Mbit/s signal. A digital section may contain multiple digital channels.

**DIL**

Dual In Line

**Directory Service Network Element (DSNE)**

A designated Network Element that is responsible for administering a database that maps Network Elements names (node names) to addresses (node Id). There can be one DSNE per (sub)network.

**Disassembly**

Splitting up a signal into its constituents as payload data and overhead (an indication of the direction of a signal).

**Domain**

The domain of an ITM-SC is the set of all SDH Network Elements that are controlled by that particular ITM-SC.

**Downstream**

At or towards the destination of the considered transmission stream, i.e. looking in the same direction of transmission.

**DPLL**

Digital Phase Locked Loop

**DPS**

Data communication Packet Switch (ISM)

**DR**

Digital Radio

**DRI**

Dual Ring Interworking

**DS-n**

Digital Signal, Level n

**DTMF**

Dual Tone Multi-Frequency

**DUS**

Do not Use for Synchronization

**DWDM**

Dense Wavelength Division Multiplexing

---

**E EC-n**

Electrical Carrier, Level n

**ECC**

Embedded Control Channel

**Electronic Industries Association (EIA)**

A trade association of the electronic industry that establishes electrical and functional standards.

**Element Management System (EMS)**

See Integrated Transport Management Subnetwork Controller.

**EMC**

ElectroMagnetic Compatibility

**EMI**

ElectroMagnetic Interference

**EOW**

See Orderwire.

**Equivalent Bit Error Ratio (EBER)**

The calculated average bit error rate over a data stream.

**Errored Second (ES)**

A performance monitoring parameter.

**ES**

End System

**ESD**

ElectroStatic Discharge

**ESPG**

Elastic Store & Pointer Generator

**ETSI**

European Telecommunication Standardisation Institute

**Event**

A significant change. Events in controlled Network Elements include signal failures, equipment failures, signals exceeding thresholds, and protection switch activity. When an event occurs in a controlled Network Element, the controlled Network Element will generate an alarm or status message and send it to the ITM-SC.

**Event Management (EM)**

Subsystem of ITM-SC that processes and logs event reports of the network.

**Externally Timed**

An operating condition of a clock in which it is locked to an external reference and is using time constants that are altered to quickly bring the local oscillator's frequency into the approximate agreement with the synchronization reference frequency.

**Extra Traffic**

Unprotected traffic that is carried over the protection channels when that capacity is not used for the protection of service traffic.

---

**F Far End Block Error (FEBE)**

An indication returned to the transmitting node that an errored block has been detected at the receiving node. A block is a specified grouping of bits.

**Far End Receive Failure (FERF)**

An indication returned to a transmitting Network Element that the receiving Network Element has detected an incoming section failure.

**FAS**

Frame Alignment Signal

**FAW**

Frame Alignment Word

**FC**

Full contact Connector

**FCC**

Federal Communications Commission

**FDDI**

Fiber Distributed Data Interface

**FEP**

Front End Processor

**Free Running**

An operating condition of a Network Element in which its local oscillator is not locked to any synchronization reference and is using no storage techniques to sustain its accuracy.

---

**G Geographic Location**

Location of the ITM-SC server. This is entered as part of the installation procedure of an ITM-SC.

**Gateway Network Element (GNE)**

Passes information between other Network Elements and management systems via a Data Communications Network.

**Geographic Redundancy (GR)**

Allows protection of management for a Network Element by assigning it to two ITM-SCs. The first primary ITM-SC, usually manages the Network Element and is now in the protected domain. If the primary ITM-SC or the link between the Network Element and the primary fails, the secondary ITM-SC will automatically take over management of the Network Element and is now in the protecting domain. The two ITM-SCs are connected by a peer to peer link, which they use to pass Geographic Redundancy management information over. This link must be established before any Network Element can be protected by Geographic Redundancy.

**Global Wait to Restore Time**

Corresponds to the time to wait before switching back to the timing reference occurs after a timing link failure has cleared. This time applies for all timing sources in a system hence the name global. This can be between 0 and 60 minutes, in increments of one minute.

**GUI**

Graphical User Interface

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**H HE**

Host Exchange

**High Density Bipolar 3 code (HDB3)**

Line code for e.g. 2 Mbit/s transmission systems.

**High level Data Link Control (HDLC)**

OSI reference model datalink layer protocol.

**Higher order Path Adaptation (HPA)**

Function that adapts a lower order Virtual Container to a higher order Virtual Container by processing the Tributary Unit pointer which indicates the phase of the lower order Virtual Container Path Overhead relative to the higher order Virtual Container Path Overhead and assembling/disassembling the complete higher order Virtual Container.

**Higher order Path Connection (HPC)**

Function that provides for flexible assignment of higher order Virtual Containers within an STM-N signal.

**Higher order Path Termination (HPT)**

Function that terminates a higher order path by generating and adding the appropriate Virtual Container Path Overhead to the relevant container at the path source and removing the Virtual Container Path Overhead and reading it at the path sink.

**HMI**

Human Machine Interface

**HO**

High Order

**Holdover**

An operating condition of a clock in which its local oscillator is not locked to an external reference but is using storage techniques to maintain its accuracy with respect to the last known frequency comparison with a synchronized reference.

**Host Name**

Name of the server on which the ITM-SC is running.

**HP-UX**

Unix Operating System for Hewlett Packard platform.

**HS**

High Speed

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**I ICB**

Interconnection Box

**ICP**

InterConnection Panel

**IEC**

International Electrotechnical Committee

**IEEE**

Institute of Electrical and Electronic Engineers

**IF**

Intermediate Frequency

**IFT**

InterFace Terminal

**Intelligent Synchronous Multiplexer (ISM)**

A network multiplexer that is designed to flexibly multiplex plesiochronous and STM-1 tributary port signals into STM-1 or STM-4 line port signals.

**Integrated Transport Management Craft Interface Terminal (ITM-CIT)**

Local manager for SDH Network Elements in a subnetwork. Also referred to as Craft Interface Terminal.

**Intermediate System (IS)**

A system which routes/relays management information. An SDH Network Element may be a combined Intermediate and end system.

**IPS**

Inter Processor Status

**IS**

In-Service

**ISDN**

Integrated Services Digital Network

**IS-IS Routing**

The Network Elements in a management network, route packets (data) between each other using a IS-IS level protocol. The size of a network running IS-IS Level 1 is limited, and therefore certain mechanisms are employed to facilitate the management of larger networks. For STATIC ROUTING, the capability exists for disabling the protocol over the LAN connections, effectively causing the management network to be partitioned into separate IS-IS Level 1 areas. In order for the ITM-SC to communicate with a specific Network Element in one of these areas, the ITM-SC must identify through which so-called Gateway Network Element this specific Network Element is connected to the LAN. All packets to this specific Network Element are routed directly to the Gateway Network Element by ITM-SC, before being re-routed (if necessary) within the Level 1 area. For DYNAMIC ROUTING an IS-IS Level 2 routing protocol is used allowing a number of Level 1 areas to interwork. The Network Elements which connect an IS-IS area to another area are set to run the IS-IS Level 2 protocol within the Network Element and on the connection between other Network Elements. Packets can now be routed between IS-IS areas and the ITM-SC does not have to identify the Gateway Network Elements.

**ISO**

International Standards Organisation

**ITM-SC Administrator**

See ITM-SC System Administrator.

**ITM-SC System Administrator**

A user of the ITM-SC application with System Administrator privileges. See also User Privilege.

**ITU**

International Telecommunications Union

**ITU-R**

International Telecommunications Union - Radio standardization sector. Formerly known as CCIR: Comité Consultatif International Radio; International Radio Consultative Committee.

**ITU-T**

International Telecommunications Union - Telecommunication standardization sector. Formerly known as CCITT: Comité Consultatif International Télégraphique & Téléphonique; International Telegraph and Telephone Consultative Committee.

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**J Jitter**

Short term variations of amplitude and frequency components of a digital signal from their ideal position in time.

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**L LAN**

Local Area Network

**LBA**

Lightwave Booster Amplifier.

**LCN**

Local Communications Network

**LDI**

Linear Drop/Insert (Add-Drop)

**LED**

Light Emitting Diode

**LEN**

Local Exchange Node

**LF**

Low Frequency

**LH**

Long Haul

**License key**

An encrypted code that is required to enable the use of specific modules in the ITM-SC. Valid license keys can be obtained from your provider.

**Line**

Transmission line; refers to a transmission medium, together with the associated high speed equipment, required to provide the means of transporting information between two consecutive Network Elements, one of which originates the line signal and the other terminates the line signal.

**Line Build Out (LBO)**

An optical attenuator that guarantees the proper signal level and shape at the receiver input.

**Line Overhead Controller (LOC)**

SLM circuit pack that accesses the overhead bytes from the high speed line.

**LNC**

LiNe Controller (SLM)

**LO**

Low Order

**LOF**

Loss Of Frame

**LOM**

Loss Of Multiframe

**LOP**

Loss Of Pointer

**LOS**

Loss Of Signal

**Lower order Path Adaptation (LPA)**

Function that adapts a PDH signal to a synchronous network by mapping the signal into or de-mapping the signal out of a synchronous container.

**Lower order Path Connection (LPC)**

Function that provides for flexible assignment of lower order VCs in a higher order VC.

**Lower order Path Termination (LPT)**

Function that terminates a lower order path by generating and adding the appropriate VC POH to the relevant container at the path source and removing the VC POH and reading it at the path sink.

**LPU**

Line Port Unit (ISM)

**LPU155**

Line Port Unit 155 Mbit/s (WaveStar® ADM 4/1)

**LRX**

Line Receiver (SLM)

**LS**

Low Speed

**LTA**

Line Terminal Application (SLM)

**LTX**

Line Transmitter (SLM)

**LTX/EML**

Line Transmitter with Electro-absorption Modulated Laser (SLM)

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**M MAF**

Management Application Function

**Management Connection**

Identifies the type of routing used (STATIC or DYNAMIC), and if STATIC is selected allows the Gateway Network Element to be identified. See also IS-IS Routing.

**Management Information Base (MIB)**

The database in the Network Element and contains the configuration data of the Network Element. A copy of each MIB is available in the ITM-SC and is called the MIB image. Under normal circumstances the MIB and MIB image of one Network Element are synchronized.

**Manager**

Capable of issuing network management operations and receiving events. The manager communicates with the Agent in the controlled Network Element.

**Manufacturer Executable Code (MEC)**

Network Element system software in binary format that after being downloaded to one of the stores can be executed by the system controller of the Network Element.

**Mapping**

Gathering together of payload data with overhead, i.e. packing the PDH signal into a Virtual Container.

**MDI**

Miscellaneous Discrete Input

**MDO**

Miscellaneous Discrete Output

**Mediation Device (MD)**

Allows for exchange of management information between Operations System and Network Elements.

**MEF**

Maintenance Entity Function (in NE)

**MEM**

System MEMory unit (for SLM ADM NEs)

**Message Communications Function (MCF)**

Function that provides facilities for the transport and routing of Telecommunications Management Network messages to and from the Network Manager.

**MF**

Mediation Function

**MFS**

Multi Frame Synchronization signal

**MIB image**

See Management Information Base.

**Midspan Meet**

The capability to interface between two lightwave Network Elements of different vendors. This applies to high speed optical interfaces.

**MMI**

Man-Machine Interface Also referred to as Human Machine Interface (HMI)

**MO**

Managed Object

**Motif**

X-Windows System supplied by Open Software Foundation.

**MS**

Multiplexer Section

**MTBF**

Mean Time Between Failures

**MTBMA**

Mean Time Between Maintenance Activities

**MTIE**

Maximum Time Interval Error

**MTPI**

Multiplexer Timing Physical Interface

**MTTR**

Mean Time To Repair

**Multiplexer Section OverHead (MSOH)**

Part of the Section Overhead. Is accessible only at line terminals and multiplexers.

**Multiplexer Section Protection (MSP)**

Provides capability for switching a signal from a working to a protection section.

**Multiplexer Section Shared Protection Ring (MS-SPRING)**

A protection method used in SLM Add-Drop Multiplexer Network Elements.

**Multiplexer Section Termination (MST)**

Function that generates the Multiplexer Section OverHead in the transmit direction and terminates the Multiplexer Section OverHead in the receive direction.

**Multiplexer Timing Source (MTS)**

Function that provides timing reference to the relevant component parts of the multiplex equipment and represents the SDH Network Element clock.

**Multiplexing**

A procedure by which multiple lower order path layer signals are adapted into a higher order path, or the multiple higher order path layer signals are adapted into a multiplex section.

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**N NEF**

Network Element Function

**NEM**

Network Element Manager

**Network Element (NE)**

A Network Element is comprised of telecommunication equipment (or groups/parts of telecommunication equipment) and support equipment that performs network element functions and has one or more standard Q-type interfaces. A Network Element is direct manageable by a management system. See also Node.

**Network Element Equivalent (NEE)**

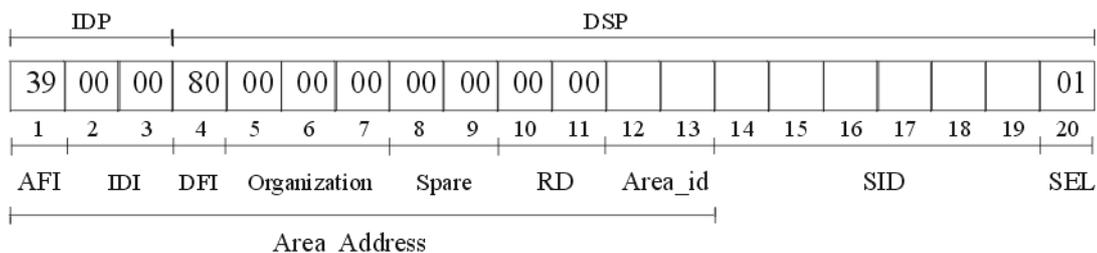
The functionality, database size and processing power required from the ITM-SC is different for each Network Element type supported. Therefore each type represents an amount of Network Element Equivalent.

**Network Mediation Unit (NMU)**

Used to collect fault and alarm events from transmission equipment. The ITM-SC can forward alarms to the NMU. The NMU can forward alarms to an Operations System.

**Network Service Access Point (NSAP)**

An end system address of the System Controller according to ISO 8348 AD2. The format used is ISO\_DCC\_LUCENT, which has the following structure:



Where

Field	Description	Length	Fixed Values
IDP	Initial Domain Part	3 octets	-
DSP	Domain Specific Part	17 octets	-
AFI	Authority and Format Identifier	1 octet	39
IDI	Initial Domain Identifier	2 octets	00 00
DFI	DSP Format Identifier	1 octet	80
Organization		3 octets	00 00 00
Spare		2 octets	00 00
RD	Routing Domain	2 octets	00 00
Area_id		2 octets	Provisionable
SID	System Identification	6 octets	-
SEL	NSAP Selector	1 octet	01
Area_Address	All Octets from AFI to Area_id	13 or 3 octets	-

### NMC

Network Maintenance Center

### NMS

Network Management System

### NNE

Non-SDH Network Element

### NNI

Network Node Interface

### Node

Defined as all equipment that is controlled by one system controller. A node is not always direct manageable by a management system. See also Network Element.

### NOMC

Network Operation Maintenance Channel

### Non-revertive switching

In non-revertive switching there is an active and standby high speed line, circuit pack, etc. When a protection switch occurs, the standby line, circuit pack, etc., is selected causing the old standby line, circuit pack, etc., to be used for the new active line, circuit pack, etc. The original active line, circuit pack, etc., becomes the standby line, circuit pack, etc. This status remains in effect when the faults clears. Therefore, this protection scheme is non-revertive in that there is no switch back to the original status in effect before the fault occurred.

**Non-synchronous**

The essential characteristic of time-scales or signals such that their corresponding significant instants do not necessarily occur at the same average rate.

**Not Protected Domain**

The not protected domain for the ITM-SC contains all the Network Elements which are managed by one ITM-SC and are not currently protected by another ITM-SC. If the ITM-SC fails, the Network Elements in this domain are not managed by any ITM-SC. See also Geographic Redundancy.

**NPI**

Null Pointer Indication

**NRZ**

Non-Return to Zero

**NSA**

Non-Service Affecting

**NVM**

Non-Volatile Memory

- 
- O OA**  
Optical Amplifier (OLS)

**OAA case tools**

A software package/tool to aid the process of requirements, analysis, design and implementation of object orientated systems.

**OAM&P**

Operations, Administration, Maintenance and Provisioning

**OC-n**

Optical Carrier, Level n

**ODF**

Optical Distribution Frame

**ODU**

Optical Demultiplexer Unit (OLS)

**OFS**

Out of Frame Second

**OI**

Optical Interface (WaveStar® ADM 16/1)

**OMU**

Optical Multiplexer Unit (OLS)

**Operations System (OS)**

Operations System is the system which provides operations, administration and maintenance functions.

**Operator**

A user of the ITM-SC application with Operator privileges. See also User Privilege.

**Optical Line System (OLS)**

A high-capacity lightwave system that is designed to multiplex eight optical signals with different wavelengths into one combined signal through an optical fiber. There is a difference of 1.5 micrometer in wavelength between two multiplexed signals.

**OOF**

Out Of Frame

**OOS**

Out Of Service

**OSB**

Optical Splice Box

**OSF**

Open Software Foundation Operations System Function

**OSF/Motif**

The WaveStar® ITM-SC application has an X-windows graphical representation and the components used in the “Graphical User Interface” are OSF/Motif compliant, these components comprise of items such as: scrollbars, menus, radio buttons, etc.

**OSI**

Open Systems Interconnection

**OW**

(Engineering) Order Wire

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**P PABX**

Private Automatic Branch eXchange

**Paddle Board - Peripheral Control and Timing link (PB-PCT)**

Is a small circuit board used in a 5ESS exchange for protection switching and optical to electrical conversion of the PCT-link.

**Path**

A logical connection between a termination point at which a standard format for a signal at the given rate is assembled, and transmitted and another termination point at which the received

standard frame format for the signal is disassembled.

**Path Overhead (POH)**

Virtual Container Path Overhead provides for integrity of communication between the point of assembly of a Virtual Container and its point of disassembly.

**PC**

Personal Computer

**PCB**

Printed Circuit Board

**PCM**

Pulse Code Modulation

**PCT-link**

Peripheral Control and Timing-link

**PDH**

Plesiochronous Digital Hierarchy

**Peer ITM-SC**

ITM-SC at the other end of the Peer to Peer link.

**Peer to Peer link**

Connection between two ITM-SCs with Geographic Redundancy. The link is used to co-ordinate the management of a Network Element. See also Geographic Redundancy.

**Performance Monitoring (PM)**

Measures the quality of service and identifies degrading or marginally operating systems (before an alarm is generated).

**Peripheral Control and Timing Facility Interface (PCTFI)**

A proprietary physical link interface supporting the transport of 21 \* 2 Mbit/s signals.

**PI**

Physical Interface Plesiochronous Interface (WaveStar® ADM 16/1)

**Platform**

Family of equipment and software configurations designed to support a particular Application.

**Plesiochronous Network**

A network that contains multiple subnetworks, each internally synchronous and all operating at the same nominal frequency, but whose timing may be slightly different at any particular instant.

**PMA**

Performance Monitoring Application

**Pointer**

An indicator whose value defines the frame offset of a virtual container with respect to the frame reference of the transport entity on which it is supported.

**POTS**

Plain Old Telephone Service

**PP**

Pointer Processing

**PPC**

Pointer Processor and Cross-connect (ISM)

**Primary ITM-SC**

ITM-SC that is usually managing a Network Element. If the primary ITM-SC fails, management of the Network Element is passed over to the secondary ITM-SC. A Network Element should be provisioned normally on the primary ITM-SC and then be configured for use on the secondary. See also Geographic Redundancy.

**Primary Reference Clock (PRC)**

The main timing clock reference in SDH equipment.

**Protected Domain**

The protected domain for an ITM-SC contains all the Network Elements this manager is the primary ITM-SC for and are protected by another secondary ITM-SC. See also Geographic Redundancy.

**Protecting Domain**

The protecting domain for an ITM-SC contains all the Network Elements this manager is the secondary ITM-SC for. See also Geographic Redundancy.

**Protection**

Extra capacity (channels, circuit packs) in transmission equipment that is not intended to be used for service, but rather to serve as backup against equipment failures.

**PSA**

Partially Service Affecting

**PSDN**

Public Switched Data Network

**PSF**

Power Supply Filter

**PSF-SIP**

Power Supply Filter; originally designed for Italian customer.

**PSN**

Packet-Switched Network

**PSTN**

Public Switched Telephone Network

**PT**

Protected Terminal Power supply filter and Timing circuit pack (WaveStar® ADM 16/1)

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**Q QAF**

Q Adapter Function (in NE)

**Q-LAN**

Thin Ethernet LAN which connects the manager to Gateway Network Elements so that management information between Network Elements and management systems can be exchanged.

**QOS**

Quality Of Service

**Quality Level (QL)**

The quality of the timing signal(s) provided to clock a Network Element. The level is provided by the Synchronization Status Marker which can accompany the timing signal. If the System and Output Timing Quality Level mode is “Enabled”, and if the signal selected for the Station Clock Output has a quality level below the Acceptance Quality Level, the Network Element “squelsches” the Station Clock Output Signal, which means that no signal is forwarded at all. Possible levels are: - PRC (Primary Reference Clock) - SSU\_T (Synchronization Supply Unit - Transit) - SSU\_L (Synchronization Supply Unit - Local) - SEC (SDH Equipment Clock) - DUS (Do not Use for Synchronization)

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**R RA**

Regenerator Application (SLM)

**Radio Protection Switching system (RPS)**

Its main function is to handle the automatic and manual switching from a main channel to a common protection channel in an N+1 system.

**Radio Relay (RR)**

A point-to-point Digital Radio system to transport STM-1 signals via microwaves.

**RCU**

Rigid Connect Unit (SLM)

**RCVR Data Distribution Unit (RCVR)**

Radio Relay circuit pack that performs distribution of the protection channel and the low priority traffic in the receiver side.

**RDDU**

RCVR Data Distribution Unit (RR)

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**RDI**

Remote Defect Indicator. Previously known as Far End Receive Failure (FERF).

**RDI**

Ring Drop/Insert (Add-Drop)

**RDSV**

Running Digital Sum Violations

**Receive-direction**

The direction towards the cross-connect.

**REGEN**

Regenerator (SLM)

**Regenerator Loop**

Loop in a Network Element between the Station Clock Output(s) and one or both Station Clock Inputs, which can be used to dejitterize the selected timing reference in network applications.

**Regenerator Overhead Controller (ROC)**

SLM circuit pack that provides user access to the SDH overhead channels at repeater sites.

**Regenerator Section Termination (RST)**

Function that generates the Regenerator Section Overhead (RSOH) in the transmit direction and terminates the RSOH in the receive direction.

**REI**

Remote Error Indication. Previously known as Far End Block Error (FEBE).

**Relay Unit (RU)**

Radio Relay circuit pack whose main function is to perform protection switching when the Alignment Switch in the demodulator unit is unable to perform protection switching.

**Restore Timer**

Counts down the time (in minutes) during which the switch waits to let the worker line recover before switching back to it. This option can be set to prevent the protection switch continually switching if a line has a continual transient fault. This field is greyed out if the mode is non-revertive.

**Revertive Switching**

In revertive switching, there is a working and protection high speed line, circuit pack, etc. When a protection switch occurs, the protection line, circuit pack, etc., is selected. When the fault clears, service reverts back to the original working line.

**RF**

Radio Frequency

**RFI**

Remote Failure Indicator

**RGU**

ReGenerator Unit (SLM)

**Route**

A series of contiguous digital sections.

**RPS**

Ring Protection Switching

**RSM**

Remote Switching Module

**RSOH**

Regenerator Section OverHead; part of SOH.

**RZ**

Return to Zero

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**S SA**

Service Affecting Synchronous Adapter (WaveStar® ADM 16/1)

**SAI**

Station Alarm Interface

**SC**

Square coupled Connector

**SD**

Signal Degrade

**SDH-TE**

SDH - Terminal Equipment

**Specification and Design Language (SDL)**

This is a standard formal language for specifying (essentially) finite state machines.

**SEC**

SDH Equipment Clock

**Secondary ITM-SC**

Backup ITM-SC for a Network Element should the primary ITM-SC fail. A Network Element should be provisioned normally on the primary ITM-SC and then be configured for use on the secondary. See also Geographic Redundancy.

**Section**

A transport entity in the transmission media layer network which provides integrity of information transfer across a section layer network connection by means of a termination function at the section layer.

**Section Adaptation (SA)**

Function that processes the AU-pointer to indicate the phase of the VC-3/4 POH relative to the STM-N SOH and assembles/disassembles the complete STM-N frame.

**Section Overhead (SOH)**

Capacity added to either an AU-4 or assembly of AU-3s to create an STM-1. Contains always STM-1 framing and optionally maintenance and operational functions. SOH can be subdivided in MSOH (multiplex section overhead) and RSOH (regenerator section overhead).

**SEF**

Support Entity Function (in NE)

**Self-healing**

A network's ability to automatically recover from the failure of one or more of its components.

**Server**

Computer in a computer network that performs dedicated main tasks which require generally sufficient performance. See also Client.

**Severely Errored Frame Seconds (SEFS)**

A performance monitoring parameter.

**Severely Errored Second (SES)**

A second with a binary error ratio and used as a performance monitoring parameter.

**Severity**

See Alarm Severity

**Service**

The operational mode of a physical entity that indicates that the entity is providing service. This designation will change with each switch action.

**SH**

Short Haul

**SI**

Synchronous Interface (WaveStar® ADM 16/1)

**SIB**

Subrack Interface Box

**SLC**

Subscriber Loop Carrier

**SLM**

Signal Label Mismatch

**Smart Communication Channel (SCC)**

A HDLC messaging channel between the SDH-TE and the 5ESS host node. Similar to the DCC messaging channels located in the STM-N section overhead.

**SML**

Service Management Level

**SMN**

SDH Management Network

**SMS**

SDH Management Subnetwork

**SNC/I**

SubNetwork Connection (protection) / Inherent monitoring

**SNC/NI**

SubNetwork Connection / Non Intrusive monitoring

**SNR**

Signal to Noise Ratio

**Soft Windows**

PC emulator package for HP platforms.

**SONET**

Synchronous Optical Network

**Space Diversity (SD)**

Reception of the Radio signal via mirror effects on earth.

**SPB2M**

Subrack Protection for 2 Mbit/s Board (WaveStar® ADM 4/1)

**SPI**

SDH Physical Interface Synchronous-Plesiochronous Interface (WaveStar® ADM 16/1)

**Squelch Map**

Traffic map for SLM Add-Drop Multiplexer Network Elements that contains information for each cross-connection in the ring and indicates the source and destination Network Elements for the low speed circuit that the cross-connection is part of. This information is used to prevent traffic misconnection in rings with isolated Network Elements or segments. See also Cross Connection Map.

**SSM**

Synchronization Status Marker

**Standby**

The operational mode of a physical entity that indicates that the entity is not providing service, but standby. This designation will change with each switch action.

**Station Clock Input (SCI)**

An external clock may be connected to a Station Clock Input.

**Station Clock Output (SCO)**

A clock signal that can be used for other systems.

**Stretched Ring (STRING)**

An open ring in which each node is an Add-Drop Multiplexer. The end nodes operate with one high speed line equipped.

**STS**

Synchronous Transport Signal; used in SONET.

**Subnetwork**

A group of interconnected/interrelated Network Elements. The most common connotation is an SDH network in which the Network Elements have data communications channels (DCC) connectivity.

**Supervisor**

A user of the ITM-SC application with Supervisor privileges. See also User Privilege.

**Supervisory Unit (SU)**

Radio Relay circuit pack that gives comprehensive supervision and control facilities to the user by collecting information from the Alarm Collection Units and Alarm Adapter Units.

**SUPV**

Supervision unit (WaveStar® ADM 4/1)

**SUPV\_SVC**

Supervision with Service Channel unit (WaveStar® ADM 4/1)

**SVCE**

Service

**Switch Receive Unit (SWR)**

SLM circuit pack that provides the cross-connect in the receive direction between high speed line timeslots and low speed tributaries.

**Switch Transmit Unit (SWT)**

SLM circuit pack that provides the cross-connect in the transmit direction between high speed line timeslots and low speed tributaries.

**Switching Module (SM)**

An access module from the 5ESS switch.

**Synchronization Supply Unit (SSU)**

A circuit pack that recovers and reshapes the clock signal in order to filter out jitter. The Local (SSU\_L) and Transit (SSU\_T) types are available.

**Synchronous**

The essential characteristic of time-scales or signals such that their corresponding significant instants occur at precisely the same average rate.

**Synchronous Digital Hierarchy (SDH)**

A hierarchical set of digital transport structures, standardized for the transport of suitable adapted payloads over transmission networks.

**Synchronous Equipment Management Function (SEMF)**

Function that converts performance data and implementation specific hardware alarms into object-oriented messages for transmission over the DCC and/or Q-interface. It also converts object-oriented messages related to other management functions for passing across the S reference points.

**Synchronous Line Multiplexer (SLM)**

A line multiplexer that is designed to multiplex VC-4 and STM-1 tributary port signals into STM-16 line port signals.

**Synchronous Network**

The synchronization of synchronous transmission systems with synchronous payloads to a master Network clock that can be traced to a single reference clock.

**Synchronous Transport Module (STM)**

The information structure used to support (section layer) connections in SDH.

**System Administrator**

A user of the computer system on which the ITM-SC application can be installed. See also User Privilege.

**System Controller (CTL)**

ISM circuit pack that controls the configuration of an Intelligent Synchronous Multiplexer system.

**System Controller (SC)**

WaveStar® ADM 16/1 circuit pack that controls and provisions all units. It also contains the data communication packet switch functionality which is necessary for routing of management information between Network Elements and their management system.

**System Controller (SCT)**

SLM Line Terminal and Regenerator Network Element circuit pack that provides the highest level of system control for the Synchronous Line Multiplexer system. The SCT circuit pack provides overall administrative control of the system. Its memory is included in the same one circuit pack.

**System Controller (STC)**

SLM Add-Drop Multiplexer Network Element circuit pack that provides the highest level of system control for the Synchronous Line Multiplexer system. The STC circuit pack provides overall administrative control of the system. Its memory is provided by the MEM circuit pack.

**System Controller (SYSCTL)**

OLS circuit pack that provides the highest level of system control for the Optical Line System. The SYSCTL circuit pack provides overall administrative control of the system. Its memory is provided by the SYSMEM circuit pack.

**System Memory Unit (MEM)**

SLM Add-Drop Multiplexer Network Element circuit pack that provides the highest level of system control for the Synchronous Line Multiplexer system. The MEM circuit pack provides memory support for the System Controller (STC) circuit pack.

**System Memory Unit (SYSMEM)**

OLS circuit pack that provides the highest level of system control for the Optical Line System. The SYSMEM circuit pack provides memory support for the SYSCTL circuit pack.

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**T TCA**

Threshold Crossing Alarm

**TCP/IP**

Transmission Control Protocol/Internet Protocol

**TDEV**

Timing DEVIation

**TDM**

Timing Division Multiplexing

**Template**

A collection of parameters that define a specific Network Element configuration. A Template gives the user the opportunity to configure parameters in a Network Element with a single operation. They are re-usable, and allow the user to configure the parameters in many Networks Elements in the same way. A set of Default templates is provided, and the user can create new templates and edit or delete user-created ones. Note that a template is always associated with one specific Network Element type and can not be used for other Network Element types.

**TERM**

Terminal Multiplexer

**TGU**

Timing Generator Unit

**TI**

Timing Interface (WaveStar® ADM 16/1)

**TLM**

TeLeMetry Unit (OLS)

**TLP**

Terminal with Line Protection

**TMN**

Telecommunications Management Network

**TPU**

Tributary Port Unit

**TPU-PCT**

Tributary Port Unit - Peripheral Control and Timing link

**TPU2**

Tributary port Unit 2 Mbit/s (WaveStar® ADM 4/1)

**TPU34/45**

Tributary port Unit 34 / 45 Mbit/s (WaveStar® ADM 4/1)

**TPU155**

Tributary port Unit 155 Mbit/s (WaveStar® ADM 4/1)

**Transmit-direction**

The direction outwards from the cross-connect.

**Trellis Code Modulation**

A combined coding and modulation scheme for improving the reliability of a digital transmission system without increasing the transmitted power or the required bandwidth.

**TRF**

TRansFer unit (WaveStar® ADM 4/1)

**Tributary**

A signal of a specific rate (2 Mbit/s, 34 Mbit/s, 140 Mbit/s, VC12, VC3, VC4, STM-1 or STM-4) that may be added to or dropped from a line signal.

**Tributary Overhead Controller (TOC)**

SLM circuit pack that allows access to the overhead bytes of the incoming tributary signal.

**Tributary Overhead Controller (TOHCTL)**

OLS circuit pack that allows access to the overhead bytes of the Supervisory channel.

**Tributary Unit (TU)**

An information structure which provides adaptation between the lower order path layer and the higher path layer. Consists of a VC-n plus a tributary unit pointer TU PTR.

**Tributary Unit Pointer (TU PTR)**

Indicates the phase alignment of the VC with respect to the TU in which it resides. The pointer position is fixed with respect to the TU frame.

**TSA**

Time Slot Assignment

**TSI**

Time Slot Interchange

**TTP**

Trail Termination Point

**TUG**

Tributary Unit Group

---

**U UAS**

UnAvailable Seconds

**ULDT**

Ultra Long Distance Transmission

**UIM/X**

A package used for developing the WaveStar® ITM-SC GUI for X-windows.

**Unavailable Seconds**

A performance monitoring parameter.

**Uninterruptable Power Supply (UPS)**

Allows connected computer equipment to gracefully shutdown, therefore preventing damage in case of a power fail and absorb dips in the supplied power.

**Universal Co-ordinated Time (UTC)**

A time-zone independent indication of an event. The local time can be calculated from the Universal Co-ordinated Time.

**UPL**

User Panel

**Upstream**

At or towards the source of the considered transmission stream, i.e. looking in the opposite direction of transmission.

**User Privilege**

Permissions a user has to perform actions on the computer system on which the ITM-SC application runs. The following users can be distinguished:

User Type	User name	Permissions
System Administrator this is NOT an ITM-SC user	root (fixed)	maintain platform .
Database Administrator this is NOT an ITM-SC user	informix (fixed)	maintain database .
ITM-SC System Administrator	i2kadmin (fixed)	maintain ITM-SC application , maintain Network Element templates , maintain MEC files on the ITM-SC , set default ITM-SC parameters .
Supervisor	free choice	perform all data retrieval functions , perform all alarm suppression functions , perform configuration changes .
Operator	free choice	perform all data retrieval functions , perform all alarm suppression functions .

---

## V VF

Voice Frequency

### Virtual Container (VC)

Container with path overhead.

---

## W Wait to Restore Time (WRT)

Corresponds to the time to wait before switching back after a failure has cleared, in a revertive protection scheme. This can be between 0 and 15 minutes, in increments of one minute.

### WAN

Wide Area Network

### Wander

Long term variations of amplitude frequency components (below 10 Hz) of a digital signal from their ideal position in time possibly resulting in buffer problems at a receiver.

### WaveStar® ADM 16/1

A network multiplexer that is designed to flexibly multiplex plesiochronous and STM-1 tributary port signals into STM-4 or STM-16 line port signals.

### WaveStar® Integrated Transport Management Subnetwork Controller (ITM-SC)

Manager for SDH Network Elements in a subnetwork. Also referred to as Element Management System.

### WaveStar® Network Management System (NMS)

Manager for SDH Network Elements in a network. Formerly known as DACScan-T.

### WDM

Wavelength Division Multiplexing

### What You See Is What You Get (WYSIWYG)

Information as displayed on the screen will appear in the same way on printed output.

---

**Wideband Communications**

Voice, data, and/or video communication at digital rates from 64 kbit/s to 2 Mbit/s.

**Windows**

Graphical User Interface on PC systems.

**Working**

Label attached to a physical entity. In case of revertive switching the working line or unit is the entity that is carrying service under normal operation. In case of non-revertive switching the label has no particular meaning.

**WS**

Work Station

**WSF**

Work Station Facility

---

**X XMTR**

Transmitter (RR)

**XMTR Switch Unit**

Radio Relay circuit pack that performs connections for protection switching and transmission of low priority traffic on the protection channel.

**XPIC**

Cross Polarization Interference Cancellation

**XSU**

XMTR Switch Unit (RR)

**X-Terminal**

Workstation that can support an X-Windows interface

**X-Windows**

Graphical User Interface on Unix Systems.





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