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

## **Installation Guide**

365-312-517  
CC109076794  
Issue a  
June 2001

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Installation Guide

365-312-517 Issue a June 2001

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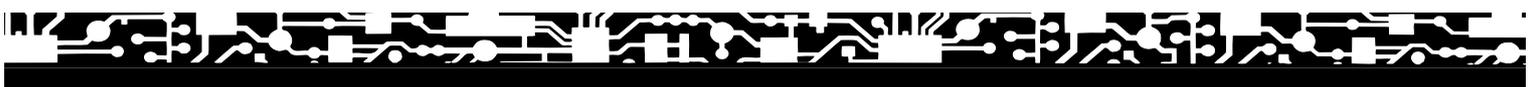
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# Contents

## About this information product

Purpose	<a href="#">xix</a>
Reason for reissue	<a href="#">xix</a>
Safety labels	<a href="#">xix</a>
Intended audience	<a href="#">xix</a>
How to use this information product	<a href="#">xx</a>
Conventions used	<a href="#">xxi</a>
Related documents	<a href="#">xxi</a>
How to comment	<a href="#">xxii</a>
How to order	<a href="#">xxii</a>

---

## 1 Application Installation

Overview	<a href="#">1-1</a>
<b>Section: Installing an ITM-SC Stand-alone</b>	
Overview	<a href="#">1-3</a>
Installing an ITM-SC Stand-alone	<a href="#">1-5</a>

---

## **Section: Installing an ITM-SC Server**

Overview [1-15](#)

Installing an ITM-SC Server [1-16](#)

## **Section: ITM-SC Client or ITM-SC X-Terminal Server Installation**

Overview [1-26](#)

ITM-SC Client or ITM-SC X-Terminal Server Installation [1-28](#)

## **Section: Installing an ITM-SC Combined Terminal Server**

Overview [1-38](#)

Installing an ITM-SC Combined Terminal Server [1-39](#)

## **Section: ITM-NMS/SC Co-resident Server Installation**

Overview [1-49](#)

ITM-NMS/SC Co-resident Server Installation [1-50](#)

## **Section: ITM-NMS/SC Joint Client Installation**

Overview [1-52](#)

ITM-NMS/SC Joint Client Installation [1-53](#)

## **Section: Setting up an ITM-SC Server to manage WS-DACS NE**

Overview [1-55](#)

Setting up an ITM-SC Server to manage WS-DACS NE [1-56](#)

## **Section: Disk Mirror Installation and Setup**

Overview [1-59](#)

Disk Mirror Installation [1-60](#)

Disk Mirror Setup [1-63](#)

## **Section: Installing a Uninterruptible Power System (UPS)**

Overview [1-65](#)

Installing a Uninterruptible Power System (UPS) [1-66](#)

## **Section: Configuring a cold stand-by ITM-SC**

Overview [1-68](#)

Configuring a cold stand-by ITM-SC [1-69](#)

## **Section: Remote ITM-SC Installation: creating a software depot**

Overview [1-73](#)

Remote ITM-SC Installation: creating a software depot [1-74](#)

## **Section: Remote ITM-SC Install from a Depot**

Overview [1-76](#)

Remote ITM-SC Install from a Depot [1-77](#)

Parameters for Remote ITM-SC Install from a Depot [1-79](#)

## **Section: Adding Disk Space to Root Volume**

Overview [1-80](#)

Adding Disk Space to Root Volume [1-81](#)

## **Section: Installing a Secure Web Console**

Overview [1-83](#)

Installing a Secure Web Console [1-84](#)

## **Section: Installing a Networked Printer**

Overview [1-88](#)

Installing a Networked Printer [1-89](#)

## **Section: Installing Background Image Map file**

Overview [1-90](#)

Installing Background Image Map file [1-91](#)

**Section: Enable ITM-SC for Alarm Beeping**

Overview [1-92](#)

Configuring ITM-SC for Alarm Beeping [1-93](#)

**Section: Setting up ITM-SC Host for routing**

Overview [1-96](#)

Static routing [1-97](#)

Dynamic routing [1-98](#)

**Section: Disabling/removing routing on an ITM-SC Host**

Overview [1-99](#)

Remove a Static IP route [1-100](#)

Disable Dynamic routing [1-101](#)

**Section: Setting up a Cisco router**

Overview [1-102](#)

Setting up a Cisco router [1-103](#)

---

**2 Application Reconfiguration**

Overview [2-1](#)

**Section: Adding a NIS Slave Server**

Overview [2-3](#)

Adding a NIS Slave Server [2-4](#)

**Section: Removing a NIS Slave or NIS Client**

Overview [2-5](#)

Remove NIS Slave [2-6](#)

Remove NIS Client [2-7](#)

## **Section: Adding an ITM-SC X-Terminal Client to an ITM-SC X-Terminal Server**

Overview	<a href="#">2-8</a>
Adding an ITM-SC X-Terminal Client to an ITM-SC X-Terminal Server	<a href="#">2-9</a>
Parameters for Adding an ITM-SC X-Terminal Client to an ITM-SC X-Terminal Server	<a href="#">2-10</a>

## **Section: Removing an ITM-SC X-Terminal from an ITM-SC X-Terminal Server**

Overview	<a href="#">2-11</a>
Removing an ITM-SC X-Terminal from an ITM-SC X-Terminal Server	<a href="#">2-12</a>

## **Section: Configuring a NCD X-Terminal**

Overview	<a href="#">2-13</a>
NCD X-Server Configuration	<a href="#">2-14</a>
NCD X-Terminal Configuration	<a href="#">2-15</a>

## **Section: Configuring an ITM-SC for CSL**

Overview	<a href="#">2-17</a>
Configuring an ITM-SC for CSL	<a href="#">2-18</a>

## **Section: Configuring an Intranet LAN on a ITM-SC X-Terminal Server**

Overview	<a href="#">2-19</a>
Configuring an Intranet LAN on a ITM-SC X-Terminal Server	<a href="#">2-20</a>

## **Section: Configuring a PC as an X-terminal**

Overview	<a href="#">2-21</a>
Configuring an PC as a X-terminal	<a href="#">2-22</a>

## **Section: Disk Mirror Remove**

Overview [2-24](#)

Disk Mirror Remove [2-25](#)

## **Section: Replacing a non-root disk with mirroring which is not hot-swappable**

Overview [2-27](#)

Replacing a non-root disk with mirroring which is not hot-swappable [2-28](#)

Parameters for Replacing a non-root disk with mirroring which is not hot-swappable [2-30](#)

## **Section: Replacing a non-root disk with mirroring which is hot-swappable**

Overview [2-31](#)

Replacing a non-root disk with mirroring which is hot-swappable. [2-32](#)

Parameters for Replacing a non-root disk with mirroring which is not hot-swappable [2-34](#)

## **Section: Replacing a root disk with mirroring which is not hot-swappable**

Overview [2-35](#)

Replacing a root disk with mirroring which is not hot-swappable [2-36](#)

Parameters for Replacing a non-root disk with mirroring which is not hot-swappable [2-40](#)

## **Section: Replacing a root disk with mirroring which is hot-swappable**

Overview [2-41](#)

Replacing a root disk with mirroring which is hot-swappable [2-42](#)

Parameters for Replacing a non-root disk with mirroring which is not hot-swappable [2-44](#)

## **Section: Removing an Uninterruptible Power System (UPS)**

Overview [2-45](#)

Removing an Uninterruptible Power System (UPS) [2-46](#)

## **Section: Installing an Archive Disk**

Overview [2-47](#)

Installing an Archive Disk [2-48](#)

## **Section: Removing an Archive Disk**

Overview [2-50](#)

Removing an Archive Disk [2-51](#)

## **Section: ITM-SC Maintenance Upgrade**

Overview [2-53](#)

Local ITM-SC Maintenance Upgrade [2-54](#)

Remote ITM-SC Maintenance Upgrade [2-56](#)

## **Section: Loading and configuring Orbix on the ITM-SC**

Overview [2-57](#)

Loading and configuring Orbix on the ITM-SC [2-58](#)

## **Section: Configure ITM-SC Foreign Language**

Overview [2-60](#)

Configure ITM-SC Foreign Language [2-61](#)

## **Section: Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone**

Overview [2-63](#)

Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone [2-64](#)

Parameters for Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone [2-66](#)

**Section: Reconfiguring a NIS Slave to be a NIS Master on a Server or Stand-alone**

Overview [2-67](#)

Reconfiguring a NIS Slave to be a NIS Master on a Server or Stand-alone [2-68](#)

Parameters for Reconfiguring a NIS Slave to be a NIS Master on a Server or Stand-alone [2-71](#)

**Section: Reconfiguring a NIS Client into a NIS Slave on an ITM-SC Client**

Overview [2-72](#)

Reconfiguring a NIS Client into a NIS Slave on an ITM-SC Client [2-73](#)

Parameters for Reconfiguring a NIS Client into a NIS Slave on an ITM-SC Client [2-76](#)

**Section: Reconfiguring a NIS slave to be a NIS Client on an ITM-SC Client**

Overview [2-77](#)

Reconfiguring a NIS slave to be a NIS Client on an ITM-SC Client [2-78](#)

Parameters for Reconfiguring a NIS slave to be a NIS Client on an ITM-SC Client [2-80](#)

**Section: Configuring ITM-SC for WS-NMS**

Overview [2-81](#)

Configuring ITM-SC for WS-NMS [2-82](#)

**Section: Configuring the ITM-SC for Geographic Redundancy**

Overview [2-84](#)

Configuring the ITM-SC for Geographic Redundancy [2-85](#)

## **Section: Configuring PAMS Report Generation**

Overview	<a href="#">2-86</a>
Configuring PAMS Report Generation	<a href="#">2-87</a>
Parameters for Configuring PAMS Report Generation	<a href="#">2-88</a>

## **Section: Configuring PM storage**

Overview	<a href="#">2-89</a>
Configuring PM storage	<a href="#">2-90</a>

## **Section: Configuring ITM-SC for Double Alarm Acknowledgment**

Overview	<a href="#">2-91</a>
Configuring ITM-SC for Double Alarm Acknowledgment	<a href="#">2-92</a>

## **Section: Configuring LO Alarms Forwarding from ITM-SC to WS-NMS**

Overview	<a href="#">2-94</a>
Configuring LO Alarms Forwarding from ITM-SC to WS-NMS	<a href="#">2-95</a>

## **Section: Changing the Time Zone**

Overview	<a href="#">2-97</a>
Changing the Time Zone	<a href="#">2-98</a>

## **Section: Setting up Network Timing Protocol (NTP)**

Overview	<a href="#">2-99</a>
Adding an NTP Synchronization source	<a href="#">2-100</a>
Enabling the NTP	<a href="#">2-101</a>
Disabling the NTP	<a href="#">2-102</a>
Removing an NTP Synchronization source	<a href="#">2-103</a>
Changing the NTP Trusted Time Server	<a href="#">2-104</a>

## **Section: Managing Shutdown Broadcast**

Overview [2-105](#)

Enabling Shutdown Broadcast [2-106](#)

Disabling Shutdown Broadcast [2-108](#)

## **Section: Enabling Alarm Color Indication Modification**

Overview [2-110](#)

Enabling Alarm Color Indication Modification [2-111](#)

## **Section: Renaming PHASE Network Elements**

Overview [2-112](#)

Renaming PHASE Network Elements [2-113](#)

## **Section: Changing Non ITM-SC Passwords**

Overview [2-114](#)

Changing Non ITM-SC Passwords [2-115](#)

---

## **3 Concepts**

Overview [3-1](#)

### **Section: Application Installation Concepts**

Overview [3-2](#)

UPS Installation [3-3](#)

Router Configuration Concepts [3-4](#)

### **Section: Application Reconfiguration Concepts**

Overview [3-6](#)

About Network Information Service (NIS) [3-7](#)

Double Alarm Acknowledgment Concepts [3-9](#)

---

## 4 Using the ITM-SC Interface

Overview [4-1](#)

### Section: HP-Vue Specific Subjects

Overview [4-2](#)

Front Panel [4-3](#)

General Modules [4-4](#)

Buttons and Mouse Movement [4-8](#)

### Section: ITM-SC Specific Modules and Windows

Overview [4-9](#)

Accessing the ITM-SC Specific Modules [4-10](#)

Management Module [4-11](#)

Administration Module [4-12](#)

General ITM-SC Windows [4-14](#)

Main EMS—Menu Window [4-18](#)

### Section: ITM-SC General Tasks

Overview [4-24](#)

Parameters for Accessing the ITM-SC [4-25](#)

Accessing the ITM-SC [4-26](#)

Changing Password [4-27](#)

Report Concepts [4-28](#)

Printing a Report [4-30](#)

View a Report [4-31](#)

Logout of the ITM-SC [4-32](#)

Logout [4-33](#)

**Section: ITM-SC Network Map**

Overview [4-34](#)

ITM-SC Network Map Concepts [4-35](#)

Customizing ITM-SC Network Map Concepts [4-39](#)

Parameters for Managing Map Groups [4-40](#)

Windows for Managing Map Groups [4-41](#)

Managing Map Groups Procedures [4-43](#)

---

**GL Glossary** [GL-1](#)

---

**IN Index** [IN-1](#)



# List of Tables

## 1 Application Installation

1-1	Determine the merging of Root Disks	<a href="#">1-3</a>
1-2	Determine the configuration (stand-alone)	<a href="#">1-4</a>
1-3	Determine the configuration (ITM-SC Server)	<a href="#">1-15</a>
1-4	Determine the merging of Root disks (ITM-SC Client or ITM-SC X-Terminal Server)	<a href="#">1-26</a>
1-5	Determine the configuration (ITM-SC Client or ITM-SC X-Terminal Server)	<a href="#">1-26</a>





# About this information product

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- Purpose** The purpose of the Subnetwork Controller Installation Guide (IG) is to provide personnel with all the information necessary to install and reconfigure the Integrated Transport Management-Subnetwork Controller (ITM-SC) so that it can be used as a centralized management system. The Subnetwork Controller Installation Guide is a management system oriented manual and is shipped to all sites where the ITM-SC is installed.
- Reason for reissue** First issue.
- Safety labels** Safety guidelines are not applicable for the ITM-SC.
- Intended audience** The intended audience of the Subnetwork Controller Installation Guide is personnel who install or reconfigure the ITM-SC management system in the SDH network.

Tasks to be performed by the installation personnel are:

- Installation of the ITM-SC platform management application software. This includes:
  - Install the ITM-SC application locally or remotely
  - Install a Network Printer, Web Console, Disk Mirror, UPS and cold stand-by ITM-SC
- Re-configuration of the ITM-SC platform management application software. This includes:
  - Re-configuring of NIS
  - X-Terminal configuration
  - Add/remove a client to multi-server configuration
  - Reconfigure a platform for Performance Monitoring, Geographic Redundancy, CSL and Double Alarm Acknowledgement
  - Replacing a failed disk
  - Removing an UPS and mirror disk
  - Perform a maintenance upgrade.

### How to use this information product

The Subnetwork Installation Guide (SIG) is divided into a number of chapters. Through this readers can quickly select the subject of their interests and needs.

This guide is divided into the following chapters:

- ***About this information product***: Brief description about how to use this guide.
- ***Application Installation***: This chapter describes how to install the ITM-SC application for several hardware configurations, how to install or configure additional software for the ITM-SC application to work properly, how to enable additional hardware to increase the availability of the ITM-SC application.
- ***Application Reconfiguration***: The topics covered in this chapter are mostly performed after initial installation. These procedures will be necessary to perform whenever the hardware configuration is changed or when the software is to be upgraded or re-configured.
- ***Concepts***: concepts of some topics addressed in this guide.

- **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** This guide uses 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

**Related documents** The following documents are Subnetwork Controller related:

- For more detailed information on 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 Application Installation

## Overview

---

- Purpose** This chapter shows how to:
- install the ITM-SC application for several hardware configurations
  - install or configure additional software for the ITM-SC application to work properly
  - enable additional hardware to increase the availability of the ITM-SC application.

To ensure a successful installation read the prerequisites carefully. The prerequisites have to be met before installation starts. Before installing an ITM-SC application the Network Information Service (NIS) configuration has to be determined. An introduction into NIS is provided in this chapter.

- Contents** This chapter describes installation procedures for the following hardware configurations:
- ITM-SC Stand-alone
  - ITM-SC Server
  - ITM-SC Client Workstation/X-Terminal Server
  - ITM-SC Combined Terminal Server
  - ITM-NMS/SC Co-resident Server
  - ITM-NMS/SC Joint Client
  - Setting up an ITM-SC Server to manage WS-DACS NEs.

To increase the availability of the ITM-SC/NMS extra hardware can be installed. The following procedures are provided in order to support these hardware changes:

- Installing a Mirrored Disk
- Installing a Uninterruptible Power Supply (UPS)
- Configuring a cold stand-by ITM-SC.

Miscellaneous procedures are:

- Installing hardware configurations remotely
- Adding disk space to root volume
- Installing a Secure Web Console
- Installing a networked printer
- Installing Background Image Map file
- Configuring ITM-SC for Alarm Beeping.
- Setting up ITM-SC Host for routing
- Disabling/removing routing on an ITM-SC Host
- Configuring a Cisco router

**Important** For all procedures it is important not to remove the tape from the drive, unless it's part of the written procedure. Ignore the messages from the platform.



## Section: Installing an ITM-SC Stand-alone

### Overview

---

<b>Purpose</b>	Perform this procedure to install an ITM-SC Stand-alone.
<b>Network Information Service (NIS)</b>	Initially an ITM-SC Stand-alone is configured as a NIS Master. However when an ITM-SC Stand-alone is to share its user information with a another Client/Server network or ITM-SC Stand-alone it may be necessary to reconfigure the ITM-SC Stand-alone as NIS Slave. The <i>Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone</i> procedure provides the steps to perform this reconfiguration.

**Merge Root Disk** Use the following table to determine whether Root disks must be merged or not. This will be needed during installation

**Table 1-1 Determine the merging of Root Disks**

Hardware	Language	RAM (Mb)	Root Disk (Gb)	2nd Root Disk (Gb)	Data-base disk (Gb)	Archive disk (Gb)	Merge Root Disk
New Stand-alone	>1	384	9	-	-	9	no
Upgraded Stand-alone	>1	>127	4(a)	-	-	2	no
Upgraded Stand-alone	>1	>127	2	2	-	4	yes
Upgraded Stand-alone	>1	>127	4	-	-	4	no
Upgraded Stand-alone	>1	>127	9	-	-	4	no

(a) The external 4 Gb disk must be selected as the root disk

**Determine the configuration name**

Use the following table to determine the configuration name. This will be needed during installation

**Table 1-2 Determine the configuration (stand-alone)**

Hardware	Root Disk (Gb)	Configuration from..
New Stand-alone	9	ITM-SC Standalone
Upgraded Stand-alone	<9	ITM-SC Small Standalone
Upgraded Stand-alone	9	ITM-SC Standalone

**Time considerations**

**Important!** This procedure will take a few hours to complete. Once started there is no possibility to pause or stop the process.



## Installing an ITM-SC Stand-alone

---

**When to use** To install a ITM-SC Stand-alone.

- Before you begin** The following prerequisites must be met before starting the ITM-SC Stand-alone installation procedure:
- The Network Element (NE) interface its hardware pathname and name (LAN) are known.
  - The Workstation Ethernet (TCP/IP) network interface its hardware pathname and name (LAN) are known.
  - All interfaces (LANs) are installed and appropriately terminated.
  - The tape device `/dev/rmt/0m` is installed and working.
  - An Informix Serial Number and Licence Key is obtained.
  - Licence keys (authorization codes) for the ITM-SC are available.
  - The ITM-SC Installation tape is available.
  - A hostname for the system is allocated. A hostname can be less than or equal to eight characters. The allowable characters are restricted to the digits and the lowercase alphabet i.e. The characters a to z an the digits 0 to 9.
  - An IP address for the system is allocated. This can be set to the same value of the default gateway routing IP address.
  - Determine the configuration by using Table 1-2, Determine the configuration (stand-alone) [1-4].
  - Determine if two root disk must be merged into one using Table 1-1, Determine the merging of Root Disks [1-3].
  - The Time Zone and current time for the system is known.
  - Initially the ITM-SC Stand-alone is configured as NIS Master. Therefore the NIS Master hostname must be known.
  - The monitor resolution is at least 1280 x 1024.
- Before performing this procedure consider the following:
- This installation procedure must be performed even when HP-UX is pre-installed.
  - This procedure will take a few hours to complete. Once started there is no possibility to pause or stop the process.
- Related information** The related procedure is:
- Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone

The related concept is:

- About Network Information Service (NIS) [3-7]

## Hardware Settings

Although this procedure is split into smaller sections, all sections must be executed successively. It is not possible to interrupt this procedure. Perform all steps to install an ITM-SC Stand-alone.

---

### 1 Turn on successively the

- screen
- external disk
- system unit

#### **Result:**

A message will be displayed describing how to change the monitor type.

---

### 2 Press **TAB** to change the monitor type.

#### **Result:**

The system will cycle through the possible monitor types.

---

### 3 Press **ENTER** when the required monitor type is displayed, and **y** to confirm your choice.

#### **Result:**

A message can be displayed how to interrupt the boot sequence.

---

### 4 If the previous message is displayed press **Escape** or any other key necessary to interrupt the boot sequence

#### **Result:**

A list of commands which you can type is displayed.

---

### 5 Insert the ITM-SC Installation tape into the tape drive

---

### 6 Use the **sea** command.

#### **Result:**

A list of devices attached to the system is displayed.

---

### 7 Write down the hardware paths of the disk and tape drives

---

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

## HP-UX Installation

---

- 1 Boot from tape by using the `bo` command.

**Result:**

The machine is booted. The user can be asked: `Interact with IPL?`

---

- 2 Answer `n` (no) to the question `Interact with IPL?`

**Result:**

The user can be ask to select the number of keyboard language

---

- 3 When asked for a keyboard language, type a number from the list displayed and press **ENTER**. Confirm by pressing **ENTER** again.

**Result:**

A Ignite-UX configuration window will be shown.

---

- 4 Select the *Install HP-UX* option and press **ENTER**

**Result:**

A window is presented for entering the type of installation.

---

- 5 Select `Media with network enabled` and `Advanced installation`.

**Result:**

Depending on the machine the user can be asked to select the LAN interface for the Ethernet.

---

- 6 Select `LAN-0` even when `LAN-1` is used as Ethernet LAN

**Result:**

The message `searching for DHCP server` will be displayed

- 
- 7 If DHCP (Dynamic Host Configuration Protocol) is not configured press **CTRL-C** to interrupt the search. If DHCP is configured type `man bootpd` for more information.

**Result:**

A screen will be displayed to enter the *hostname*, *IP address* and the *default gateway routing IP address*.

---

- 8 Enter the *hostname*, *IP address* of the machine and the *default gateway*. Leave the *subnet* mask blank.

**Result:**

The user is asked if the information just entered is temporary

---

- 9 Select No. Use **TAB** to highlight the *OK* field at the bottom left of the screen and press **ENTER**

**Result:**

The *select System Root Disk* screen will be displayed.

---

- 10 Make sure the disk selected as primary boot path is highlighted. Accept the default values by using the **TAB** key until the *OK* field is highlighted. Press **ENTER** to proceed.
- 

- 11 In the Basic Window use **TAB** to move to *Additional*. Press **ENTER**.

**Result:**

The *Additional Configuration Controls* window is shown.

---

- 12 Select ITM-SC stand alone or ITM-SC small stand alone Table 1-2, Determine the configuration (stand-alone) [1-4]
- 

- 13 Press Go!

**Result:**

A message dialog box will be displayed containing a warning that the disk contains a file system boot area and continuing will destroy all data on this disk.

- 
- 14** If any error messages are displayed at this point they must be investigated before continuing with the installation. Use the **TAB**key to select the Go option. Press **ENTER**to continue

**Result:**

The screen will display the minimal UNIX configuration files as they are being loaded from tape. The loading time is 5 minutes. A interaction message is displayed telling *not* to remove the HPUX installation tape but to press RETURN to continue.

---

- 15** Do *NOT* remove the Tape. Press **ENTER** to continue.

**Result:**

All required software will be loaded from tape. This process will take at least *two hours*. After loading the system will reboot.

---

- 16** Ignore any ERROR and WARNING messages indicating that software will not be installed due to a mismatch between the hardware configuration and the selected software. This is due to the install medium containing software for all supported hardware platforms.

**Result:**

During reboot the keyboard selection menu will appear.

---

- 17** Select the appropriate keyboard language.

**Result:**

The system will display the welcome to HP-UX screen with the prompt Are you ready to link this system to a network?

---

- 18** Select yes.

**Result:**

The system will then ask if you wish to use DHCP to obtain the networking information.

---

- 19** Select no.

**Result:**

You will then be prompted with the configuration information required .

---

.....  
20 Ensure you have your completed checklist and select *yes* to continue.

**Result:**

The next prompt displayed is for the hostname which should be as previously specified.

.....  
21 Check the name and select *ok*. Confirm by selecting *yes*.

**Result:**

Time Zone information can be entered.

.....  
22 Select the correct Location and select *ok*. Then select the required timezone and press *ok*. Confirm this information by selecting *yes*.

.....  
23 Use the mouse to set the Date and Time if required.

.....  
24 Enter the *root password*.

**Result:**

The IP address entered at the start of the install process should be displayed.

.....  
25 Confirm this is correct and select *OK*.

.....  
26 Select *no* at the Additional Network Parameters screen.

**Result:**

The configure font server screen will be displayed.

.....  
27 Select the *no* option.

**Result:**

Two more information screens will be displayed,

.....  
28 Read the information screen and select *close*.

**Result:**

The machine will continue to boot and a *CDE login* window will be displayed

- 
- 29** Wait until the *CDE login* window appears. Select *Options -> command line login* and press **ENTER**.(If you failed to choose command line only, reboot the machine)

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

### NIS Database Installation and Initialization

---

- 1** Login as *root*
- 

- 2** Enter the command below: `itmasc_archive_disk_setup`

**Result:**

A list of available disks to use as archive disk is displayed

---

- 3** Select a disk

**Result:**

If any of the file systems already exists the following information is displayed: There is an existing file system on `/dev/vg02/lvol_archive` Do you wish to use the existing filesystem (y/n) [n]

---

- 4** Select the default of *n* (no) by pressing **ENTER**

**Result:**

If a small archive disk is installed on the system the command will terminate having installed the following archive areas, *Operator Log & Alarm History archive* and the *On-line Database archive*.

---

- 5** Make sure you can locate the **#**key on the keyboard. Try the **#**-key, the **ALT-3** or **Extended Char 3** key combinations. If not log out and log in as *'fail safe'* session. Do not continue unless the **#** key can be located.
- 

- 6** Depending on the configuration detailed in Table 1-2, Determine the configuration (stand-alone) [1-4] enter one of the following

commands: `itmsc_small_standalone_setup` or  
`itmsc_standalone_setup`

**Result:**

The following text is displayed: Adding extra disks.  
There are additional disks available Do you  
wish to use one of these for the Informix  
database (y/n[y])?

---

- 7** Accept the default *n*(no) and press **ENTER**. On a Standalone installation the Informix database is installed on the root disk and the additional disk is used for archiving.

**Result:**

You will be prompted to select the LAN interface to use for the Workstation LAN, out of the list displayed.

---

- 8** Select the appropriate LAN press **ENTER**. Note the Workstation LAN interface

**Result:**

You will be prompted to select the LAN interface to use for the Network Element LAN (Q-LAN).

---

- 9** Select the NE LAN press **ENTER**. Note the NE LAN interface (Q-LAN).

**Result:**

The following text is displayed: Is this the master  
(or only) ITM-SC server (y/n[y]) ?

---

- 10** Accept the default *y*(yes) and press **ENTER**

**Result:**

The following text is displayed: Do you want this  
procedure to quit on non-fatal errors  
(y/n[n]) ?

---

- 11** Accept the default *n* (no) and press **ENTER**.

**Result:**

Information about NIS servers in the server domain is displayed

- 
- 12** Since this is a stand-alone installation there are no slave servers. Press **ENTER**.

**Result:**

A confirmation is asked whether the information entered is correct

---

- 13** Select y (yes) and press **ENTER**

**Result:**

The *ypservers* database is build. If the NIS Master can not be contacted the ITM-SC installation process will terminate. The user is asked for the Informix Serial Number.

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

**ITM-SC Stand-alone  
Installation**

---

- 1** To enable a successful reboot, make sure the LAN connection to the NEs is present.
- 

- 2** Enter the *Informix Serial number* and press **ENTER**.

**Result:**

The user is asked for the Informix Key

---

- 3** Enter the *Informix Key* and press **ENTER**.

**Result:**

Informix is configured. This will take 5 minutes. Ignore all warnings while Informix and the kernel are build. The following question is displayed: Do you like to move the kernel at this time (y/n[y])?

---

- 4** Select y (yes) and press **ENTER**.

**Result:**

The following question is displayed: Do you want to reboot the system at this time (y/n[y]) ?

- .....
- 5 Select y(yes) and press **ENTER**.

**Result:**

The ITM-SC is installed and the system will reboot. As the machine starts up the checkbox will display failed until the ITM-SC is licensed.

**Important!** Proceed with next section of this procedure.

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

**ITM-SC Initialization:**

- .....
- 1 Log in as user i2kadmi n (password=i2kadmin) form the *VUE login* screen and license the ITM-SC

**Result:**

The ITM-SC is licensed

- .....
- 2 If a tape containing a customized network map background presentation is present put the tape in the drive. Run the following command as user root: `i t m s c _ l o a d _ m a p`

- .....
- 3 Use the *System Administration* module to start the ITM-SC

**Result:**

The ITM-SC is ready to use

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

**After the procedure** Initially the subnet mask for each system is set to the same value. If systems do have different subnet mask values NIS will not work. To change the subnet mask value after installation use the `i t m s c _ s e t _ n e t m a s k` command.



## Section: Installing an ITM-SC Server

### Overview

---

**Purpose** Perform this procedure to install an ITM-SC Server.

**Network Information Service (NIS)** In a single ITM-SC Server network the ITM-SC Server will be the NIS Master. In a Multi-Server network, one of the ITM-SC Servers must be defined as a NIS Master. If the ITM-SC Server to be installed is a NIS Slave, and it was not added to the list of NIS Slaves when the NIS master was installed, the reconfiguration process for adding a NIS slave server should be performed.

**Determine the configuration name** Use the table below to determine the configuration name. This will be needed during installation

**Table 1-3 Determine the configuration (ITM-SC Server)**

Hardware	RAM (Mb)	Root Disk	Data-base Disk	Archive Disk	Configuration from
New Server	768	9	9	9	ITM-SC Large Server
Upgraded Server	>256	4	2	2	ITM-SC Server
Upgraded Server	384	4	4	4	ITM-SC Server
Upgraded Server	512	9	9	9	ITM-SC Large Server
Upgraded Server	512	9	4	4	ITM-SC Large Server

#### Time considerations

**Important!** This procedure will take a few hours to complete. Once started there is no possibility to pause or stop the process.



## Installing an ITM-SC Server

---

**When to use** To install an ITM-SC Server.

**Before you begin** Before starting the ITM-SC installation procedure make sure:

- The Network Element (NE) interface its hardware pathname and name (LAN) are known.
- The Workstation Ethernet (TCP/IP) network interface its hardware pathname and name (LAN) are known.
- If a WDACS is to be installed, the WDACS Ethernet (TCP/IP) network interface its hardware pathname and name (LAN) are known.
- All interfaces (LANs) are installed and appropriately terminated.
- The tape device/*dev/rmt/0m* is installed and working.
- An Informix Serial Number and Licence Key are available.
- The licence keys (auth. codes) for the ITM-SC are available.
- An ITM-SC Installation tape is available.
- A hostname for the system is allocated. A hostname can be less than or equal to eight characters. The allowable characters are restricted to the digits and the lowercase alphabet i.e. The characters a to z and the digits 0 to 9.
- An IP address for the system is allocated. The IP address can be set to the same value of the default gateway routing IP address.
- Determine the configuration by using Table 1-3, Determine the configuration (ITM-SC Server) [1-15].
- The time zone and local time are known.
- The NIS role of the ITM-SC Server to be installed is known.  
If the ITM-SC Server to be installed as a NIS Slave then:
  - the hostname of the ITM-SC Server to be installed must be added to the list of NIS Slaves in the NIS Master. If not done already perform the reconfiguration process for adding a NIS Slave Server.
  - the NIS Master must be up and running.
- If the NIS Master is located on a separate subnet contacted via a gateway, the IP address of NIS master and the IP address of gateway are known.
- Check the *Service/Normal* switch on the rear-side of the server is in *Normal* position.

- The terminators used have the right impedance.
- When the archive disk and database disk are both smaller than 4 Gb the external 4 Gb disk must be selected as root disk.

Before performing this procedure consider the following:

- This installation procedure must be performed even when HP-UX is pre-installed.
- This procedure will take a few hours to complete. Once started there is no possibility to pause or stop the process.

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

**Hardware Settings** Although this procedure is split into smaller sections, all sections must be executed successively. It is not possible to interrupt this procedure. Perform all steps to install an ITM-SC Server.

---

**1** Turn on successively:

- the screen
- external disks
- system unit.

**Result:**

The machine is on. A message will be displayed how to interrupt the boot sequence.

---

**2** Press any key to interrupt the boot sequence.

**Result:**

The boot sequence is stopped

---

**3** Insert the ITM-SC Installation tape into the tape drive

**Result:**

A list of commands which you can type is displayed.

---

**4** Use sea command.

**Result:**

A list of devices attached to the system is displayed.

---

**5** Write down the hardware paths of the tape and disk drives.

---

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

## HP-UX Installation

---

- 1 Boot from tape by using the bo command.

**Result:**

The machine is booted. The following question will be displayed: Interact with IPL?

---

- 2 Answer n (no)

**Result:**

After a few minutes you can be asked to select the number of the keyboard language. On some hardware platforms this question will not be asked. .

---

- 3 When asked for a keyboard language, type a number from the list displayed and press **ENTER**. Confirm by pressing **ENTER** again.

**Result:**

A Ignite-UX configuration window will be shown.

---

- 4 Select the *Install HP-UX* option and press **ENTER**

**Result:**

A window is presented for entering the type of installation.

---

- 5 Select Media with network enabled and Advanced installation.

**Result:**

Depending on the machine the user can be asked to select the LAN interface for the Ethernet.

---

- 6 Select the *Build-in LAN* at this point.

**Result:**

The message searching for DHCP server. . will be displayed.

---

- 
- 7 If DHCP (Dynamic Host Configuration Protocol) is not configured press **CTRL-C** to interrupt the search.

If DHCP is configured type `man boot pd` for more information.

**Result:**

A screen is displayed to enter the *hostname*, *IP address* and *default gateway routing IP address*.

---

- 8 Enter the *hostname*, *IP address* and *default gateway routing IP address*.

Leave the *subnet mask* blank.

**Result:**

The last field asks if this information just entered is temporary.

---

- 9 Select No. Use **TAB** to highlight the OK field and press **ENTER**

**Result:**

The *Select System Root Disk* screen will be displayed.

---

- 10 Make sure the *SCID* of the root disk is selected as primary boot path. Accept all the default values by pressing **TAB** until the OK field is highlighted at the bottom of the screen. Press **ENTER** to move on the next screen.
- 

- 11 In the *Basic Window* use **TAB** to move to Additional. Press **ENTER**.

**Result:**

The *Additional Configuration Controls* window is shown.

---

- 12 Select either *ITM-SC server* or *ITM-SC large server* using Table 1-3, Determine the configuration (ITM-SC Server) [1-15]
- 

- 13 Select Go!

**Result:**

A message dialog box will be displayed containing a warning that the disk contains a file system boot area and continuing will destroy all data on this disk.

---

- 
- 14** If any error messages are displayed at this point they must be investigated before continuing with the installation. Use the **TAB** key to select the **Go** option. Press **ENTER** to continue

**Result:**

The screen will display the minimal UNIX configuration files as they are being loaded from tape. The loading time is 5 minutes. A interaction message is displayed telling *not* to remove the HP-UX installation tape but to press **RETURN** to continue.

---

- 15** Do *NOT* remove the Tape. Press **ENTER** to continue.

**Result:**

All required software will be loaded from tape. This process will take at least *two hours*. After loading the system will reboot. After the filesets have been loaded you will be asked Are ready to link this system to a network?

---

- 16** Select either **y(es)** or **n(o)** and select **ENTER**. Proceed by selecting **y(es)** and **ENTER**.

**Result:**

The system will ask Do you wish to use DHCP to obtain networking information.

---

- 17** Select **n** and **ENTER**.

**Result:**

A list of the information you require will be displayed.

---

- 18** Answer **y(es)** and **ENTER**.

**Result:**

The hostname for the system entered at the start of the install process should be displayed.

---

- 19** Check that the hostname is correct and press **ENTER**. To accept the hostname select **y(es)** and press **ENTER**.

**Result:**

The user is asked to select a time zone.

---

.....  
**20** Choose a suitable time zone.

.....  
**21** Set the Date and Time if required.

.....  
**22** Enter the *root password*.

**Result:**

The IP address entered at the start of the install process should be displayed.

.....  
**23** Check that the IP address is correct and press **ENTER**. To accept the IP address answer y(es) and press **ENTER**.

**Result:**

You will be asked Do you want to configure Additional Network Parameters ?

.....  
**24** Answer n(o) and press **ENTER**.

**Result:**

An information screen is displayed saying not all the disk space has been used.

.....  
**25** Press **ENTER** to continue.

**Result:**

Information screens will be displayed.

.....  
**26** Read the information screens and press **ENTER** to continue.

**Result:**

The boot sequence will now complete. At the end of this process a UNIX login prompt will be displayed.

.....  
**27** When the login prompt is displayed it is safe to remove the tape drive.

**Important!** Proceed with next section of this procedure.

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

## NIS Database Installation and Initialization

---

1 Login as *root*.

---

2 Enter the command below: `itmsc_archive_disk_setup`

**Result:**

A list of available disks to use as archive disk is displayed.

---

3 Select a disk

**Result:**

If any of the filesystem already exists the following information is displayed: There is an existing file system on /dev/vg02/lvol\_archive Do you wish to use the existing filesystem (y/n) [n]

---

4 Select the default of n(o) by pressing **ENTER**. The previous message can be displayed more times. Select n(o) by pressing **ENTER** to proceed.

**Result:**

If a small archive disk is installed on the system the command will terminate having installed the following archive areas:

- Operator Log & Alarm History archive
  - On-line Database archive
- 

5 Make sure you can locate the #key on the keyboard. Try the#-key, the **ALT-3** or **Extended Char 3** key combinations. If not log out and log in as *'fail safe'* session. Do not continue unless the # key can be located.

---

6 Depending on the configuration as detailed in Table 1-3, Determine the configuration (ITM-SC Server) [1-15] enter one of the following commands: `itmsc_server_setup` or `itmsc_large_server_setup`

**Result:**

You will be prompted with a list of available disks on which to install Informix database.

---

- 
- 7 Select a disk by selecting a number and press **ENTER**.

**Result:**

You will be prompted to select the LAN interface to use for the Workstation LAN.

- 
- 8 Select the appropriate LAN press **ENTER**. Write down the Workstation LAN used for future reference.

**Result:**

You will be prompted to select the LAN interface to use for the Network Element LAN (Q-LAN).

- 
- 9 Select the appropriate LAN press **ENTER**. Note the Network Element LAN (Q-LAN). Write down the Q-LAN for future reference.

**Result:**

The following question will be displayed: Is this machine a NIS (m)aster, (s)lave, (c)lient or (n)o NIS? [m/s/c/n: m]

- 
- 10 Enter *m* or *s* and press **ENTER**.

**Result:**

You are asked to enter the domain name

- 
- 11 Enter the hostname of the NIS Master. Press **ENTER** to continue.

**Result:**

A warning is displayed about removing any local EMS users from this system.

- 
- 12 Press *y* (yes) and press **ENTER**.

**Result:**

Information about NIS Slaves in the installed ITM-SC Server domain is displayed.

- 
- 13 When asked Do you wish to continue (y/n [y]) press **ENTER** to accept the default.

An attempt will be made to contact a NIS server and NIS slave server maps will be created. At the end of the sequence the following question will be displayed: Enter the name of default ITMSC Server.

Do you want this procedure to quit on non-fatal errors? [y/n: n]

- .....
- 14** Enter the name of the default ITM-SC Server.

**Result:**

The following message will be displayed: Do you want this procedure to quit on non-fatal errors? [y/n: n]

- .....
- 15** Select n (no) and press **ENTER**.

**Result:**

For a NIS slave server the connectivity to the NIS Master is established before the NIS database is created. If the NIS Master can not be contacted the ITM-SC installation process will terminate. The user is asked for the Informix Serial Number.

**Important!** Proceed with next section of this procedure.

END OF STEPS

ITM-SC Server Installation

- .....
- 1** To enable a successful reboot, make sure the LAN connection to the NEs is present.

- .....
- 2** Enter the *Informix Serial number* and press **ENTER**.

**Result:**

The user is asked for the Informix Key

- .....
- 3** Enter the *Informix Key* and press **ENTER**.

**Result:**

Informix is configured. This will take 30 minutes.

- 
- 4 Ignore all warnings while Informix and the kernel are build.

**Result:**

The following question is displayed: Do you want to remove the kernel at this time (y/n[y])?

---

- 5 Select y (yes) and press **ENTER**.

**Result:**

The following question is displayed: Do you want to reboot the system at this time (y/n[y])?

---

- 6 Select y (yes) and press **ENTER**.

**Result:**

The ITM-SC is installed and the system will reboot. The checkbox for the ITM-SC start-up will display **Failed** until the ITM-SC is licensed.

---

- 7 Install a Client following the ITM-SC Client or ITM-SC X-Terminal Server installation procedure. Use the Client to licence the ITM-SC.

**Result:**

The ITM-SC Server is ready to use.

END OF STEPS

---

**After the procedure** Initially the subnet mask for each system is set to the same value. If systems do have different subnet mask values NIS will not work. To change the subnet mask value after installation use the `itm_sc_set_netmask` command.



## Section: ITM-SC Client or ITM-SC X-Terminal Server Installation

### Overview

---

**Purpose** Perform this procedure to install an ITM-SC Client or ITM-SC X-Terminal Server.

**Merge Root Disk** Use the following table to determine whether Root disks must be merged or not. This will be needed during installation

**Table 1-4 Determine the merging of Root disks (ITM-SC Client or ITM-SC X-Terminal Server)**

Hardware	Languages	RAM (MB)	Root Disk (GB)	2nd Root Disk (GB)	Merge Root Disk
New ITM-SC Client	>1	128	9	-	no
Upgraded ITM-SC Client	1	128	2	-	no
Upgraded ITM-SC Client	>1	128	2	2	yes
Upgraded ITM-SC Client	>1	128	4 or 9	-	no
New ITM-SC X-Terminal Server	>1	256	9	-	no
Upgraded ITM-SC X-Terminal Server	>1	256	4 or 9	-	no

**Determine the configuration name** Use the following table to determine the configuration name. This will be needed during installation

**Table 1-5 Determine the configuration (ITM-SC Client or ITM-SC X-Terminal Server)**

Hardware	Languages	Configuration from..
New ITM-SC Client	>1	ITM-SC Client

**Table 1-5 Determine the configuration (ITM-SC Client or ITM-SC X-Terminal Server) (continued)**

Hardware	Languages	Configuration from..
Upgraded ITM-SC Client	1	ITM-SC Small Client
Upgraded ITM-SC Client	>1	ITM-SC Client
New ITM-SC X-Terminal Server	>1	ITM-SC X-Terminal Server
Upgraded ITM-SC X-Terminal Server	>1	ITM-SC X-Terminal Server

### Time considerations

**Important!** This procedure will take a few hours to complete. Once started there is no possibility to pause or stop the process.



## ITM-SC Client or ITM-SC X-Terminal Server Installation

---

**When to use** To install an ITM-SC Client or ITM-SC X-Terminal Server.

**Before you begin** The following prerequisites must be met before starting the installation procedure:

- The Workstation Ethernet (TCP/IP) network interface its hardware pathname and name (LAN) are known.
- The Intranet Ethernet (TCP/IP) network interface its hardware pathname and name (LAN) are known (for the X-Terminal installation).
- All interfaces (LANs) are installed and appropriately terminated.
- The tape device `/dev/rmt/0m` is installed and working.
- An ITM-SC Installation tape is available.
- A hostname for the system is allocated. A hostname can be less than or equal to eight characters. The allowable characters are restricted to the digits and the lowercase alphabet i.e. The characters a to z and the digits 0 to 9.
- An IP address for the system is allocated.
- Determine the configuration by using Table 1-5, Determine the configuration (ITM-SC Client or ITM-SC X-Terminal Server) [1-26].
- Determine if two root disks must be merged into one by using Table 1-4, Determine the merging of Root disks (ITM-SC Client or ITM-SC X-Terminal Server) [1-26].
- The Time Zone for the system is known.
- The local time is known.
- The NIS role of the ITM-SC Client or ITM-SC X-Terminal Server to be installed is known. This NIS role can be either NIS Slave or NIS Client.
- The NIS Master is working and connectivity between NIS Master and ITM-SC Client or ITM-SC X-Terminal Server is established.
- If the NIS Master is located on a separate subnet contacted via a gateway, the IP address of NIS master and the IP address of the gateway are required.
- The terminators used have the right impedance.

Before performing this procedure consider the following:

- This installation procedure must be performed even when HP-UX is pre-installed.
- This procedure will take a few hours to complete. Once started there is no possibility to pause or stop the process.

**Related information**

The related procedure is:

- Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone

The related concept is:

- About Network Information Service (NIS) [3-7]

**Hardware Settings on the  
NIS Master**

Although this procedure is split into smaller sections, all sections must be executed successively. It is not possible to interrupt this procedure. Perform all steps to install a ITM-SC Client or ITM-SC X-Terminal Server.

- 
- 1 Before a ITM-SC Client or ITM-SC X-Terminal Server can be configured its IP address and hostname must be added to the */etc/hosts* file on the NIS master server and */var/yp/ypmake* must be run. This is done by logging into the NIS master as root and typing the following command:

```
itmsc_add_host <client hostname><client IP  
address>
```

- 
- 2 Make sure the ITM-SC Client or ITM-SC X-Terminal Server has been added to the */etc/hosts* file on the NIS master server by typing *ypcat hosts* on the NIS master and looking for the ITM-SC Client or ITM-SC X-Terminal Server hostname in the returned list. *Do NOT proceed until NIS is configured.*

**Result:**

The ITM-SC Client or ITM-SC X-Terminal Server is known to the NIS Master

- 
- 3 Turn on successively on ITM-SC Client or ITM-SC X-Terminal Server the:
    - screen
    - external disks
    - system unit respectively

**Result:**

A message will be displayed describing how to change the monitor type.

---

- 4 Press **TAB** to change the monitor type.

**Result:**

The system will cycle through the possible monitor types.

---

- 5 Press **ENTER** when the required monitor type is displayed, and y to confirm your choice. The monitor resolution should be at least 1280 x 1024.

**Result:**

A message can be displayed how to interrupt the boot sequence.

---

- 6 If the previous message is displayed press **ESCAPE** or any key to stop the boot sequence.

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

**Hardware Settings on the  
ITM-SC Client or ITM-SC  
X-Terminal Server**

---

- 1 Insert the ITM-SC Installation tape into the tape drive.

**Result:**

A list of commands you can use is displayed.

---

- 2 Enter the sea command.

**Result:**

A list of devices attached to the system is displayed.

---

- 3 Write down the hardware paths of the tape and disk drives.

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

## HP-UX Installation

---

- 1 Boot from tape by using the `bo` command.

**Result:**

The machine is booted. The following question is displayed:  
Interact with IPL?

---

- 2 Answer `n` (no)

**Result:**

After a few minutes the user can be asked to select the number of the keyboard language. On some hardware platforms this question will not be asked.

---

- 3 When asked for a keyboard language, select a number from the list and press **ENTER**. Confirm by pressing **ENTER** again.

**Result:**

The Ignite-UX configuration window is displayed.

---

- 4 Select the `Install HP-UX` option and press **ENTER**.

**Result:**

A window for entering the type of installation is displayed.

---

- 5 Select `Media with network enabled and Advanced installation`.

**Result:**

If more than one LAN card installed you will be asked to select the LAN interface for the Ethernet (TCP/IP).

---

- 6 If asked for select the LAN interface for the Ethernet (TCP/IP). `LAN-0` *must* be selected at this point.

**Result:**

The message `... Searching for DHCP server...` is displayed.

---

- 
- 7** If DHCP (Dynamic Host Configuration Protocol) is not configured press **CTRL-C** to interrupt the search. If DHCP is configured type `man bootpd` for more information.

**Result:**

A screen is displayed to enter the *hostname*, *IP address* and *default gateway routing IP address*.

---

- 8** Enter the *hostname*, *IP address* and *default gateway routing IP address*.

Leave the *subnet mask* blank.

**Result:**

The user is asked if the information just entered is temporary.

---

- 9** Select No. Use **TAB** to highlight the OK field at the bottom left of the screen and press **ENTER**.

**Result:**

The *Select System Root Disk* screen will be displayed.

---

- 10** Highlight the *SCSI ID* of the Root disk. Accept the default values by using the **TAB** key until the OK field is highlighted. Press **ENTER** to continue.

**Result:**

The *basic window* is displayed.

---

- 11** In the *Basic Window* use **TAB** move to `Additional` and then press **ENTER**.

**Result:**

The *Additional Configuration Controls* window is displayed.

---

- 12** Select `ITM-SC Client` or `ITM-SC small client` using Table 1-5, Determine the configuration (ITM-SC Client or ITM-SC X-Terminal Server) [1-26].

Select `go!` to continue.

**Result:**

A warning message will be displayed indicating the disk contains a file system boot area and continuing will destroy all data on this disk.

---

- 13** If any error messages are displayed at this point they must be investigated before continuing with the install. Use the **TAB**key to select the **gO** option. Press **ENTER** to continue

**Result:**

The screen will display the minimal UNIX configuration files as they are being loaded from tape. The loading time is 5 minutes. An interaction message is displayed telling *not* to remove the HP-UX installation tape.

---

- 14** Do *NOT* remove the Tape. Press **ENTER** to continue.

**Result:**

All required software will be loaded from tape. This process will take at least *two hours*. After loading the system will reboot.

---

- 15** Ignore any **ERROR** and **WARNING** messages indicating that software will not be installed due to a mismatch between the hardware configuration and the selected software. This is due to the install medium containing software for all supported hardware platforms.

The system will display the welcome to HP-UX screen with the prompt Are you ready to link this system to a network?

---

- 16** Select **yes**.

**Result:**

The system will then ask if you wish to use DHCP to obtain the networking information.

---

- 17** Select **no**.

**Result:**

You will then be prompted with the configuration information required .

---

- 
- 18** Make sure you have your completed checklist and select *yes* to continue.

**Result:**

The next prompt displayed is for the hostname which should be as previously specified.

---

- 19** Check the name and select *ok*. Confirm by selecting *yes*.

**Result:**

Time Zone information can be entered.

---

- 20** Select the correct Location and select *ok*. Then select the required timezone and press *ok*. Confirm this information by selecting *yes*.
- 

- 21** Use the mouse to set the Date and Time if required.
- 

- 22** Enter the *root password*.

**Result:**

The IP address entered at the start of the install process should be displayed.

---

- 23** Confirm the IP address by selecting *OK*.

**Result:**

The *Additional Network Parameters* screen is displayed.

---

- 24** Select *no*.

**Result:**

If an ITM-SC X-Terminal Server is being installed, an information screen will be displayed.

If an ITM-SC Client is installed a *Configure Font Server* screen is displayed.

---

- 25** If installing an ITM-SC Client select *no*. If installing an ITM-SC X-Terminal Server read the information screen and select the *Close* option.
-

**Result:**

Two information screens will be displayed.

- 
- 26** Read the information screens and select the **C**lose option to continue.

**Result:**

The machine will reboot and a *CDE Login* screen is displayed

- 
- 27** Remove the tape from the tape drive.

- 
- 28** Wait until the *CDE login window* appears. From the CDE login screen select *Options -> command line login* and press **ENTER**.

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

**NIS Database Installation  
and Initialization**

- 
- 1** Login as *root*.

- 
- 2** Enter the following command: `itmsc_client_setup`

- 
- 3** Make sure the:

- NIS Master is set up and reachable over the network
- the NIS Master host file includes the IP Address of the ITM-SC Client.

**Result:**

The following message will be displayed: `Is this machine a NIS master, slave, client or no NIS?`

- 
- 4** To configure the ITM-SC Client as NIS Client select **c**. To configure as a NIS Slave Server select **s**. Press **ENTER**.

**Result:**

In a simple client server installation the NIS master is the default ITM-SC to be displayed from a client. However, with several servers in the NIS domain the NIS master may not be the default server. You will be asked if the NIS master is the default ITM-SC server.

---

- 5** When the NIS master is *not* the default ITM-SC server select n. If the NIS master is the default ITM-SC server, select y and proceed with the next step.

**Result:**

You will be asked to enter the hostname of the default server.

---

- 6** Enter the hostname of the default server.

**Result:**

The following message is displayed: Warning! You maybe about to remove any local EMS users from this machine Do you wish to continue? [y/n: y]

---

- 7** To accept the default of yes press **ENTER**.

**Result:**

You now will be asked to make sure the ITM-SC Client is configured as a NIS slave on the NIS master.

---

- 8** When the ITM-SC Client is configured as a NIS slave on the NIS master select y (yes) to continue.

**Result:**

The machine is attempting to contact a NIS Server in the domain of the NIS Master Server. When contacted the NIS Slave Server maps are created. You will be asked to enter the name of the default ITM-SC Server.

---

- 9** Enter the name of the default ITM-SC server.

**Result:**

The following question is displayed: Do you want this procedure to quit on non-fatal errors? [y/n: n]

---

- 
- 10** Accept the default of *n* (no) by pressing **ENTER**

**Result:**

The NIS maps will be built. The kernel will be rebuilt and the following question will be displayed: Do you want to move the kernel at this time (y/n[y])?

---

- 11** Select *y* (yes) and press **ENTER**

**Result:**

following question will be displayed: *Do you want to reboot the system at this time (y/n[y])?*

---

- 12** Select *y* (yes) and press **ENTER**.

**Result:**

The ITM-SC is installed and the system will reboot.

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

**Initialization**

---

- 1** If a tape containing a customized network map background presentation is available insert the tape in the tape drive. Enter the following command as user root: `itmsc_load_map`.
- 
- 2** If the ITM-SC X-Terminal Server was installed perform the *Adding an X-Terminal Client to an ITM-SC X-Terminal Server* procedure. This procedure configures the ITM-SC X-Terminal Server to support X-Terminals. This procedure is described in the next chapter.

**Result:**

The ITM-SC Client or ITM-SC X-Terminal Server is installed.

END OF STEPS

---

**After the procedure** Initially the subnet mask for each system is set to the same value. If systems do have different subnet mask values NIS will not work. To change the subnet mask value after installation use the `itmsc_set_netmask` command.

□

## Section: Installing an ITM-SC Combined Terminal Server

### Overview

---

**Purpose** Perform this procedure to install an ITM-SC Combined Server. An ITM-SC combined server does incorporate both the ITM-SC Server as well as the ITM-SC X-terminal Server. By doing so the UIP (user interface presentation) can be directed to a normal PC.

#### Time considerations

**Important!** This procedure will take a few hours to complete. Once started there is no possibility to pause or stop the process.



## Installing an ITM-SC Combined Terminal Server

---

**When to use** To install a ITM-SC Combined Terminal Server

**Before you begin** Before starting the ITM-SC installation procedure make sure:

- The Network Element (NE) interface its hardware pathname and name (LAN) are known.
- The Workstation Ethernet (TCP/IP) network interface its hardware pathname and name (LAN) are known.
- If a WDACS is to be installed, the WDACS Ethernet (TCP/IP) network interface its hardware pathname and name (LAN) are known.
- All interfaces (LANs) are installed and appropriately terminated.
- The tape device/*dev/rmt/0m* is installed and working.
- An Informix Serial Number and Licence Key are available.
- The licence keys (auth. codes) for the ITM-SC are available.
- An ITM-SC Installation tape is available.
- A hostname for the system is allocated. A hostname can be less than or equal to eight characters. The allowable characters are restricted to the digits and the lowercase alphabet i.e. The characters a to z an the digits 0 to 9.
- An IP address for the system is allocated. The IP address can be set to the same value of the default gateway routing IP address.
- The time zone and local time are known.
- The NIS role of the ITM-SC Combined Server to be installed is known.

If the ITM-SC Server to be installed as a NIS Slave then:

- the hostname of the ITM-SC Server to be installed must be added to the list of NIS Slaves in the NIS Master. If not done already perform the reconfiguration process for adding a NIS Slave Server.
- the NIS Master must be up and running.
- If the NIS Master is located on a separate subnet contacted via a gateway, the IP address of NIS master and the IP address of gateway are known.
- The *Service/Normal* switch on the rear-side of the server is in *Normal* position.
- The terminators used have the right impedance.

Before performing this procedure consider the following:

- This installation procedure must be performed even when HP-UX is pre-installed.
- This procedure will take a few hours to complete. Once started there is no possibility to pause or stop the process.

**Related information** The related procedure is:

- Configuring a PC as an X-terminal

The related concept is:

- About Network Information Service (NIS) [3-7]

**Hardware Settings** Although this procedure is split into smaller sections, all sections must be executed successively. It is not possible to interrupt this procedure. Perform all steps to install an ITM-SC Combined Terminal Server.

- 
- 1 If the machine is turned on, turn it off first. Then turn on successively the
    - screen
    - external disk
    - system unit

**Result:**

A message will be displayed about how to interrupt the boot sequence.

- 
- 2 Press **Escape** or any other key necessary to interrupt the boot sequence

- 
- 3 Insert the ITM-SC Installation tape into the tape drive

**Result:**

A list of commands which you can type is displayed.

- 
- 4 Use the `sea` command.

**Result:**

A list of devices attached to the system is displayed.

- 
- 5 Write down the hardware paths of the disk and tape drives

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

## HP-UX Installation

---

- 1 Boot from tape by using the `bo` command.

**Result:**

The machine is booted. The user will be asked:  
Interact with IPL?

---

- 2 Answer `n` (no) to the question Interact with IPL?

**Result:**

A Ignite-UX configuration window will be shown.

---

- 3 Select the *Install HP-UX* option and press **ENTER**

**Result:**

A window is presented for entering the type of installation.

---

- 4 Select *Media with network enabled and Advanced installation*.

**Result:**

Depending on the machine the user can be asked to select the LAN interface for the Ethernet.

---

- 5 Select the *Build-in LAN* at this point.

**Result:**

The message searching for DHCP server will be displayed

---

- 6 If DHCP (Dynamic Host Configuration Protocol) is not configured press **CTRL-C** to interrupt the search. If DHCP is configured type `man bootpd` for more information.

**Result:**

A screen will be displayed to enter the *hostname*, *IP address* and the *default gateway routing IP address*.

---

- 
- 7 Enter the *hostname*, *IP address* of the machine and the *default gateway*. Leave the *subnet* mask blank.

**Result:**

The user is asked if the information just entered is temporary

---

- 8 Select No. Use **TAB** to highlight the *OK* field at the bottom left of the screen and press **ENTER**

**Result:**

The *Installation Tool* screen will be displayed.

---

- 9 Use **TAB** to go to *Root Disk* and press **ENTER**.
- 

- 10 Highlight the disk selected as primary boot path. Accept the default values by using the **TAB** key until the *OK* field is highlighted. Press **ENTER** to proceed.
- 

- 11 In the Basic Window use **TAB** to move to *Additional*. Press **ENTER**.

**Result:**

The *Additional Configuration Controls* window is shown.

---

- 12 Select I TM- SC combi ned server.
- 

- 13 Press Go!

**Result:**

A message dialog box will be displayed containing a warning that the disk contains a file system boot area and continuing will destroy all data on this disk.

---

- 14 If any error messages are displayed at this point they must be investigated before continuing with the installation. Use the **TAB** key to select the Go option. Press **ENTER** to continue

**Result:**

The screen will display the minimal UNIX configuration files as they are being loaded from tape. The loading time is 5 minutes.

---

A interaction message is displayed telling *not* to remove the HP-UX installation tape but to press RETURN to continue.

---

- 15** Do *NOT* remove the Tape. Press **ENTER** to continue.

**Result:**

All required software will be loaded from tape. This process will take at least *two hours*. After loading the system will reboot.

---

- 16** Ignore any ERROR and WARNING messages indicating that software will not be installed due to a mismatch between the hardware configuration and the selected software. This is due to the install medium containing software for all supported hardware platforms.

**Result:**

The system will display the welcome to HP-UX screen with the prompt Are you ready to link this system to a network?.

---

- 17** Select *yes* and press **ENTER**.

**Result:**

The system will then ask if you wish to use DHCP to obtain the networking information.

---

- 18** Select *no* and press **ENTER**.

**Result:**

You will then be prompted with the configuration information required .

---

- 19** Ensure you have your completed checklist and select *yes* to continue.

**Result:**

The next prompt displayed is for the hostname which should be as previously specified.

---

- 20** Check the name and select *ok*. Confirm by selecting *yes*.

**Result:**

Time Zone information can be entered.

---

.....  
**21** Select the correct Location and select ok. Then select the required  
timezone and press ok. Confirm this information by selecting yes.  
.....

**22** Use the mouse to set the Date and Time if required.  
.....

**23** Enter the *root password*.  
**Result:**  
The IP address entered at the start of the install process should  
be displayed.  
.....

**24** Confirm this is correct and select OK.  
**Result:**  
You will be asked:  
Do you want to configure Additional Network  
Parameters?  
.....

**25** Select no at and press **ENTER**.  
**Result:**  
An information screen will be displayed.  
.....

**26** Read the information screen and select cl ose.  
**Result:**  
Two more information screens will be displayed,  
.....

**27** Read the information screens and select cl ose.  
**Result:**  
The machine will continue to boot. At the end of this process a  
UNIX login prompt will be displayed.  
.....

**28** It is now safe to remove the tape from the tape drive.

**Important!** Proceed with next section of this procedure.

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

## NIS Database Installation and Initialization

---

- 1 Login as *root*
- 

- 2 Enter the command below: `itmsc_archive_disk_setup`

**Result:**

A list of available disks to use as archive disk is displayed

---

- 3 Select a disk

**Result:**

If any of the file systems already exists the following information is displayed: There is an existing file system on `/dev/vg02/lvol_archive` Do you wish to use the existing filesystem (y/n) [n]

---

- 4 Accept the default of n (no) by pressing **ENTER**

**Result:**

If a small archive disk is installed on the system the command will terminate having installed the following archive areas, *Operator Log & Alarm History archive* and the *On-line Database archive*.

---

- 5 Make sure you can locate the **#**key on the keyboard. Try the **#**-key, the **ALT-3** or **Extended Char 3** key combinations. If not log out and log in as *'fail safe'* session. Do not continue unless the **#** key can be located.
- 

- 6 Enter the following command:

```
itmsc_combined_server_setup
```

**Result:**

The following text is displayed:

Adding extra disks.

```
1 /dev/dsk/c1t1d0 8683Mbyte SEAGATE  
ST39204LC
```

```
2 /dev/dsk/c2t2d0 8683Mbyte SEAGATE  
ST39204LC
```

Please select disk to use for the Informix  
database :

- .....
- 7** Select a disk to use for the Informix database.

**Result:**

The following question will be displayed: Is this machine  
a NIS (m)aster, (s)lave, (c)lient or (n)o  
NIS? [m/s/c/n: m]

In a simple client server installation the NIS master is the  
default ITM-SC to be displayed from a client. However, with  
several servers in the NIS domain the NIS master may not be  
the default server. You will be asked for the name of the NIS  
master.

- .....
- 8** Enter the hostname of the NIS Master.

**Result:**

If you are configuring as this machine as a NIS slaver server or  
NIS client then a warning is displayed about removing any local  
EMS users from this system.

- .....
- 9** Enter y (yes) to continue.

**Result:**

A warning message is displayed to make sure the <hostname> is  
configured as a NIS Slave on the NIS Master <NISMas-  
terServer>

You will be asked to continue.

- .....
- 10** Accept the default y(yes) and press **ENTER**

**Result:**

Attempts are being made to contact the NIS Server in the  
<NISMasterServer> domain. After the NIS Slave Server maps  
are created the following text is displayed:

Do you want this procedure to quit on  
non-fatal errors (y/n[n])?

- .....
- 11** Accept the default n (no) and press **ENTER**.

**Result:**

The *NIS maps* are built. If the NIS Master can not be contacted the ITM-SC installation process will terminate. The user is asked for the Informix Serial Number

**Important!** Proceed with next section of this procedure.

END OF STEPS

---

**ITM-SC Combined-Server  
Installation**

---

- 1 To enable a successful reboot, make sure the LAN connection to the NEs is present.
- 

- 2 Enter the *Informix Serial number* and press **ENTER**.

**Result:**

The user is asked for the Informix Key

---

- 3 Enter the *Informix Key* and press **ENTER**.

**Result:**

Informix is configured. This will take 5 minutes. Ignore all warnings while Informix and the kernel are build. The following question is displayed:

Do you like to move the kernel at this time  
(y/n[y]) ?

---

- 4 Select y (yes) and press **ENTER**.

**Result:**

The following question is displayed:

Do you want to reboot the system at this  
time (y/n[y]) ?

---

- 5 Select y(yes) and press **ENTER**.

**Result:**

The ITM-SC is installed and the system will reboot. As the machine starts up the checkbox will display failed until the ITM-SC is licensed.

**Important!** Proceed with next section of this procedure.

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

**ITM-SC Initialization:** .....

- 1 Log in as user i2kadmin (password=i2kadmin) from the *VUE login* screen and license the ITM-SC

**Result:**

The ITM-SC is licensed

.....

- 2 If a tape containing a customized network map background presentation is present put the tape in the drive. Run the following command as user root: `itm_sc_load_map`
- .....

- 3 Use the *System Administration* module to start the ITM-SC

**Result:**

The ITM-SC is ready to use

.....

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

**After the procedure** Initially the subnet mask for each system is set to the same value. If systems do have different subnet mask values NIS will not work. To change the subnet mask value after installation use the `itm_sc_set_netmask` command.



## Section: ITM-NMS/SC Co-resident Server Installation

### Overview

---

**Purpose** Perform this procedure to install a ITM-NMS/SC co-resident Server. On this co-resident server both the ITM-NMS (Integrated Transport Manager - Network Management System) and ITM-SC (Integrated Transport Manager - Subnetwork Controller) are installed.



## ITM-NMS/SC Co-resident Server Installation

---

- When to use** When installing an ITM-NMS/SC co-resident Server:
- Before you begin** No prerequisites or considerations apply on this procedure
- Related information** No related information is available.

### Procedure

---

- 1 Install WS-NMS leaving enough space for the ITM-SC, BaseWorx and Informix. The following logical will be set up by the NM install.
  - /opt/informix
  - /opt/baseworx
  - /opt/itm/sc/
  - /var/spool/itm/sc/
  - /dev/infmtx\_tbl

---
- 2 Make sure one unformatted 2 Gigabytes disk is available for the ITM-SC database (Informix).

---
- 3 Make sure the user ID's 200, 201 and 202 and the group ID's 200, 201 and 202 are not already in use.

These will be used by the ITM-SC install scripts for the users 'baseworx', 'i2kadmin' and 'informix' respectively.

---
- 4 Insert the tape containing the ITM-SC software in the tape drive.

---
- 5 Log in as root and enter the command below. Press **ENTER** after each '\'.

```
swi nstall -x allow_multiple_versions=true -x  
mount_all_filesystems=false \  
-s /dev/rmt/0m itm.sc.Server
```

---
- 6 Log in as root and enter:

```
/opt/itm/sc/toolbox/bin itm_sc_nm_coresident -  
_setup
```

.....  
**7** Log in as *root*.

.....  
**8** Enter:

`/opt/itm/sc/tool box/bin/itm_sc_set_itmm_name`

**Result:**

This script invokes a menu driven interface that allows the ITM-NM hostnames to be added or deleted. For upgrade purposes the version number can also be changed.

.....  
**9** To reboot the co-resident server enter:

`shut down -r -y 0`

.....  
**10** Install an ITM-SC Client and license the ITM-SC.

`END OF STEPS`  
.....



## Section: ITM-NMS/SC Joint Client Installation

### Overview

---

**Purpose** Perform this procedure to install an ITM-NMS/SC Joint Client. An ITM-NM/SC Joint Client both the ITM-NMS Client (Integrated Transport Manager - Network Management System) and ITM-SC Client (Integrated Transport Manager - Subnetwork Controller) are installed.



## ITM-NMS/SC Joint Client Installation

---

**When to use** When installing an Joint Client workstation.

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

- That sufficient free disk space is available in the */opt/itm/sc/* directory.  
Use the following as a guidance to determine the amount of disk space required in the */opt/itm/sc/* directory: Disk space required = 7 Mb for each ITM-SC installed + space for On-line documentation and help.

**Related information** No related information is available

**Procedure** Follow these steps to install the ITM-NMS/SC Join Client:

---

- 1 Install the ITM-NMS client software leaving enough space for the ITM-SC.  

---
- 2 Make sure the *user id 201* is not already in use. This is used by the ITM-SC install scripts for the user *i2kadmin*.  

---
- 3 Make sure the *group id 201* is not already in use. This is used by the ITM-SC install scripts for the group *i2k*  

---
- 4 Make sure the hostname of this joint workstation has been added to the */etc/hosts* file of any ITM-SC servers. To add the hostname of this joint workstation:
  - log on into the ITM-SC server
  - run as user *root*: `itmsc_add_host <client hostname> <client IP address>`

---
- 5 Insert the tape containing the ITM-SC software in the tape drive.  

---
- 6 Log in as root and enter the command below. Press the return key after each '`\`'.  

```
swinstall -x allow_multiple_versions=true -x  
mount_all_filesystems=false \  
-s /dev/rmt/0m itmssc.Client.
```

- .....
- 7** Make sure the hostnames of the ITM-SC Servers are in the joint workstations /etc/hosts file by running the following command as user root:

```
/opt/itm/sc/tool box/bin/itm_sc_add_host <server  
hostname> <server IP address>
```

.....

- 8** Run the following command as user root to setup the joint workstation:

```
/opt/itm/sc/tool box/bin/itm_sc_nm_joi ntws_set up
```

**Result:**

The following text should appear the screen: Enter the name of the default ITM-SC server for this client: DefaultServer

.....

- 9** Enter the *hostnames* of any ITM-SC servers.

**Result:**

A list containing the ITM-SC servers is displayed. A confirmation message is displayed.

.....

- 10** Choose y (yes) to continue or n (no) to enter the list of servers again
- .....

- 11** After the configuration has completed reboot the ITM-NM/SC Client using the following command: shutdown -r -y 0

END OF STEPS

.....



## Section: Setting up an ITM-SC Server to manage WS-DACS NE

### Overview

---

**Purpose** This procedure describes how to setup an ITM-SC Server to manage WS-DACS NEs. This procedure is intended for use where there are 3 LAN cards available in the server. If the Management LAN is used for the WS-DACS NEs then this procedure should not be used but instead it can be needed to configure a Router to manage these WDACS NEs.



## Setting up an ITM-SC Server to manage WS-DACS NE

---

**When to use** When setting up an ITM-SC Server for managing WS-DACS NEs. This procedure is intended for use where there are 3 LAN cards available in the server.

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

- The SC has 3 LAN cards (the built-in LAN card and 2 others) or 2 LAN cards and only WS-DACS NEs being managed.
- The SC is conform the correct Hardware Specification
- All of the available LAN cards are correctly cabled up and terminated
- The name of the WS-DACS being managed is known
- The netmask for the LAN Interface is known
- The LAN identity for managing WS-DACS is known - e.g. LAN 2 or any LAN Interface not being used
- The name to be used for the SC on the WS-DACS LAN is known
- The IP address for the SC on the WS-DACS LAN is known

**Related information** No related information is available.

### Procedure

---

- 1** Login as *root*  

---
- 2** Using the name of the SC on the WS-DACS LAN and it's IP address, enter the command:  

```
i t m s c _ a d d _ h o s t <S C - n a m e><S C I P A d d r e s s>
```

---
- 3** Enter the following command:  

```
i t m s c _ l a n _ i d e n t i f y
```

---
- 4** Enter the Option:  
WDACS LAN  

---
- 5** Enter the LAN identity for the WS-DACS <LAN-ID>

- 6 Enter the name of the host you have chosen for the SC on this LAN  
<SC-NAME>
- 7 Enter the netmask to be used on this LAN interface. This must  
correspond to a valid sub-network mask for the class of address you  
are using. If the subnetwork mask is entered incorrectly correct this  
problem by using the next procedure: *Change Sub-Network Mask*.
- 8 For each WS-DACS to be managed enter the command:  
itmsc\_add\_host <WS-DACS NName> <WS-DACS IP Address>
- 9 Stop the ITM-SC if it is running using an SC Client.
- 10 Reboot the machine by entering the command:  
shut down -r now
- 11 Login as *root*
- 12 Verify the SC is now available on the WS-DACS network by entering  
the command:  
ping <SC—Name> -n 10
- 13 Start the ITM-SC using an SC Client  
E N D O F S T E P S

### Change Sub-Network Mask

If the sub-network mask has been entered incorrectly, then you  
can change it using the following procedure.

- 1 Log in as *root*.
- 2 Enter the following command:  
i t m s c \_ s e t \_ n e t m a s k -l <LAN- I D> <SUBNET- MASK>
- 3 Reboot the machine by entering:

Section: Setting up an ITM-SC Server to  
manage WS-DACS NE  
Setting up an ITM-SC Server to manage  
WS-DACS NE

*Application Installation*

shutdown -r now

END OF STEPS

---



## Section: Disk Mirror Installation and Setup

### Overview

---

**Purpose** To increase the reliability of the ITM-SC Server, a second disk or a second pair of disks can be installed. The second disk or pair will maintain an exact copy of the primary one. When the primary disk fails the second will take over all processes active on the ITM-SC Server.

The disk mirroring for the ITM-SC Server is achieved by use of HP MirrorDisk/UX software, additional SCSI controller cards (optional) and additional disk drives.



## Disk Mirror Installation

---

**When to use** When installing a second disk to increase reliability.

**Before you begin** To order to achieve full operational disk mirroring two procedures must be performed: *Disk Mirror Installation* and *Disk Mirror Setup*. Although the Disk Mirror Setup procedure can only be done when the Disk Mirror Installation procedure is performed successfully these two procedures can be performed individually.

When performing this procedure make sure:

- The system on which the disk mirroring software is being installed is a Large Network Management Server with the hardware of the Optional Mirroring Components already installed.
- ITM-SC is installed and configured according the ITM-SC Server Installation procedure.
- The PM archive disk is installed if the PM archive option is licensed.
- The Customer ID is known for the system.
- A Mirror U/X Codeword is available.
- The CD-ROM must be present for which the above Customer ID and Mirror U/X Codeword are valid.

Before performing this procedure consider the following:

- It is not possible to install an ITM-SC after disk mirroring has been set up.

**Related information** The related procedure is:

- Disk Mirror Setup

**Procedure** Follow these steps to install a second disk or pair of disks:

---

**1** Login as *root*

---

**2** Insert the Application Software CD-ROM into the CD-ROM drive.

---

**3** To make a new directory enter the command:

```
mkdi r /SD_CDROM
```

---

**4** Enter the following command: `i oscan - fnC di sk`

**Result:**

The output should will contain a line for the CD-ROM device.  
For example:

```
di sk 2 8/16/5. 2. 0 sdi sk CLAIMED DEVICE  
TOSHIBA CD-ROM XM-5401 TA /dev/dsk/c1t2d0  
/dev/rdisk/c1t2d0
```

- 
- 5 Write down the device filename that starts with */dev/dsk/c.....*. In the example above this will be *c1t2d0*.

- 
- 6 Enter the following command: `mount /dev/dsk/<device filename> /SD_CDROM`. Replacing the *<device filename>* with the output from the `i oscan` command. In the example above this will be *c1t2d0*. For more details of the commands `i oscan`, `mkdi r` and `mount` see the HP Manual.

- 
- 7 To determine the bundle ID enter the following command:

```
swl ist -d @ /SD_CDROM | grep <product number>
```

**Result:**

The bundle ID is the first word of the output displayed, usually the *<product number>* with a suffix. For example the bundle ID for product number *B2491A* is *B2491A\_APZ*. Now the bundle ID is known.

- 
- 8 Write down the *bundle ID*.

- 
- 9 To licence and install the software enter the following command:

```
i tmsc_mi rror_i nstal l <bundle ID>/SD_CDROM  
<bundle ID> <codeword>
```

Note: When typing the codeword into the command line it is necessary to omit any spaces there may be between the blocks of characters.

**Result:**

You will be requested for the Customer ID and HP Codeword.

- 
- 10 Enter the Customer ID and HP codeword.

**Result:**

The command should then prompt with a warning message:  
WARNING!!! When the software has been  
installed the system will reboot!!! Do you  
wish to continue (y/n [y])

- 
- 11** Type n to terminate the command without installing the software.  
Type y to start the software installation process.

**Result:**

If y is selected the progress of the installation process will be  
logged to the screen. On successful completion of the software  
load the system will reboot. The setup of the mirrored disk can  
now be carried out. Disk Mirror Setup [1-63]

END OF STEPS



## Disk Mirror Setup

---

**When to use** When installing a second disk to increase reliability and the installation procedure is performed successfully..

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

- the Disk Mirror Installation procedure is performed successfully..

Although the Disk Mirror Setup procedure can only be done when the Disk Mirror Installation procedure is performed successfully these two procedures can be performed individually.

**Related information** The related procedure is:

- Disk Mirror Installation

**Procedure** Follow these steps to setup and initialize a Mirrored Disk:

---

**1** Login as *root*

---

**2** Repeat the following steps for each *Volume Group* (disk) that is to be mirrored.

---

**3** Determine the <bundle-ID> for HP MirrorU/X is the same as the <bundle-ID> obtained during the disk mirroring installation.

After disk mirroring installation has been done, the <bundle-ID> can be obtained by command:

```
swl i s t | g r e p " H P M i r r o r U / X "
```

The bundle-ID is the first word of the output displayed, usually the <product number> wit a suffix. For example the bundle-ID for product number B2491A is B2491A\_APZ.

**Result:**

The bundle ID is known.

---

**4** Enter the following command: `itmsc_mirror_setup -b <bundle ID>`

**Result:**

The available Volume Groups are listed together with some details of the Logical Volumes contained and the physical disks used. Accordingly the ITM-SC will prompt the following

message: Select Volume Group to mirror (0 to abort):

---

- 5** Enter the *Volume Group* to mirror.

**Result:**

A list of the available unused disks is displayed.

For example:

```
1 /dev/dsk/c0t5d0 4095 Mbyte SEAGATE  
ST34371W.
```

Accordingly the ITM-SC will prompt the following message:

Select disk to mirror (0 to abort):

---

- 6** Select one of the available disks by entering the corresponding number.

**Result:**

A confirmation message is displayed.

For example:

```
Do you wish to add mirror disk  
/dev/dsk/c0t5d0 to Volume Group /dev/vg00  
(y/n [n])?
```

---

- 7** To terminate without any action taken enter n. To setup the mirroring as indicated by the confirmation message enter y.

**Result:**

It will take about *1 hour* to complete the synchronization of the new mirror disks.

---

- 8** To mirror another *Volume Group* repeat this procedure.

END OF STEPS

---



## Section: Installing a Uninterruptible Power System (UPS)

### Overview

---

**Purpose** To increase the reliability of the ITM-SC, a Uninterruptible Power System (UPS) can provide power at times of power failure. The time a UPS can provide power to the ITM-SC system depend on the specifications of the UPS as well as the specifications of the equipment protected by the UPS.



## Installing a Uninterruptible Power System (UPS)

---

**When to use** When adding an UPS to increase reliability.

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

- the server is a HP D230 or HP 380. Only these servers support UPS. It is however possible to connect the UPS to other server types but the UPS won't be fully monitored by the ITM-SC in that case.
- the ITM-SC Server is installed successfully.

Before performing this procedure consider the following:

- The alarm UPS cannot communicate with the UPS monitor daemon can only be raised at system start-up. Failure of the communication between UPS and ITM-SC will not be notified by the ITM-SC unless the ITM-SC is rebooted.

**Related information** The related concept is:

- UPS Installation [3-3]

**Procedure** Follow these steps to add UPS support:

- 1 Unpack the UPS device(s) and re-charge it for at least 24 hours. Connect the UPS device(s) to the serial port(s) on the workstation that will run the UPS daemon (take note of the serial port(s) and their associated */dev* entry).
- 2 Log into the ITM-SC system that is to run the UPS daemon as user *root*.
- 3 To start the installation process enter the command:  
`itmsc_ups_setup`

**Result:**

The installation process retrieves the current UPS configuration. If a current UPS configuration is not present then a default configuration will be created. The UPS configuration is checked and then displayed. If an error is encountered during the configuration of the UPS then a warning will be displayed. Accordingly a prompt is displayed for setting the UPS time parameters.

---

**4** Enter:

- D to select default values from a selection table (choose either 1, 2 or 3).
- O to enter manually values for the time parameters (enter Y or N to confirm that a time parameter is to be updated. Enter the new integer time value if Y).
- U to leave the time parameters at their current values. After the time values are set the user will be asked if more upstty entries are to be made.

---

**5** After the time values are set a prompt is displayed asking if more *upstty* entries are to be made. Enter either:

- N to not add additional upstty entries.
- Y to add additional upstty entries:
  - select the serial port to add from the displayed list.
  - enter to add properties to the current upstty entry (select an option from the property list) or N to allocate no properties to the current upstty entry

**Result:**

After the additional upstty entries are complete a prompt is displayed for manipulating the lines.

---

**6** If a line is to be manipulated (edit, move, delete or commented) then enter Y. Then enter the integer valued line number and the option.

---

**7** When the configuration is set enter N to terminate line manipulation.

**Result:**

The installation process will invoke the UPS daemon and report the process identifier of the UPS daemon.

END OF STEPS



## Section: Configuring a cold stand-by ITM-SC

### Overview

---

**Purpose** To increase the availability of the ITM-SC management system a so called 'cold stand-by' can be configured to backup the live ITM-SC. One cold stand-by ITM-SC will backup only one ITM-SC.



## Configuring a cold stand-by ITM-SC

---

**When to use** When adding an extra ITM-SC which acts as a cold stand-by.

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

- the hardware configuration for the cold standby ITM-SC is the same as the live ITM-SC. For example same number of disks of the same size.
- the cold standby ITM-SC is connected to the same (Q-LAN) LAN0 as the live ITM-SC.
- the ethernet (TCP/IP) LAN-1 connection on the cold stand-by ITM-SC is *NOT* connected to the same hub as the live ITM-SC. This will cause network conflicts because the stand-by ITM-SC will be installed using the same hostname and IP address as the live ITM-SC.

Before performing this procedure consider the following

- This procedure requires knowledge of ITM-SC administration, specifically the database backup and restore procedure. The recommended approach is to configure the cold stand-by ITM-SC and verify that it can manage the NEs. After configuration of the cold stand-by ITM-SC regular backups of the running ITM-SC and the database should be performed to tape.
- To ease the database backup configure the backup as periodic archive.

**Related information** The related concept is:

- UPS Installation [3-3]

**Procedure** Perform these steps to configure a cold stand-by:

---

- 1 Clean install the cold stand-by ITM-SC using the same procedure and software release used to install the live ITM-SC. Make sure the *hostname*, *IP address* and *NIS configuration* are the same as the live ITM-SC.

If the cold stand-by is a NIS Slave it will need to obtain its NIS information from the NIS master. To do so take into account the following prerequisites:

Before entering the `itmssc_server_setup` or `itmssc_standard_setup` command:

- disconnect the live ITM-SC from *LAN-1*
- connect the cold stand-by ITM-SC to *LAN-1*.
- Restore the *LAN-1* connection to their original positions when the Informix serial number is entered.

---

**2** After the installation has finished licence the cold stand-by ITM-SC for the same features that the live ITM-SC supports.

---

**3** Make a backup of the licence file on the cold stand-by ITM-SC because it will be copied out when the ITM-SC configuration files are restored from the live ITM-SC. Log in as user *root* and enter the following commands:

- `cd /opt/itm/sc/etc/itmssc_setup`
- `cd $SEMSAPPLDIR`
- `cp authcodes /etc/opt/itm/sc`

---

**4** Log onto the *live ITM-SC* as user *root*. Place a tape, not write protected and labelled *ITM-SC backup*, into the tape drive. Save the live ITM-SC files to tape by running the following command, note the ITM-SC will not need to be shutdown: `itmssc_backup`

**Result:**

The following message is displayed: INFO: Start of `itmssc_backup`. Do you wish to use `/etc/opt/itm/sc/SaveList (y/n[y])?`

---

**5** Select *y* (yes) and press **ENTER**.

**Result:**

The files saved to tape will be displayed. This will take *half an hour*.

---

**6** When all of the configuration files have been saved remove the tape from the tape drive and write protect it.

---

**7** Insert a second tape, not write protected and labelled with *Informix Backup <hostname>* into the tape drive. Perform the Backing up the ITM-SC Database procedure described in the *Sub-network controller*

*Administration Guide (SAG)*. After finishing this procedure remove the tape and write protect it.

---

- 8** Step 4 until Step 7 should be repeated on a regular basis to ensure that an up-to-date backup of the live ITM-SC is maintained. Step 4 should be done when any new users, hosts or system alarm monitor configuration changes are made. This should not need to be done as frequently as Step 7, which can be configured as an automatic periodic archive.
- 

- 9** In the event of a live ITM-SC failure or to test the cold stand-by ITM-SC configuration:

- log in as user root onto the cold stand-by ITM-SC
- Place the tape labelled ITM-SC back-up into the tape drive
- enter the following commands successively:
  - `i n i t 3` (login again as user root)
  - `i t m s c _ r e s t o r e`

**Result:**

After the `i n i t 3` command the user is asked to log in again as user root. After the `itmsc_restore` command the following message will be displayed: INFO: Start of `itmsc_restore` WARNING: The ITM-SC will be stopped and the files on the tape restored. Any existing data will be overwritten. Are you sure you want to continue (y/n [n])?

---

- 10** Select y (yes) and press **ENTER**.

**Result:**

The saved configuration files will be restored from tape, this may take *half an hour*.

---

- 11** Log in as user root and restore the saved licence file by entering successively:

- `. /opt/i t m / s c / e t c / i t m s c _ s e t u p`
- `cp /e t c / o p t / i t m / s c / a u t h c o d e s $ E M S A P P L D I R`
- `i n i t 4`

- 
- 12** Remove the ITM-SC Backup tape and insert the tape labelled *Informix Backup <hostname>* into the tape drive of the cold stand-by ITM-SC. Follow the *Restoring ITM-SC Database* procedure as can be found in the *Sub-network controller Administration Guide (SAG)* and start the ITM-SC.
- 
- 13** Remove the *LAN-1* (TCP/IP) connection from the live ITM-SC and place it into the *LAN-1* (TCP/IP) connection of the cold stand-by ITM-SC. If the live ITM-SC is running then stop it and the cold stand-by will take over management of the NEs.
- 
- 14** When the live ITM-SC has been repaired it can be configured as the cold stand-by ITM-SC.

END OF STEPS



## Section: Remote ITM-SC Installation: creating a software depot

### Overview

---

**Purpose** To install an ITM-SC on a remote system, first a software depot has to be created.



## Remote ITM-SC Installation: creating a software depot

---

**When to use** When installing an ITM-SC remotely, but no software depot has been created yet.

**Before you begin** The following prerequisites must be met before starting the remote installation procedure.

- The checklist for the type of target being remotely installed is completed.
- The machine on which the software depot source is to be installed is connected to the network and can be contacted from the system to be installed.
- The tape device `/dev/rmt/0m` is installed and working on the source system.
- Sufficient free disk space is available to install the software depot. The estimated size of the software depot is 90 Megabytes. This includes Informix and BaseWorx.
- The ITM-SC Installation tape is available.

**Related information** No related information is available.

**Procedure** Before installing an ITM-SC on a remote site a software depot must be created. A depot can be created on any system that has enough space and has a network connection to the system to be installed. Follow this procedure to set up a software depot.

---

**1** Log in as `root` onto the system where the software depot is to be created. This will normally be an ITM-SC server.

---

**2** Make sure no other releases of the ITM-SC to be installed are present in the software depot. This can be done by entering the following command:

```
swlist -dl product @/depot
```

**Result:**

If an error message is displayed then no software is present in the depot.

---

**3** If a software depot is present remove it by entering:

```
swremove -d\* @/depot
```

**Result:**

The removal of the software depot will take up to two hours depending on what is loaded in the depot.

---

- 4 Make sure a depot directory exists. To create a depot directory enter:  
`mkdir /depot`

**Result:**

A depot directory is present.

---

- 5 Insert the tape with the ITM-SC software into the tape drive and enter the command below on one line.

```
swcopy -x enforce_dependencies=false -x  
mount_all_filesystems=false \ -s /dev/rmt/0m \*  
@/depot
```

---

- 6 Enter the following command: `/dev/rmt/0m \* @/depot`

**Result:**

The software is being loaded. The estimated time for the software to load from tape into the depot varies depending on what is being loaded. The full ITM-SC may take around *two hours*.

---

- 7 Make sure the required software has been loaded into the depot by using the following command:

```
swlist -dl product @/depot
```

**Result:**

The software is listed including its Informix, BaseWorx, ITM-SC and ITM-SC C components

END OF STEPS

---



## Section: Remote ITM-SC Install from a Depot

### Overview

---

**Purpose** To install a ITM-SC from a remote place perform this procedure.



## Remote ITM-SC Install from a Depot

---

**When to use** When installing an ITM-SC remotely.

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

- All steps of this procedure are performed as user root on the target ITM-SC. The target ITM-SC is the system where the ITM-SC is to be installed.
- a software depot is created somewhere on a system which can be contacted by the target ITM-SC.

**Related information** No related information is available.

**Procedure** All steps of this procedure must be performed as user root on target ITM-SC. The target ITM-SC is the system where the ITM-SC is to be installed.

---

**1** Make sure the target has:

- had HP-UX-11 installed
  - the SCSI IDs set correctly (refer to the appropriate procedure)
  - the logical volumes `/..`, `/stand`, `/home`, `/usr`, `/opt`, `/tmp`, `swap` and `unused` are set to `vg00`.
- 

**2** Enter the command below to make sure the system containing the software depot can be accessed across the network.

```
ping <IP address of machine containing depot >
```

---

**3** The network problem must be corrected before continuing if the ping command fails.

---

**4** Exit the ping command by pressing **CTRL-C**.

---

**5** To load the Stand-alone software enter the command below.

Note that the `ITM-SC_TYPE` parameter must be replaced by one of the proper options. These options are `itmsc.Client`, `itmsc.Xserver`, `itmsc.Standalone` and `itmsc.Server`. To load a language pack replace `ITM-SC_TYPE` by `itmsc-spa`

Press **ENTER** after each '`\`'.

```
swinstall \  
-x reinstall=false \  
-x autoreboot=true \  
-x mount_all_filesystems=false \  
-s <IP address of depot>:/depot \  
ITM-SC_TYPE patches additional
```

where *ITM-SC\_type* is to be replaced by specific lines according  
ITM-SC\_TYPE [1-79]

---

**6** To activate the right paths *log out* and *log in* again as user *root*.

---

**7** Continue with the installation for the required target type from the point where the patches have been loaded and the machine has rebooted.

END OF STEPS



## Parameters for Remote ITM-SC Install from a Depot

---

**Purpose** Parameters used for installing an ITM-SC from a depot are described below.

**ITM-SC\_TYPE** Replace the ITM-SC\_Type parameter with the following lines when installing an ITM-SC from a depot.

when installing a	use
ITM-SC Client	itmsc.Client
X-Terminal Server	itmsc.Xserver
ITM-SC Standalone	itmsc.Standalone
Language pack	itmsc-spa



## Section: Adding Disk Space to Root Volume

### Overview

---

**Purpose** Perform this procedure to add extra disks to the root volume group. For example a Stand-alone ITM-SC requires 4 GBytes of disk space to install. This can be achieved by merging two 2 GByte disks into one.



## Adding Disk Space to Root Volume

---

**When to use** When disk space in root volume group is not sufficient.

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

- that the ITM-SC Stand-alone or ITM-SC Client or ITM-SC X-Terminal Server installation procedures are performed until the step which displays the *System Configurations* screen.

**Related information** No related information is available.

**Procedure** Perform these steps to add disk space to the root volume. To highlight a screen parameter use **TAB** to scroll the screen.

---

**1** Highlight *File System*, and press **ENTER**.

---

**2** Highlight *Add/Remove disk*, and press **ENTER**

---

**3** Use the cursor keys to highlight the disk whose usage is *[none]*.

---

**4** Highlight *USAGE* and press **ENTER**.

**Result:**

The option list is displayed.

---

**5** Highlight *LVM* by using the cursor keys and press **ENTER**.

---

**6** Highlight *Modify* and press **ENTER** to accept.

---

**7** Highlight the *OK* field and press **ENTER** to accept the changes.

---

**8** Make sure that there are now *two* disks in *vg00*.

---

**9** On a normal ITM-SC Stand-alone make sure at least *200 MBytes disk space* is available in *vg00*. On a small ITM-SC Stand-alone at least *200 MBytes*. This is needed for the Informix Database.

---

**10** Highlight the *GO!* field and press **ENTER**.

**Result:**

One warning message per disk can be displayed. This message will state that an existing file system is about to be written over.

- .....
- 11** Continue with the *ITM-SC Stand-alone or ITM-SC Client or ITM-SC X-Terminal Server installation procedure.*

.....

END OF STEPS

.....



## Section: Installing a Secure Web Console

### Overview

---

**Purpose** A Web Console maintains a secure connection from a ITM-SC Server to a central administrative console over a customers' intranet. A Web Console includes password protection and scrambling of data to prevent improper use of the ITM-SC.

The advantages of using web consoles are that less space is taken up by terminal consoles allowing customers to make better use of valuable space, and the ITM-SC Servers can be administered from a central location.



## Installing a Secure Web Console

---

**When to use** When installing a Web Console to increase the security of the ITM-SC.

**Before you begin** Before performing the procedure make sure the following prerequisites are met.

- An IP address and subnet mask for the HP Secure Web Console and the IP address of the network gateway are known
- Hostname of the ITM-SC server is known
- The username and password of the person who will administer the Web Console must be chosen
- A PC or workstation must be available to run a browser on to execute the initialization phase, this machine is also called as a `client_host`.
- No routers are allowed between the Web Console and the `client_host`.

**Related information** No related information is available.

**Procedure** Before starting this procedure make sure the prerequisites are met.

---

**1** Connect the HP Secure Web Console to your `client_host`'s LAN.

---

**2** The HP Secure Web Console comes with a pre-configured IP address 192.0.0.192.

Enter the commands below successively on the `client_host` machine to see if another device is assigned the same IP address:

```
route add 192.0.0.192 [client_host IP address]
ping 192.0.0.192
```

**Result:**

If no device is assigned this IP address, it will time-out. If a device is connected, it will give a reply.

---

**3** If another device has been assigned this IP address contact your network administrator.

- 
- 4 Connect the power adapter and connect the external power adapter to a wall socket.
- 

- 5 Reset the Web Console by the following procedure:
- Power off the console by unplugging the power cable.
  - Press the button on the top of the console (between the amber LED and green LED) and keep it pressed.
  - Power on the box by reconnecting the power cable.
  - Release the button after a couple of seconds.

**Result:**

The Web Console will perform hardware and firmware self-tests, then start the software boot sequence.

---

- 6 Disable Proxies within your web browser network settings (use *no proxies* or temporarily add 192.0.0.192 to the list of URLs for which no proxy is configured), enable Java TM and Java TM scripts.
- 

- 7 Enter the following command into either a DOS or UNIX window on the client\_host (PC or a workstation where your browser is running) to configure the HP Secure Web console and add it to the gateway list:

```
ping 192. 0. 0. 192.
```

---

- 8 If ping is successful, proceed to Step 10
- 

- 9 Enter the following command in the same window as the previous step.

```
arp -s 192. 0. 0. 192 [Web console MAC Address]
```

The MAC address for each HP Secure Web Console can be found on both the label attached to the top of the device and on the box used for shipment. The MAC address must be entered in the appropriate format:

PCs: 00-60-b0-22-3e-ae

UNIX Workstaions: 00:60:b0:22:3e:ae

- 
- 10** Access your Web Console on the client\_host by typing the following URL in your web browser:

http://192.0.0.192.

**Result:**

If a window is displayed with a title like HP SECURE WEB CONSOLE the physical installation was performed successfully

---

- 11** Click OK to access the configuration.

**Result:**

The Web Console will ask you to create the first administrator account.

---

- 12** Fill out the user parameters shown and click OK to continue.

**Result:**

The *Configure IP* window is displayed.

---

- 13** Fill in the network parameters asked for. If you do not have a valid IP gateway, enter the same IP address as you entered for the HP Secure Web Console.

**Result:**

A notification about the end of the initial setup will be displayed.

---

- 14** Print or save your configuration data. Store it in a safe place, to be able to reconfigure your Web Console in case it needs to be replaced or reconfigured later on.
- 

- 15** Connect the serial cable (RS-232) from the system console port to ITM-SC server.

**Result:**

**WARNING:** For security reasons, do not connect the serial cable until you have completed the above configuration.

---

- 16** The system is ready to be connect to the HP Secure WEB Console. To access the system from the browser, open *http://<new IP>*, where the

<*new IP*> is the IP address defined in the HP Secure WEB Console Network Parameters.

---

- 17** Logon using the *User Administrator login* and *password* you have defined in user parameters. Select *Logi n* to get to the system console screen.

END OF STEPS

---



## Section: Installing a Networked Printer

### Overview

---

**Purpose** The following procedure describes how to install a networked printer.

A networked printer must download its hostname and IP address information from a BOOTP/DCHP server. The JetAdmin software is used to perform this configuration and set up a printer spooler on the same machine. This is done on the NIS Master ITM-SC. All other NIS slaves are configured as remote printers and print requests are sent to the spooler on the NIS Master to be printed.



## Installing a Networked Printer

---

**When to use** When installing an printer which is connected to the management network of the ITM-SC.

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

- The NIS Master ITM-SC which must be in the same NIS domain as the printer.
- Because the bootp broadcast requests will not be sent over a router and so the printer must be configured in the same subnet as the machine providing the hostname and IP address.
- The hostname, IP address and hardware address of the printer to be configured are known. The hardware address can normally be obtained by printing the Setup/Configuration page from the printer menu.

**Related information** No related information is available.

**Procedure** Perform the following steps to install a networked printer.

---

**1** Make sure the printer is connected to the network according to the installation guidelines shipped with the network-based printer or the network interface card of the printer.

---

**2** Log on to the *NIS Master* as user *root*.

---

**3** Enter the following command to install the print spooler and BOOTP/DCHP configuration on the NIS Master: `itmsc_printer_setup`

**Result:**

The user will be prompted to enter *Hostname*, *IP address* and *Hardware address*.

---

**4** Enter the *Hostname*, *IP address* and *Hardware address*.

**Result:**

The printer spooler is installed on the NIS Master

---

**5** Log out of the NIS Master and repeat previous steps on all *NIS Clients* and *NIS Slaves* where printing should be facilitated.

END OF STEPS

---



## Section: Installing Background Image Map file

### Overview

---

**Purpose** Background Image Files can enhance the navigation to NEs on the Network Map. Backgrounds can be specified for the top level map and also for the any Map Group that is created.

**File format, name and directory** Background image map files can be either in GIF or XPM format. The group background files are stored in the same directory as the top level background and can be given any file name chosen by the user.

**Image size recommendation** The recommended optimum size is: up to 1000 wide x 600 high. Larger images will be handled correctly and may be viewed using the scrollbars. Image color recommendation

Recommended maximum number of Colors is 5. If there are more than the maximum colors in the map then extras may display as black. Also the colors, as shown in the table below, should not be used since these are used to color the nodes that appear on the background maps.

Color used for	Red (RGB value)	Green (RGB value)	Blue (RGB value)
Prompt Alarm (red)	255	0	0
Information Alarm (orange)	255	200	0
Deferred Alarm (yellow)	255	255	0
Selection (white)	255	255	255
No managed (grey)	192	192	192
Pre-provisioned (blue)	0	51	255
No alarm (green)	0	255	0
Land (grey)	51	51	51
Sea (blue)	0	102	153
Neighbor country (tan)	153	153	102
State Border lines (medium grey)	153	153	153
Province Border (wheat)	204	204	153

**Top level image file** The top level background file must be named *toplevel.gif* (or possibly *toplevel.xpm*) A default top level background is always provided when the system is installed.

□

## Installing Background Image Map file

---

**When to use** When installing an image which acts as a background for the main ITM-SC screen.

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

- Background image map files can be either in GIF or XPM format.
- The top level background file must be named *toplevel.gif* (or possibly *toplevel.xpm*) A default top level background is always provided when the system is installed.

**Related information** No related information is available.

**Procedure** Follow these steps to install a background image map file on a ITM-SC Client or Stand-alone ITM-SC.

---

**1** Log in as root on the system where the background image map file is to be installed.

---

**2** Insert the tape in the tape drive

---

**3** Run the following command: `itmssc_load_map`

The default tape drive is `/dev/rmt/0m`. If another drive is used it needs to be specified on the command line like:

```
itmssc_load_map <tape device>
```

---

**4** If the image is to be used as the top level background rename the image *toplevel.gif*

---

**5** If the image is to be used as a group background rename the image to any suitable name with appropriate gif extension.

---

**6** If the image is to be used as the top level background restart the ITM-SC user interface to activate the new image.

---

**7** If the image is to be used as a group background use the Modifying Map Groups procedure as can be found in the *Sub-network controller Administration Guide (SAG)* to associate the new image to a group.

END OF STEPS

---

## Section: Enable ITM-SC for Alarm Beeping

### Overview

---

**Purpose** Perform this procedure to enable the ITM-SC to use the alarm beeping feature. This alarm beeping feature is part of the ITM-SC's External Alarm presentation as described in the section *Configuring Systems Alarm Monitoring*.



## Configuring ITM-SC for Alarm Beeping

---

**When to use** When implementing the alarm beeping functionality as part of the maintenance philosophy.

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

- That this procedure can only be performed at installation time.

**Related information** Related procedures are:

- Configuring ITM-SC for Double Alarm Acknowledgment
- Configuring Systems Alarm Monitoring

**Procedure** Follow these steps to enable the alarm beeping feature as comprised in the System External Alarm presentation.

---

**1** Open a terminal screen and log in as *i2kadmin* on the ITM-SC.

---

**2** Enter the following command:

```
SEMSAPPLDIR/bin/ems_param -i
```

**Result:**

A menu driven tool is displayed. This tool will allow certain configurable parameters to be maintained.

---

**3** Choose the number next to the *alarm\_beep\_enabled* parameter and press **ENTER**. If the parameter is not in the list press **ENTER** to go to the next page until the parameter is shown.

**Result:**

The following information should be displayed:

```
Name : alarm_beep_enabled Should the alarm
beep feature be enabled ? i.e. should the
ITM-SC beep if there are any unacknowledged
alarms.
```

```
Type : BOOLEAN
```

```
Range: TRUE or FALSE
```

```
Default: FALSE
```

```
Value: FALSE
```

- 
- 4** Enter TRUE and select **ENTER**. Also true, True, t or T are allowed.

**Result:**

The following confirmation message is displayed: Changed value of alarm\_beep\_enabled to TRUE Press <Enter> to continue. . .

---

- 5** Select **ENTER** to continue.

**Result:**

The opening menu will be displayed again.

---

- 6** If the alarm beep interval does not have to be changed press q and select **ENTER** to quit the script.
- 

- 7** To change the alarm beep interval choose the number next to the parameter alarm\_beep\_interval and press **ENTER**. If you don't want to change the alarm beep interval proceed to Step 10.

**Result:**

The following information is displayed:

Name : alarm\_beep\_interval The interval between alarm beeps (milliseconds).

Type : INTEGER

Range : 500 - 86400000

Default : 500

Value : 500

---

- 8** Enter the required value (in milliseconds) and press **ENTER**.

**Result:**

A confirmation message is displayed.

---

- 9** Press **ENTER** to continue.

**Result:**

The opening menu will be displayed again.

---

- 
- 10** Press **q** and select **ENTER** to quit the script and complete the procedure.

END OF STEPS

---



## Section: Setting up ITM-SC Host for routing

### Overview

---

**Purpose** To prepare an ITM-SC host to interconnect with other LAN segments via a router perform this procedure.



## Static routing

---

**When to use** When setting up an ITM-SC Host for static routing.

**Before you begin** The following prerequisites must be met before setting up the ITM-SC Host for routing.

- The hostname must be known
- When static routing is implemented the following must be known for all IP routes
  - Network address of the destination network <network>
  - Netmask in dotted decimal or class form <netmask>
  - Gateway router <gateway>

**Related information** Related procedures are:

- *Disabling/removing routing on an ITM-SC Host*
- *Setting up a Cisco router*

The related concept is:

- Router Configuration Concepts [3-4]

**Procedure** Perform the following procedure to add a static IP route.

---

**1** Log in as *root* on the ITM-SC host

---

**2** Enter the following command:

```
itm_sc_ip_route_add <network><netmask><gateway>
```

**Result:**

A static IP route is added

END OF STEPS

---



## Dynamic routing

---

**When to use** When setting up an ITM-SC Host for dynamic routing.

**Before you begin** The following prerequisite must be met before setting up the ITM-SC Host for routing.

- The hostname must be known

**Related information** Related procedures are:

- *Disabling/removing routing on an ITM-SC Host*
- *Setting up a Cisco router*

**Procedure** Perform the following procedure to enable dynamic routing.

---

**1** Log in as *root* on the ITM-SC host

---

**2** Enter the following command:

```
itm_sc_ip_routing_enable rip
```

Where *rip* is the routing protocol

**Result:**

The routing table will be configured automatically according the *rip* protocol.

END OF STEPS

---



## Section: Disabling/removing routing on an ITM-SC Host

### Overview

---

**Purpose** To remove a static IP route or to disable the routing protocol perform this procedure.



## Remove a Static IP route

---

**When to use** When removing a static IP route.

**Before you begin** The following prerequisites must be met before removing a static route on an ITM-SC Host.

- The hostname must be known
- The following must be known for all IP routes to be deleted
  - Network address of the destination network <network>
  - Netmask in dotted decimal or class form <netmask>
  - Gateway router <gateway>

**Related information** Related procedures are:

- *Setting up ITM-SC Host for routing*
- *Setting up a Cisco router*

The related concept is:

- Router Configuration Concepts [3-4]

**Procedure** Perform the following procedure to add a static IP route.

---

**1** Log in as root on the ITM-SC host

---

**2** Enter the following command:

```
i t m s c _ i p _ r o u t e _ d e l e t e  
< n e t w o r k > < n e t m a s k > < g a t e w a y >
```

**Result:**

The static IP route is deleted

END OF STEPS

---



## Disable Dynamic routing

---

**When to use** When disabling the dynamic routing protocol.

**Before you begin** The following prerequisite must be met before disabling dynamic routing on an ITM-SC Host.

- The hostname must be known

**Related information** Related procedures are:

- *Setting up ITM-SC Host for routing*
- *Setting up a Cisco router*

**Procedure** Perform the following procedure to disable dynamic routing.

---

**1** Log in as root on the ITM-SC host

---

**2** Enter the following command:

```
itmssc_ip_routing_disable rip
```

**Result:**

The *rip* protocol is disabled.

END OF STEPS

---



## Section: Setting up a Cisco router

### Overview

---

**Purpose** To configure a Cisco router perform this procedure.



## Setting up a Cisco router

---

**When to use** When setting up a Cisco router.

**Before you begin** The following prerequisites must be met before setting up the Cisco router.

- The hostname of the router must be known
- The secret password, enable password and the Virtual Terminal password must be known.
- The current secret password if the router that is intended to used has already been configured for a different purpose
- For an IP section the following must be known
  - The IP Address and Netmask of both Ethernet Interface 0 and 1 (Ethernet 1 not applicable in Ethernet-Serial sections).
  - For static IP routes the Network address, Netmask and Gateway for each IP route.
  - For dynamic IP routing the Network address.
- For an ISIS (OSI) section a description of Ethernet 0 and 1 (or Serial 1 in case of a Ethernet-Serial section) as well as the NSAP address (40 hex numbers) must be known.

**Related information** Related procedures are:

- *Setting up ITM-SC Host for routing*
- *Disabling/removing routing on an ITM-SC Host*

The related concept is:

- Router Configuration Concepts [3-4]

**Procedure** Setting up a Cisco router consists of a series of procedures. Depending on the protocol (IP or OSI) the procedure may differ. Use the table below to determine which procedures to follow.

To	Perform procedure(s)
reset a used router	perform procedure Reset [1-104]
set up a router which uses the IP protocol	perform the procedures successively: <ul style="list-style-type: none"> <li>• Common configuration [1-105]</li> <li>• IP protocol [1-105]</li> <li>• Saving the configuration [1-107]</li> </ul>

To	Perform procedure(s)
set up a router which uses the OSI (ISIS) protocol	perform the procedures successively: <ul style="list-style-type: none"><li>• Common configuration [1-105]</li><li>• OSI (ISIS) protocol [1-106]</li><li>• Saving the configuration [1-107]</li></ul>

**Reset** .....

**1** If the router has been used previously return the router to a standard starting place. To do so enter at the router console the following commands:

- enable <current\_secret\_password>
- erase start
- reload

**Result:**

The message Proceed with reload? will appear

.....

**2** Press **ENTER** to confirm

.....

**3** Follow the Cisco instructions until it says: Would you like to enter the initial configuration dialog? [yes]:

Enter no

**Result:**

You will be prompted with the following message: Would you like to terminate autoinstall [yes]:

.....

**4** Enter yes

**Result:**

The router will come back after about 30 seconds with the prompt "Router" You are now ready to start entering your configuration.

.....

**5** You are now ready to start entering your configuration. You might need to press **ENTER** once or twice to get a prompt free of router system messages.

END OF STEPS

.....

## Common configuration

---

- 1 Enter the following commands
  - enable
  - config term
  - hostname <hostname>
  - enable secret <secret\_password>
  - enable password <enable\_password>
  - line vty 0 4
  - password <virtual\_terminal\_password>
  - exit
  - no cdp run

END OF STEPS

---

## IP protocol

---

- 1 Enter the following commands
  - interface ethernet0
  - ip address <IP\_address><Netmask>
  - no shutdown
  - exit
  - interface ethernet1
  - ip address <IP\_address><Netmask>
  - no shutdown
  - exit
  - no ip classless
  - no ip domain-lookup
  - service udp-small-servers
  - service tcp-small-servers

- 2 When static routing is desired enter the following command for each IP route:

ip route <network><netmask><gateway>

.....  
**3** When dynamic routing is desired enter the following commands:

- router rip
- network <network>
- exit

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

## OSI (ISIS) protocol

.....

**1** Enter the following commands

- clns configuration-time 10
  - clns holding-time 21
  - clns packet-lifetime 255
  - clns routing
- .....

**2** To configure the first Ethernet port (Ethernet 0) enter the following commands:

- interface ethernet0
  - description <description\_ethernet0>
- .....

**3** Enter the following commands

- no keepalive
- no mop enabled
- clns router isis
- clns route-cache
- isis hello-interval 20 level-1
- isis hello-interval 20 level-2
- isis hello-mult 3 level-1
- isis hello-mult 3 level-2
- isis circuit-type level-1-2
- isis priority 64 level-1
- isis priority 64 level-2
- isis metric 14 level-1
- isis metric 14 level-2
- isis transmit-interval 5
- isis csnp-interval 30
- exit

.....  
**4** To configure a second ethernet port (Ethernet 1) enter the following commands:

- `interface ethernet 1`
  - `description <description_ethernet 1>`
- .....

**5** To configure the other serial port (serial0) enter the following commands:

- `interface serial 0`
  - `description <description_serial 0>`
- .....

**6** Enter the commands at Step 3

.....

**7** To complete the configuration enter the following commands

- `router isis`
- `is-type level-1-2`
- `clns mtu 512`
- `lsp-mtu 512`
- `net <NSAP>` where in the NSAP address the dots have to be omitted
- `exit`

END OF STEPS  
.....

### Saving the configuration

.....

**1** When all the commands are issued type **CTRL-Z** to end the configuration session.

**Result:**

The router will now implement the configuration entered and should return after a few seconds the following message:

```
%SYS-5-CONFIG_I: Configured from console by console
```

.....

**2** Enter the following command:

```
wr mem
```

**Result:**

The entered configuration will be stored in the non-volatile memory of the router.

END OF STEPS

---





## 2 Application Reconfiguration

### Overview

---

**Purpose** The topics covered in this chapter are mostly performed after initial installation. These procedures will be necessary to perform whenever the hardware configuration is changed or when the software is to be upgraded or reconfigured.

**Contents** All of the following procedures are described in this chapter. They are categorized according to hardware changes, software changes or software reconfiguration.

**Hardware changes** Procedures which will change the hardware setup are:

- Adding a NIS Slave Server
- Removal of a NIS Slave or NIS Client from an ITM-SC Server
- Installation and removal of a X-Terminal Client to an X-Terminal Server
- Configuring a NCD X-Terminal
- Configuring an ITM-SC for CSL
- Configuring Intranet LAN on a X-Terminal Server
- Removing a Mirror Disk
- Replacing a failed Disk with or without mirroring
- Removing a Uninterruptible Power Supply
- Installing or removing an Archive Disk.

**Software changes** Procedures which upgrade the existing software are:

- ITM-SC Maintenance Upgrade
- Configure ITM-SC Foreign Language
- Loading and configuring Orbix on the ITM-SC

**Software reconfiguration** Procedures which reconfigure the installed software are:

- Reconfiguring NIS on ITM-SC Servers and ITM-SC Clients
- Configuring ITM-SC to support an WS-NMS
- Configuring ITM-SC for Geographic Redundancy
- Configuring PAMS Report Generation
- Configuring PM Storage
- Configuring ITM-SC for Double Acknowledgment
- Configuring LO Alarms Forwarding from the ITM-SC to WS-NMS
- Changing Time-Zone on a ITM-SC Client
- Enabling and disabling the Timing Network Protocol (NTP)
- Managing Shutdown Broadcast
- Enabling changing Alarm Color Indication
- Renaming PHASE Network Elements
- Changing non-ITM-SC passwords.

□

## Section: Adding a NIS Slave Server

### Overview

---

**Purpose** Perform this procedure to add a NIS Slave Server.



## Adding a NIS Slave Server

---

**When to use** When adding a NIS Slave Server.

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

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

### Procedure

---

- 1 On the NIS master server run the following command:

```
i t m s c _ a d d _ n i s _ s l a v e _ s e r v e r s
```

**Result:**

A list of current servers for this domain is shown.

You will be asked to construct a list NIS Slaves for this system..

---

- 2 Enter the NIS slaves one by one. When finishing enter a blank line or press **CTRL-D**.

**Result:**

An attempt will be made to contact the proposed new NIS slave server(s). If a connection can be made, the script will display nothing

If a connection cannot be made then the following will be displayed:

```
There appears to be problem with the
connection to <new nis slave server2> check
that hostname is in /etc/hosts and that
there is a route to machine
```

```
Do you want to ignore the problem? [y/n: n]
```

```
Problems encountered, leaving script (NIS
information unchanged)
```

END OF STEPS

---



## Section: Removing a NIS Slave or NIS Client

### Overview

---

**Purpose** Perform this procedure to:

- remove a NIS Slave
- remove a NIS Client from a multi-server network.

The NIS Slave can be an ITM-SC Server, ITM-SC Stand-alone or ITM-SC Client. This NIS Client is always an ITM-SC Client.



## Remove NIS Slave

---

**When to use** Whenever a NIS Slave is not used anymore it has to be removed.

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

- that prior of removing a NIS Client the NIS has to be reconfigured.

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

**Procedure** Follow these steps to remove a NIS Slave:

---

**1** Log in as root on the NIS Master to make sure the NIS Slave to be removed is actually configured as a NIS Slave. Enter the following command:

```
ypcat ypservers | grep <NIS slave hostname>
```

---

**2** If the NIS Slave its hostname is displayed then remove the NIS Slave from the list of NIS slaves by entering the following command as root:

```
itmsc_remove_nis_slave_server <nis slave hostname>
```

**Result:**

The following question appears: Do you wish to remove slave server <nis slave hostname>? [y/n: y]

---

**3** Enter y (yes) and press **ENTER**.

**Result:**

The workstation will be no longer deemed a NIS Slave server by the NIS Master server.

---

**4** If the slave server is to be removed from the network, remove the hostname of the NIS slave server from the `/etc/hosts` file on the NIS Master by entering the following command:`itmsc_remove_host <NIS slave hostname>`

---

**5** Remove the NIS Slave physically from the network.

END OF STEPS

---



## Remove NIS Client

---

**When to use** Whenever a NIS Client is not used anymore it has to be removed.

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

- the NIS is reconfigured before removing the NIS Client .

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

**Procedure** Follow these steps to remove a NIS Client from a Multi-Server ITM-SC system:

---

**1** Log in as *root* on the NIS Master and remove the hostname of the NIS Client from the */etc/hosts* file by entering the following command:

```
itmsc_remove_host <NIS slave hostname>.
```

---

**2** Remove the NIS Client physically from the network.

END OF STEPS

---



## Section: Adding an ITM-SC X-Terminal Client to an ITM-SC X-Terminal Server

### Overview

---

**Purpose** Perform this procedure to add an extra ITM-SC X-Terminal to an ITM-SC X-Terminal Server.



## Adding an ITM-SC X-Terminal Client to an ITM-SC X-Terminal Server

---

**Purpose** When adding an X-Terminal to an ITM-SC X-Terminal Server:

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

- Make sure the appropriate ITM-SC X-Terminal hostname and IP address are allocated to the correct Ethernet address.

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

### Procedure

---

**1** Install the ITM-SC X-Terminal hardware.

---

**2** Log onto the NIS Master as user *root*.

---

**3** Enter the command for each ITM-SC X-Terminal to add:

```
<itmsc_add_host <X-Terminal_hostname>
<X-Terminal_IP-Address>.
```

---

**4** Log onto the ITM-SC X-Terminal Server as user *root*.

---

**5** Enter the command for each ITM-SC X-Terminal to add:

```
itmsc_netstation_setup <X-Terminal_hostname>
<X-Term_ethernet_address> <type>.
```

END OF STEPS

---



## Parameters for Adding an ITM-SC X-Terminal Client to an ITM-SC X-Terminal Server

---

**Parameters used**    The parameters used in this procedure are described below.

**X-Terminal\_hostname**    the unique hostname of the ITM-SC X-Terminal.

**X-Terminal\_IP-Address**    the unique Internet Protocol address for the ITM-SC X-Terminal.

**X-Term\_ethernet\_address**    the unique Ethernet address of the ITM-SC X-Terminal (for example  
11aa22bb33cc).

**type**    the ITM-SC X-Terminal type:  
1 = 700/RX, ENVIZEX or ENTRIA  
2 = ENVIZEX II or ENTRIA II  
u = unknown.

□

## Section: Removing an ITM-SC X-Terminal from an ITM-SC X-Terminal Server

### Overview

---

**Purpose** Perform this procedure to remove an ITM-SC X-Terminal from an ITM-SC X-Terminal Server.



## Removing an ITM-SC X-Terminal from an ITM-SC X-Terminal Server

---

**Procedure** Follow these steps to remove X-Terminals from an ITM-SC X-Terminal Server:

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

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

**Procedure**

---

**1** Log onto the *ITM-SC X-Terminal Server* as user *root*.

---

**2** Enter the command for each X-Terminal to remove:  
`itmsc_netstation_remove <X-Terminal_hostname>`.  
The *<X-Terminal\_hostname>* is the unique hostname of the ITM-SC X-Terminal to remove

---

**3** Log onto the *ITM-SC NIS Master Server* as *root*.

---

**4** Issue the command for each X-Terminal to remove:  
`itmsc_remove_host <X-Terminal_hostname>`

---

**5** Remove the X-Terminal physically from the ITM-SC X-Terminal Server.

END OF STEPS

---



## Section: Configuring a NCD X-Terminal

### Overview

---

**Purpose** Use this procedure to configure a NCD X-Terminal with flash memory.



## NCD X-Server Configuration

---

**When to use** When configuring an NCD X-Server.

**Procedure** Before performing this procedure consider the following:

- There are two stages in the configuration of the NCD X-Terminal. Firstly the X-Server must be configured to allow these NCD X-terminals to be used. This only needs to be carried out once per X-Server. Secondly the procedures to configure individual X-terminals must be followed. This includes adding information about the X-Terminal to the NIS Master and X-Server.

**Related information** No related information is available.

**Procedure** This procedure needs to be carried out once per X-Server.

---

**1** Log onto the ITM-SC X-Terminal Server as user *root*.

---

**2** Create the *fonts.tbl* file to enable the X-terminal to use this font server by entering the following commands successively:

- `cd /`
  - `mkdir -p tftpboot/teexp/boot/config`
  - `echo "tcp/<IP of X-Server>: 7000" > /tftpboot/teexp/boot/config/fonts.tbl`
- 

**3** Add `tftpboot/teexp` to list of files to export by entering the following command:

```
echo "/tftpboot/teexp" >> /etc/exports
```

---

**4** Set up the X-server as a NFS server by entering the following command successively:

- `cd /etc/rc.config.d`
  - `cp nfsconf nfsconf.save`
  - `cat nfsconf.save | sed s/^NFS_SERVER=0/NFS_SERVER=1/g > nfsconf`
- 

**5** Restart the X-Server by entering:

```
shutdown -r -y 0
```

END OF STEPS

---

## NCD X-Terminal Configuration

---

**When to use** When configuring an NCD X-Terminal

**Procedure** Before performing this procedure make sure:

- the NCD X-Server is configured.  
There are two stages in the configuration of the NCD X-Terminal. Firstly the X-Server must be configured to allow these NCD X-terminals to be used. This only needs to be carried out once per X-Server. Secondly the procedures to configure individual X-terminals must be followed. This includes adding information about the X-Terminal to the NIS Master and X-Server.

**Related information** No related information is available.

**Procedure** This procedure needs to be carried out for every X-Terminal.

---

**1** Install the X-Terminal hardware and make sure the X-terminal is connected to the network.

---

**2** Log onto the ITM-SC master NIS server as user *root*.

---

**3** Enter the following command for each X-Terminal to add:

```
itmsc_add_host <X-Term_hostname> <X-Term_IP-Address>
```

---

**4** Log onto the ITM-SC X-Terminal Server as user *root*.

---

**5** Enter the following command for each X-Terminal to add:

```
itmsc_netstation_setup <X-Term_hostname>  
<X-Term_etheret_address> u
```

**Result:**

The X-Terminal will boot up.

---

**6** When the X-terminal has completed its boot up. Enter the configuration menu by pressing **SHIFT** and **PAUSE** simultaneously.

**Result:**

The configuration menu will be displayed.

---

**7** Enter the details of the X-server into the X-terminal:

- select X Environment from the *Configuration Summaries* drop down menu.
- select XDMCP Direct for the *Host Connect Method*.
- enter the IP address of the X-server in the Primary XDMCP Server box and press **ENTER**.

---

**8** To Set the X-Terminal to use the X-Servers font server:

- select Host File Access from the *Configuration Summaries* drop down menu.
- select NFS as the *Primary File Access*.
- enter the following command into the box displayed next to *Primary Mount Path* and press **ENTER** after done so.  
/teexp/boot/config
- select NFS Mount from the *Network Tables & Utilities* drop down menu.
- enter the following in the *File System Name* box: <IP of X-Server>: tftpboot/teexp
- enter the following in the *Local Directory* box: /teexp
- enter the following in the Transfer Size box: 8192
- **left click** on the *Add Table Entry* button.

---

**9** To save the setting to NVRAM:

- **left click** on the *Return to Main Menu* button.
- **left click** on the *Save Settings to NVRAM* button.

---

**10** To reboot the X-terminal:

- **left click** on the *Reboot NC* button.
- **left click** on *Continue* when prompted

END OF STEPS



## Section: Configuring an ITM-SC for CSL

### Overview

---

**Purpose** Use the following procedure to configure an ITM-SC client into a Communications Software Launcher (CSL) deployment.



## Configuring an ITM-SC for CSL

---

**Purpose** When configuring CSL on an ITM-SC.

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

- The ITM-SC is CSL launch compliant, which means that the ITM-SC client can be started by clicking an icon on the CSL workstation. All other ITM-SC administration functions must be performed from the ITM-SC client.

**Related information** No related information is available.

### Procedure

---

**1** Clean install the ITM-SC Server and Client according the ITM-SC installation procedures described in this manual.

---

**2** Log into the *ITM-SC Client* as user *root* and enter the following command:

```
i t m s c _ c s l _ i n s t a l l
```

**Result:**

You will be prompted to enter the *hostname* of the ITM-SC server.

---

**3** Enter the *hostname* of the ITM-SC and press **ENTER**.

**Result:**

CSL is now configured for the ITM-SC Server.

---

**4** Repeat Step 2 to Step 3 for each ITM-SC Server to be added to CSL

---

**5** When logging in via CSL on the ITM-SC network the login is only required once. ITM-SC user access control is impacted when logging in using CSL.

END OF STEPS

---



## Section: Configuring an Intranet LAN on a ITM-SC X-Terminal Server

### Overview

---

**Purpose** Use the following procedure to configure a second LAN card for an IP connection to the intranet on an ITM-SC X-Terminal Server.



## Configuring an Intranet LAN on a ITM-SC X-Terminal Server

---

**Purpose** When to configure an intranet LAN on a X-Terminal Server:

**Before you begin** The following prerequisites must be met before configuring a second LAN card:

- The IP address for the second LAN card is on a different subnet. Otherwise the routing cannot be performed and NIS problems will be experienced.
- The hostname, IP address and subnet mask information are known.
- The subnet for LAN-0 is configured correctly.

When having doubts about what these parameters should be please contact the systems administrator.

**Related information** No related information is available.

### Procedure

1 Log into the *NIS master* as user *root*.

2 Enter the following command to add the hostname and IP address of the second LAN card to NIS:

```
itmsc_add_host <lan1 IP host name> <lan1 address>
```

3 Log into the *ITM-SC X-terminal Server* as user *root*.

4 To configure the second LAN card enter the following commands successively:

- `itmsc_set_lan -l lan1 -i <lan1 host name>`
- `itmsc_set_netmask -l lan1 <subnet mask>` The subnet mask can be for example `<255.255.0.0>`
- `shutdown -r -y now`

5 After the ITM-SC X-terminal Server reboots, login as user *root*.

6 Make sure the second LAN card its interface state is UP by entering the `lanscan` command: `lanscan`

END OF STEPS



## Section: Configuring a PC as an X-terminal

### Overview

---

**Purpose** This procedure is to be used to configure a PC loaded with NT 4.0 and Hummingbird Exceed 6.0 for use as a X-terminal to communicate with an ITM-SC X-Terminal Server.



## Configuring an PC as a X-terminal

---

**When to use** When configuring a PC loaded with NT 4.0 and Hummingbird Exceed 6.0 for use as a X-terminal to communicate with an ITM-SC X-Terminal Server.

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

- NT 4.0 is installed on the system.
- Hummingbird Exceed 6.0 is installed on the system according to the manufacturers instructions.

**Related information** No related information is available.

### Procedure

---

- 1 Log onto the NT platform as *administrator* user.  

---
- 2 Select *Start -> Programs -> Exceed -> XConfig*  

---
- 3 Configure the Exceed environment for DHCP communication:
  - Select *Communication*
  - Select *XDMCP broadcast* from drop down menu
  - Select *Configure*
  - Check *first display manager* box
  - Check *host address* box
  - Accept these values by clicking OK in both screens to return to the original *Xconfig* window

---
- 4 Enter the I.P. Address of the ITM-SC X-Terminal Server:
  - Select *Transports*
  - Enter the *IP Address* of the ITM-SC X-Terminal Server
  - Accept this value by clicking OK

---
- 5 Setup the window parameters:
  - Select *Screen definition*
  - Select *Single Window* button

- Select *PseudoColor* from *Server Visual* pull down menu.
- Accept these values by clicking OK in both screens to return to the original *Xconfig* window

.....  
**6** Exit *XConfig*.

.....  
**7** Copy the *eXceed* shortcut to the desktop

.....  
**8** Change name of shortcut to *ITM-SC*

.....  
**9** Double click on *eXceed* shortcut to start the PC as X-Terminal.

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



## Section: Disk Mirror Remove

### Overview

---

**Purpose** To remove the Disk Mirror support perform this procedure.



## Disk Mirror Remove

---

- When to use** When removing Mirror Disk support.
- Before you begin** No prerequisites or precautions are needed when performing this procedure.
- Related information** No related information is available.
- Procedure** Repeat the following steps for each Volume Group (disk) for which mirroring is to be removed:
- 1 Login as *root*.
  - 2 Enter the following command: `itmsc_mirror_remove`

**Result:**

A list of available Volume Groups and some details of the Logical Volumes contained and the physical disks used appears. The following message is displayed:

```
Select Volume Group to un-mirror (0 to abort):
```
  - 3 Select a *Volume Group* by entering the corresponding number.

**Result:**

A list will display the mirror disks in the selected Volume Group. The following message is displayed:

```
Select disk to un-mirror (o to abort):
```
  - 4 Select the disk to un-mirror.

**Result:**

A confirmation window will be displayed.

An example is shown below:

```
Do you wish to remove mirror disk
/dev/dsk/c0t5d0 from Volume Group /dev/vg00
(y/n[n])?
```
  - 5 To terminate with no action enter n. To remove the mirroring as selected enter y. press **ENTER**.

**Result:**

The un-mirror process will take about *5 minutes* to complete.

END OF STEPS

---



## Section: Replacing a non-root disk with mirroring which is not hot-swappable

### Overview

---

**Purpose** Perform this procedure to replace a non-root disk with mirroring which is not 'hot-swappable'.



## Replacing a non-root disk with mirroring which is not hot-swappable

---

**When to use** When the failed disk is *not* a so called ‘hot-swappable’ disk and also *not* the root disk.

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

**Related information** No related information is available.

### Procedure

---

**1** Check the ITM-SC Log file to localize the faulty disk.

---

**2** Login as *root* and enter: `shut down -h -y 0`

---

**3** Turn off the power of the ITM-SC and any other external disk cabinets.

---

**4** Remove the faulty disk and replace it with the new disk. Make sure the hardware address is the same as that of the disk it is replacing.

---

**5** Restore the power to the ITM-SC and allow it to boot up.

---

**6** To restore the LVM configuration/headers onto the new disk from your backup of the *LVM* configuration, enter on one line:

```
vgcfgrestore -n /dev/<vg_name>  
/dev/rdisk/<device_spec>
```

**Result:**

The following message will appear: Volume Group configuration has been restored to /dev/rdisk/<device\_spec>

---

**7** To reactivate the volume group so that the new disk can be attached enter:

```
vgchange -a y /dev/<vg_name>.
```

This is necessary because the new disk was not configured at boot time.

**Result:**

The following message will appear: Volume group "/dev/<vg\_name>" has been successfully changed.

---

- 8 To re-synchronize the volume group so that the primary and the mirror disk are in agreement enter: `vgsync /dev/<vg_name>`.

**Result:**

A portion of the output is detailed below: Resynchronized logical volume "/dev/<vg\_name>/<lv\_name>".

The re-synchronization may take a considerable amount of time.

END OF STEPS

---



## Parameters for Replacing a non-root disk with mirroring which is not hot-swappable

---

**Fault localization** When a disk has failed it is important to know which physical device has failed. If the ITM-SC did not crash the resource monitor (ems\_rm) may have raised an alarm against the device. This alarm will be detailed in the ITM-SC Log file. However, if the failed device caused the ITM-SC to crash, then the resource monitor may not have been able to raise an alarm. If the ITM-SC is not able to reboot after a crash then there is a high probability that the failed disk is the primary root disk. The device specification and volume group of the primary root disk are c0t5d0 and vg00 respectively.

**Parameters used** In the procedure to replace a non-root, non 'hot-swappable' disk the following parameters are used:

Parameter	indicates..
<device_spec>	the disk device specification of the failed disk.
<vg_name>	the volume group to which the failed disk was attached.
<lv_name>	the logical volume.



## Section: Replacing a non-root disk with mirroring which is hot-swappable

### Overview

---

**Purpose** Perform this procedure to replace a non-root disk with mirroring which is 'hot-swappable'.



## Replacing a non-root disk with mirroring which is hot-swappable.

---

**When to use** When the failed disk *is* a so called ‘hot-swappable’ disk but is *not* the root disk.

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

**Related information** No related information is available.

### Procedure

---

- 1 Check the ITM-SC Log file to localize the faulty disk.
  - 2 Remove the faulty disk and replace it with the new disk. Make suer the hardware address should be made the same as that of the disk it is replacing.
- 

- 3 To restore the LVM configuration/headers onto the new disk from your backup of the LVM configuration, enter on one line:

```
vgcfgrestore -n /dev/<vg_name>  
/dev/rdisk/<device_spec>
```

**Result:**

The following message will appear: Volume Group configuration has been restored to /dev/rdisk/<device\_spec>

---

- 4 To reactivate the volume group so that the new disk can be attached enter: `vgchange -a y /dev/<vg_name>`. This command is necessary because the new disk was not configured at boot time.

**Result:**

The following message will appear: Volume group "/dev/<vg\_name>" has been successfully changed.

---

- 5 To re synchronize the volume group so that the primary and the mirror disk are in agreement enter: `vgsync /dev/<vg_name>`

Section: Replacing a non-root disk with mirroring which is hot-swappable  
Replacing a non-root disk with mirroring which is hot-swappable.

**Result:**

A portion of the output is detailed below: Resynchronized logical volume “/dev/<vg\_name>/<lv\_name>”.

The re— synchronization may take a considerable amount of time.

END OF STEPS

---



## Parameters for Replacing a non-root disk with mirroring which is not hot-swappable

---

**Fault localization** When a disk has failed it is important to know which physical device has failed. If the ITM-SC did not crash the resource monitor (ems\_rm) may have raised an alarm against the device. This alarm will be detailed in the ITM-SC Log file. However, if the failed device caused the ITM-SC to crash, then the resource monitor may not have been able to raise an alarm. If the ITM-SC is not able to reboot after a crash then there is a high probability that the failed disk is the primary root disk. The device specification and volume group of the primary root disk are c0t5d0 and vg00 respectively.

**Parameters used** In the procedure to replace a non-root, non 'hot-swappable' disk the following parameters are used:

Parameter	indicates..
<device_spec>	the disk device specification of the failed disk.
<vg_name>	the volume group to which the failed disk was attached.
<lv_name>	the logical volume.



## Section: Replacing a root disk with mirroring which is not hot-swappable

### Overview

---

**Purpose** Perform this procedure to replace a root disk with mirroring which is not 'hot-swappable'.



## Replacing a root disk with mirroring which is not hot-swappable

---

**When to use** When the failed disk is *not* a so called 'hot-swappable' disk but *is* the root disk.

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

**Related information** No related information is available.

### Procedure

---

1 If the ITM-SC is still running login as root and enter:  
shut down -h -y 0

---

2 Turn off the power of the ITM-SC and any external disk cabinets.

---

3 Remove the faulty disk and replace it with the new disk. Its hardware address should be made the same as that of the disk it is replacing.

---

4 Make sure that the CD-ROM drive and the DAT drive are empty. Boot the ITM-SC.

**Result:**

The following message appears: To di scont i nue, press any key wi thi n 10 seconds.

---

5 Interrupt the boot sequence by pressing any key directly.

---

6 If it was the primary root disk that failed find the primary and alternate boot paths. To find these paths enter: Pat h

**Result:**

The primary and alternate boot path are listed together with the console and keyboard path.

---

7 Write down the decimal entries of the primary and alternate boot paths. These entries are indicates with a '*dec*' next to them.

- 
- 8** If the alternate boot path displayed is not set, or is the same as the primary boot path, then the alternate boot path has to be determined. To determine the alternate boot path enter: `search IPL`. If the alternate boot path is known proceed with Step 11.

**Result:**

A message indicates a search for devices with bootable media. This may take several minutes.

- 
- 9** Wait for a list to display. To discontinue search, press any key (termination may not be immediate).

**Result:**

A list will be displayed with information about Path Number, Device Path and Device Type.

- 
- 10** In the list displayed, look in the column Device Type for Random access media entry. The column named Device Path of this same row indicates the alternate boot path. Write down this value. There should be just one entry like this in the Device Type column for the alternate boot device. (The primary boot device has failed and been replaced, hence the only disk with an IPL on it should be the alternate boot device).

**Result:**

The alternate boot path is known.

- 
- 11** If it was the primary root disk that failed, boot the ITM-SC from the alternate boot path. Enter: `boot <alt boot path>`.

If it was the mirror root disk that failed boot the ITM-SC from the primary boot path. Enter: `boot`.

**Result:**

The following question appears: `Interact with IPL (Y or N)?`

- 
- 12** Enter `y` (yes) and press **ENTER**.

- 
- 13** To start the ITM-SC in single user mode enter: `ISL> hpux -i s -l q`

- 
- 14** To make the new disk a bootable physical volume enter:

```
pvcreate -Bf /dev/rdisk <device_spec>
```

**Result:**

Depending on the way the disk failed one of the following messages will appear:

- `pvcreate -Bf /dev/rdisk/<device_spec>`  
`pvcreate: The physical volume "/dev/dsk/<device_spec>" is already recorded in the "/etc/lvmtab" file.`
- `Physical volume "/dev/rdisk/<device_spec>" has been successfully created.`

- 
- 15** To place LIF information onto the replacement disk enter: `mkboot /dev/rdisk/<device_spec>`

- 
- 16** To create an autoexec file (AUTO) on the replacement disk enter:  
`mkboot -a "hpux (; 0) /stand/vmunix" /dev/rdisk/<device_spec>`

- 
- 17** To restore the LVM configuration/headers onto the replacement disk from the backup of the LVM configuration, enter: `vgcfgrestore -n /dev/<vg_name> /dev/rdisk/<device_spec>`

**Result:**

The following message will appear: Volume Group configuration has been restored to /dev/rdisk/<device\_spec>

- 
- 18** To reactivate the volume group so that the new disk can be attached enter: `vgchange -a y /dev/vg00`

This is necessary because the new disk was not configured at boot time.

**Result:**

The following message will appear: Volume group "/dev/vg00" has been successfully changed.

- 
- 19** Re-sync the volume group so that the primary and the mirror are in agreement. In order to do so enter the following command:

```
vgsync /dev/vg00
```

**Result:**

This will display the re— synchronized volume group and logical volume.

**Important!** This may take a considerable amount of time.

---

- 20** If it was the primary root disk that was replaced, then reboot the ITM-SC. It should boot normally off the primary root disk by entering: `shut down -r -y 0`
- 

- 21** If it was the mirror root disk that was replaced, then you should bring the ITM-SC up into multi-user mode. Look at the first line in `/etc/inittab` for the normal run level by entering:

```
head -1 /etc/i n i t t a b
```

**Result:**

The following message is displayed: `i n i t :`  
`<normal _run_l evel >: i n i t d e f a u l t :`

---

- 22** The normal run level is the second field (delimited by ":"s) and is a single digit integer. Change to the normal run level by entering the following command: `i n i t <normal _run_l evel >`

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

---



## Parameters for Replacing a non-root disk with mirroring which is not hot-swappable

---

**Fault localization** When a disk has failed it is important to know which physical device has failed. If the ITM-SC did not crash the resource monitor (ems\_rm) may have raised an alarm against the device. This alarm will be detailed in the ITM-SC Log file. However, if the failed device caused the ITM-SC to crash, then the resource monitor may not have been able to raise an alarm. If the ITM-SC is not able to reboot after a crash then there is a high probability that the failed disk is the primary root disk. The device specification and volume group of the primary root disk are c0t5d0 and vg00 respectively.

**Parameters used** In the procedure to replace a non-root, non 'hot-swappable' disk the following parameters are used:

Parameter	indicates..
<device_spec>	the disk device specification of the failed disk.
<vg_name>	the volume group to which the failed disk was attached.
<lv_name>	the logical volume.



## Section: Replacing a root disk with mirroring which is hot-swappable

### Overview

---

**Purpose** Perform this procedure to replace a root disk with mirroring which is 'hot-swappable'.



## Replacing a root disk with mirroring which is hot-swappable

---

- When to use** When the failed disk *is* a so called ‘hot-swappable’ disk and *also* the root disk.
- Before you begin** No prerequisites or precautions are needed when performing this procedure.
- Related information** No related information is available.

### Procedure

---

- 1 Remove the faulty disk and replace it with the new disk. Its hardware address should be made the same as that of the disk it is replacing.
- 

- 2 To make the new disk a bootable physical volume enter:

```
pvcreate -Bf /dev/rdisk <device_spec>
```

**Result:**

one of the following messages will appear:

- `pvcreate -Bf /dev/rdisk/<device_spec>`  
`pvcreate: The physical volume "/dev/dsk/<device_spec>" is already recorded in the "/etc/lvmtab" file.`
  - `Physical volume "/dev/rdisk/<device_spec>" has been successfully created.`
- 

- 3 To place LIF information onto the replacement disk enter:

```
mkboot /dev/rdisk/<device_spec>
```

---

- 4 To create an autoexec file (AUTO) on the replacement disk enter:

```
mkboot -a "hpux (; 0) /stand/vmuni x"  
/dev/rdisk/<device_spec>
```

---

- 5 To restore the LVM configuration/headers onto the replacement disk from the backup of the LVM configuration, enter:

```
vgcfgrestore -n /dev/<vg_name>  
/dev/rdisk/<device_spec>
```

**Result:**

The following message will appear: Volume Group configuration has been restored to /dev/rdisk/<device\_spec>

---

- 6** To reactivate the volume group so that the new disk can be attached enter: `vgchange -a y /dev/vg00`

This is necessary because the new disk was not configured at boot time.

**Result:**

The following message will appear: Volume group "/dev/vg00" has been successfully changed.

---

- 7** Re-sync the volume group so that the primary and the mirror are in agreement. In order to do so enter the following command:

`vgsync /dev/<vg_name>`

**Result:**

This will display the resynchronized volume group and logical volume.

**Important!** This may take a considerable amount of time.

END OF STEPS

---



## Parameters for Replacing a non-root disk with mirroring which is not hot-swappable

---

**Fault localization** When a disk has failed it is important to know which physical device has failed. If the ITM-SC did not crash the resource monitor (ems\_rm) may have raised an alarm against the device. This alarm will be detailed in the ITM-SC Log file. However, if the failed device caused the ITM-SC to crash, then the resource monitor may not have been able to raise an alarm. If the ITM-SC is not able to reboot after a crash then there is a high probability that the failed disk is the primary root disk. The device specification and volume group of the primary root disk are c0t5d0 and vg00 respectively.

**Parameters used** In the procedure to replace a non-root, non 'hot-swappable' disk the following parameters are used:

Parameter	indicates..
<device_spec>	the disk device specification of the failed disk.
<vg_name>	the volume group to which the failed disk was attached.
<lv_name>	the logical volume.

□

## Section: Removing an Uninterruptible Power System (UPS)

### Overview

---

**Purpose** When an ITM-SC stopped supporting an UPS this must be announced to the ITM-SC. Perform this procedure to remove UPS support.



## Removing an Uninterruptible Power System (UPS)

---

**When to use** When removing UPS support:

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

**Related information** The related concept is:

- UPS Installation [3-3]

### Procedure

---

**1** Log into the workstation that is running the UPS daemon as user *root*.

---

**2** To remove UPS support enter: `i t m s c _ u p s _ r e m o v e`

END OF STEPS

---



## Section: Installing an Archive Disk

### Overview

---

**Purpose** Perform this procedure to install an archive disk.

**Contents** An archive disk contains archive information on the following:

- On-line Archive
- Operator Log
- Alarm History
- PM archiving (4 Gbyte only)



## Installing an Archive Disk

---

**When to use** When installing an archive disk:

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

**Related information** No related information is available.

### Procedure

---

- 1 Stop the ITM-SC and logout.  

---
- 2 If installing an archive disk on an *ITM-SC Standalone* select: *Options* -> *No Windows* and press **ENTER**.  

---
- 3 Login as *root*.  

---
- 4 Shutdown the system by entering: `shut down -h -y 0`  

---
- 5 Power off the system once it has halted.  

---
- 6 Insert the new archive disk.  

---
- 7 Power up the system.  

---
- 8 If replacing an archive disk on an *ITM-SC Standalone* select: *Options* -> *No Windows* and press **ENTER**.  

---
- 9 Login as *root*.  

---
- 10 Enter the following command: `itmsc_archive_disk_setup`  
**Result:**  
A list of available disks to select for use as archive disk appears.  

---
- 11 Select the disk just inserted.

**Result:**

If any of the filesystems already exists then the following message will be displayed: There is an existing file system on /dev/vg02/lvol\_archive. Do you wish to use the existing filesystem (y/n)  
[n]

.....  
**12** Select the default of n by pressing **ENTER**.

.....  
**13** If you require disk mirroring of the new archive disk perform the *Disk Mirror Setup* procedure in this guide. Note that the Archive disk volume group is *vg02*.

.....  
**14** Enter the following command: /usr/sbin/exportfs -a

.....  
**15** Restart any running user interface.

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



## Section: Removing an Archive Disk

### Overview

---

**Purpose** Perform this procedure to remove an archive disk from the ITM-SC system.



## Removing an Archive Disk

---

**When to use** When removing an archive disk.

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

- After the archive disk has been removed, the old archive information will not be available on the system anymore.

**Related information** No related information is available.

### Procedure

---

**1** If required, archive the data on the archive disk to tape.

**Result:**

The data is archived on tape.

---

**2** Stop the ITM-SC.

---

**3** Logout of the ITM-SC.

---

**4** If removing an archive disk on an *ITM-SC Standalone* select: *Options* -> *No Windows* and press **ENTER** otherwise proceed with the next step.

---

**5** Login as *root*.

---

**6** If the Disk Mirror option is enabled perform the *Disk Mirror Remove* procedure in this guide.

---

**7** Enter the following command: `itmsc_archive_disk_remove`

**Result:**

During the running of the script the name of the archive disk and hardware archive disk currently in use is displayed. An example is shown below. The current archive disk is `/dev/dsk/c0t8d0`. The current Hardware archive disk is `8/4.8.0`. If you wish to physically replace the archive disk you must shut down the system first. Do you wish to shut the system down now (y/n) [y]

- .....
- 8** Accept the default answer y by pressing **ENTER**.
- .....
- 9** Remove the old archive disk.
- .....
- 10** Power off the system once the system has halted.
- .....
- 11** When adding a replacement disk perform the *Installing an Archive Disk* procedure from the point where the machine is turned off.

.....

END OF STEPS

.....



## Section: ITM-SC Maintenance Upgrade

### Overview

---

**Purpose** This procedure will install a new version of the ITM-SC software. This procedure will automatically upgrade the help files and on-line documentation. This can be done locally or remotely.



## Local ITM-SC Maintenance Upgrade

---

**When to use** When upgrading the ITM-SC to a new version of the same release on a local system. This procedure will automatically upgrade the help files and on-line documentation.

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

- *not* to use this procedure for upgrading additional languages. Please perform the ITM-SC foreign Language Install procedure.

Consider the following recommendation:

- It is recommended the ITM-SC configuration files and Informix database are backed up before performing an upgrade. This can be done by following the *Backing Up of the Entire ITM-SC System* procedure as described in the Administration Guide (AG).

**Related information** The related procedure is:

- Local ITM-SC Maintenance Upgrade

**Procedure** Follow these steps to perform a *local* ITM-SC Maintenance upgrade:

---

**1** Insert the ITM-SC installation tape for the required hardware platform into the tape drive.

---

**2** Hardware platforms with less than the standard hard disk space requirement may need a HP-UX patch cleanup program to be loaded and run. Enter the following command as user root to perform the patch cleanup:

```
cl eanup -F
```

---

**3** Answer y (yes) to the prompts to trim logs and remove patch backups.

---

**4** To perform the actual upgrade enter the following command:  
`itmsc_maintenance_upgrade [source location]`

(The default source location is `/dev/rmt/0m`)

**Result:**

After the upgrade the machine will automatically reboot.

.....  
**5** The reboot can be suppressed using the -nr (noreboot) switch. The use of this switch is not recommended.  
.....

**6** If upgrading a client or stand-alone machine, from the CDE login screen select *Options -> Command Line Only* and press **ENTER**.  
.....

**7** Login as *root*.  
.....

**8** After the new release of the ITM-SC is installed enter:  
`itmsc_switch_release`

**Result:**

This command will configure and start the new release. A list of available releases is displayed and the user is prompted to select the release to switch to.  
.....

**9** Choose a release by typing a number as indicated by the list.

**Result:**

The ITM-SC will be stopped and restarted as necessary.

END OF STEPS  
.....



## Remote ITM-SC Maintenance Upgrade

---

**When to use** When upgrading the ITM-SC to a new version of the same release on a remote system. This procedure will automatically upgrade the help files and on-line documentation.

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

- *not* to use this procedure for upgrading additional languages. Please perform the ITM-SC foreign Language Install procedure.

Consider the following recommendation:

- It is recommended the ITM-SC configuration files and Informix database are backed up before performing an upgrade. This can be done by following the *Backing Up of the Entire ITM-SC System* procedure as described in the Administration Guide (AG).

**Related information** The related procedure is:

- Local ITM-SC Maintenance Upgrade

**Procedure** Follow these steps to perform a Remote Maintenance upgrade. This will be done via a depot:

---

- 1 Enter the command below to make sure the system containing the software depot can be accessed across the network:

```
/etc/ping <IP address of machine containing depot >
```

**Result:**

The ping command should display regular successful communication time messages. An example is shown below:

```
PING <IP address>: 64 byte packet 64 bytes
from <IP address>: icmp_seq=0. time=2. ms 64
bytes from <IP address>: icmp_seq=1. time=1.
ms ----<hostname> PING Statistics---- 2
packets transmitted, 2 packets received, 0%
packet loss
```

---

- 2 Perform the ITM-SC Maintenance Upgrade procedure using the remote depot. To do so enter:

```
itm_sc_maintenance_upgrade -s <ip of depot machine>: /depot
```

END OF STEPS

---



## Section: Loading and configuring Orbix on the ITM-SC

### Overview

---

**Purpose** Perform this procedure to install IONA's Orbix 3.0.1 onto an ITM-SC server or standalone system. This is needed for TMF support.



## Loading and configuring Orbix on the ITM-SC

---

**When to use** When installing IONA's Orbix 3.0.1 onto an ITM-SC server or standalone system for TMF support.

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

- the system is not being used because this procedure requires the system to be re-booted.

Before performing this procedure consider the following:

- The TMF feature requires an additional licence to run.
- The absence of the TMF licence will not affect the system's ability to run Orbix.

**Related information** No related information is available.

### Procedure

---

**1** Login on the console as *root*.

---

**2** Make sure the ITM-SC Installation tape is loaded in the tape drive.

---

**3** If you are installing Orbix from the default drive enter the following command on one line:

```
i t m s c _ s w i n s t a l l I T o r b i x I T o r b i x P a t c h e s  
I T o r b i x N o t i f y R o g u e w a v e
```

**Result:**

This will take some time to complete and may report an error regarding a failed configure script. This error message can be ignored.

---

**4** If you are loading Orbix and the latest patch bundle from something other than the default tape drive then use the "-s" flag to specify the source. For example:

```
i t m s c _ s w i n s t a l l - s / d e v / r m t / c 1 t 3 d 0 D D S 1 I T o r b i x  
I T o r b i x P a t c h e s I T o r b i x N o t i f y R o g u e w a v e
```

or when installing from a depot:

```
i t m s c _ s w i n s t a l l - s a h o s t : / d e p o t / o r b i x _ s t u f f  
I T o r b i x I T o r b i x P a t c h e s I T o r b i x N o t i f y R o g u e w a v e
```

**Result:**

This will take some time to complete and may report an error regarding a failed configure script. This error message can be ignored.

---

- 5** When the installation is complete, enter the following command:

```
orbix_setup
```

**Result:**

The *orbix\_setup* command will take a minute or more to complete. It applies the required Orbix patches and licenses the Orbix daemon. On completion of these tasks, it will display Orbix daemon configuration and version information.

---

- 6** Reboot the system to start the orbix daemon by entering the following command:

```
reboot
```

END OF STEPS

---



## Section: Configure ITM-SC Foreign Language

### Overview

---

**Purpose** Perform this procedure to load a new language package onto the ITM-SC, change the default language and remove the language pack.

**Time considerations**

**Important!** The estimated time for the software to load is 2 hours.



## Configure ITM-SC Foreign Language

---

- When to use** When
- loading a new language package onto any system
  - changing the default language
  - removing the language pack

- Before you begin** Before performing this procedure make sure:
- that in a Client/Server network configuration the language package is installed on the NIS Master *before* any other ITM-SC Servers or Clients are installed. The NIS Master will always be an ITM-SC Server. Certain languages (e.g. Japanese) make changes to the kernel. These changes require the system to reboot. The ITM-SC is stopped before the reboot takes place.
  - On platforms where the hardware needs to be upgraded to support additional languages, a clean installation of the ITM-SC will be required onto the new disk drive prior to adding the additional language.

Before performing this procedure consider the following:

- The estimated time for the software to load is 2 hours.
- When removing a language package, note that the english and C languages can not be removed since they are an essential part of the ITM-SC system.

**Related information** No related information is available.

### Load pack and change default

---

- 1** Insert the tape containing the language package to be installed into the tape drive.
- 

- 2** Log in as *root* and enter the following command:  
`itmsc_language_install [source location]`  
(The default source location is */dev/rmt/0m*)

#### **Result:**

After a new language is installed, it will become the default language. The estimated time for download is 2 (*two*) hours.

- 
- 3** To change the default language use the following command as user  
*root*: `itmsc_set_language [<language id>]`

**Result:**

If the last command is invoked without a language identifier a list of installed languages is given. The user is requested to enter a default language otherwise sets the default login language to the given one. This can be run on ITM-SC Client or Stand-alone platforms, it is not applicable to an ITM-SC Server.

- 
- 4** Reboot the ITM-SC System or Client Sessions to enable the changes just made.

END OF STEPS

---

### Language pack removal

---

- 1** Log in as *root* and enter the following command:

`itmsc_language_remove [<language ID>]`

**Important!** If the language being removed is the default language then the system will be restored to use English as the default language.

**Result:**

If invoked without a language ID a list of installed languages is given and the user prompted for a language to remove.

- 
- 2** Reboot the system to enable the changes just made.

- 
- 3** If changing the default language use the following command as user  
*root*: `itmsc_set_language [<language id>]`

**Result:**

If the last command is invoked without a language identifier a list of installed languages is given. The user is requested to enter a default language otherwise sets the default login language to the given one. This can be run on ITM-SC Client or Stand-alone platforms, it is not applicable to an ITM-SC Server.

- 
- 4** Reboot the ITM-SC System or Client Sessions to enable the changes just made.

END OF STEPS

---

## Section: Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone

### Overview

---

**Purpose** Perform this procedure to change a NIS Master into a NIS Slave on an ITM-SC Server or ITM-SC Stand-alone.



## Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone

---

**When to use** When configuring a NIS Master as a NIS Slave. The starting point will be two NIS Masters, one will remain a NIS Master and the other will become a NIS Slave.

The NIS configuration is normally done at clean install time, however as more ITM-SC Servers are added to a network reconfiguration of NIS is required. To add a new ITM-SC Server or ITM-SC Stand-alone to an existing multi-server configuration perform the ITM-SC Server or ITM-SC Stand-alone Installation procedure.

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

- two ITM-SC Servers or Stand-alones are installed as NIS Master. One of them is remaining as NIS Master while the other will be changed into NIS Slave by performing this procedure.

Before performing this procedure consider the following:

- It is recommended that all ITM-SC Servers or Clients in a remote office are set up as NIS Slaves. This will reduce the network traffic.

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

### Procedure

---

- 1 Make sure the ITM-SC Server which is to become a NIS Slave is in the hosts file of the NIS Master. If not run the following command on the NIS master as user root:

```
i t m s c _ a d d _ h o s t < h o s t n a m e > < i p a d d r e s s >
```

---

- 2 Still on the NIS Master enter the following command:

```
i t m s c _ a d d _ n i s _ s l a v e _ s e r v e r s
```

**Result:**

A list of servers for the current domain is displayed together with the question to provide the hostnames of the slave servers.

---

- 3 Enter *ServerNameN* and press **CTRL-D**.

**Result:**

The new list of NIS servers will be displayed and the user is asked to confirm this.

---

- 4 Enter y (yes) or press **ENTER**.

**Result:**

The NIS Server is added to NIS.

---

- 5 Log onto the machine which is to become a NIS slave as user root and run the following command:

```
i t m s c _ s e r v e r _ n i s _ s e t u p
```

**Result:**

The following question appears: Is this the (m)aster, (s)lave, (c)lient or (n)o NIS? [m/s/c/n: m]

---

- 6 Enter s (slave) and press **ENTER**.

**Result:**

A reminder about adding this NIS slave to the NIS master database is displayed. You will be asked to continue

---

- 7 Enter y (yes) and press **ENTER**.

**Result:**

The system is attempting to contact a NIS Server for the domain <NISMasterServer> and when succeeded will create NIS Slave Server maps.

Finally you will be asked:

Do you want this procedure to quit on non-fatal errors? [y/n: n]

---

- 8 Select n (no) and press **ENTER**.

**Result:**

The NIS maps will be built. The reconfiguration is now complete.

END OF STEPS

---



## Parameters for Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone

---

- Parameters used**    The parameters used in this procedure are described below.
- NISMasterServer**    The name of the ITM-SC Server which holds the NIS database information. In a single ITM-SC Server network the NISMasterServer is the Hostname of the ITM-SC Server. In a multiple ITM-SC Server network the NISMasterServer is one of the ITM-SC Servers or Stand-alones.
- ServerNameN**        The name of any ITM-SC Server which is to be used as NIS Slaves. All NIS Slaves must be entered.
- RemoteWSName**     The name of any remote ITM-SC Client which is to be used as NIS Slaves. All NIS Slaves must be entered.



## Section: Reconfiguring a NIS Slave to be a NIS Master on a Server or Stand-alone

### Overview

---

**Purpose** Perform this procedure to change a NIS Slave into a NIS Master on an ITM-SC Server or ITM-SC Stand-alone.



## Reconfiguring a NIS Slave to be a NIS Master on a Server or Stand-alone

---

**When to use** When configuring a NIS Slave as NIS Master. The starting point here is a NIS Master and a NIS Slave. The NIS Slave will become a NIS Master so that the result is two NIS Masters.

The NIS configuration is normally done at clean install time, however as more ITM-SC Servers are added to a network reconfiguration of NIS is required. To add a new ITM-SC Server or ITM-SC Stand-alone to an existing multi-server configuration perform the ITM-SC Server or ITM-SC Stand-alone Installation procedure.

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

- one ITM-SC Server or Stand-alone is installed as NIS Master. Other ITM-SC Servers or Stand-alones are always installed as NIS Slave.

Before performing this procedure consider the following:

- It is recommended that all ITM-SC Servers or Clients in a remote office are set up as NIS Slaves. This will reduce the network traffic.

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

### Procedure

---

**1** On the NIS Master as user *root* enter the following command:

```
i t m s c _ r e m o v e _ n i s _ s l a v e _ s e r v e r X
```

**Result:**

The following question is displayed:

```
D o y o u w i s h t o r e m o v e s l a v e s e r v e r X ? [ y / n :  
y ]
```

---

**2** Enter y (yes) and press **ENTER**.

---

**3** On the NIS Slave that is to become a NIS Master enter the following command:

```
i t m s c _ n i s _ s e t u p .
```

**Result:**

The following question appears: Is this the (m)aster,  
(s)lave, (c)lient or (n)o NIS? [m/s/c/n: m]

.....

- 4 Enter m (master) and press **ENTER**.

**Result:**

You will be asked to enter the domain name.

.....

- 5 Enter the *NISMasterServer* and press **ENTER**.

**Result:**

The following message appears

Do you want this procedure to quit on  
non-fatal errors? [y/n: n]

.....

- 6 Accept the default n (no) by pressing **ENTER**.

**Result:**

A list of servers for the current domain is displayed together  
with the question to provide the hostnames of the slave servers.

.....

- 7 Enter all NIS Slaves. Do *NOT* enter the hostname of the NIS slave to  
be removed. If the NIS Master has hosts that are not NIS Slaves, do  
*NOT* add these here. When there are no more names to be added,  
press **CTRL-D** or a blank line.

**Result:**

A confirmation is required to accept the current list of NIS  
Slave Servers.

.....

- 8 Enter y (yes) and press **ENTER**.

**Result:**

The reconfiguration is now complete. Any hostnames and  
password entries that existed on the original NIS master must be  
entered again on the new NIS master.

.....

- 9 Log onto the machine which is to become a *NIS Master* and repeat  
Step 1 until Step 8 of this procedure on this NIS Slave.

**Result:**

The NIS Slave is changed its role into NIS Master.

- 
- 10** The new created NIS Master must be rebooted for the changes to take effect. Enter the following command as user *root*:

```
shutdown -r -y 0
```

**Result:**

The reconfiguration is now complete. Any hostnames and password entries that existed on the original NIS Master must be entered again on the new created NIS master.

END OF STEPS

---



## Parameters for Reconfiguring a NIS Slave to be a NIS Master on a Server or Stand-alone

---

- Parameters used** The parameters used in this procedure are described below.
- NISMasterServer** the name of the ITM-SC Server which holds the NIS database information. In a single ITM-SC Server network the NISMasterServer is the Hostname of the ITM-SC Server. In a multiple ITM-SC Server network the NISMasterServer is one of the ITM-SC Servers or Stand-alones.
- ServerNameN** the name of any ITM-SC Server which is to be used as NIS Slaves. All NIS Slaves must be entered.
- RemoteWSName** the name of any remote ITM-SC Client which is to be used as NIS Slaves. All NIS Slaves must be entered.



## Section: Reconfiguring a NIS Client into a NIS Slave on an ITM-SC Client

### Overview

---

**Purpose** Perform this procedure to change an ITM-SC Client from a NIS Client into a NIS Slave.



## Reconfiguring a NIS Client into a NIS Slave on an ITM-SC Client

---

**When to use** When reconfiguring a NIS Client into a NIS Slave on an ITM-SC Client.

The NIS configuration is normally done at clean install time, however it may be necessary to reconfigure NIS if the quality of the connection to the ITM-SC Server changes.

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

- a NIS Master is installed. All ITM-SC Servers and Stand-alones apart from the NIS Master are always NIS Slaves.
- The ITM-SC Client which is to become a NIS Slave is present in the hosts file of the NIS Master.

Before performing this procedure consider the following:

- It is recommended that all ITM-SC Servers or Stand-alones in a remote office are set up as NIS Slaves. This will reduce network traffic during normal operations.

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

### Procedure

---

- 1 On the NIS Master enter the following command:

```
itmsc_add_nis_slave_servers
```

**Result:**

A list of servers for the current domain is displayed. You will be asked to add the hostnames of the NIS Slave Servers.

---

- 2 Add the hostnames of the NIS Slave Servers on by one. When finished add a blank line or press **CTRL-D**.

**Result:**

The new list of NIS Servers will be displayed. You will be asked to confirm this.

---

- 3 Enter y (yes) and press **ENTER**.

- .....
- 4** On the client which is to become a NIS Slave Server enter the following command:

```
i tmsc_ni s_set up
```

**Result:**

The following question appears: Is this the (m) aster, (s)lave, (c)lient or (n)o NIS? [m/s/c/n: m]

.....

- 5** Enter s (slave) and press **ENTER**.

**Result:**

You will be asked to enter the hostname.

.....

- 6** Enter the hostname of the NIS Master Server. Make sure the NIS Slave Server is configured as a NIS slave on the NIS Master.

**Result:**

You will be asked to enter the domain name.

.....

- 7** Enter the domain name and press y (yes) to continue

**Result:**

The NIS will be stopped and an attempt to contact the NIS Master will be made.

The following question is displayed: Do you want this procedure to quit on non-fatal errors? [y/n: n]

.....

- 8** Enter n (no) and press **ENTER** to continue.

**Result:**

Now a lot of logging takes place stating that the user can expect some error messages in certain configurations. Also logged is the transferring of each map to the slave server.

Next the following message appears:

Warning! You maybe about to remove any local EMS users from this machine Do you wish to continue? [y/n: y]

.....

- 9** Enter y (yes) and press **ENTER** to continue.
- .....

Section: Reconfiguring a NIS Client into a  
NIS Slave on an ITM-SC Client  
Reconfiguring a NIS Client into a NIS  
Slave on an ITM-SC Client

**Result:**

The reconfiguration is now complete.

END OF STEPS

---



## Parameters for Reconfiguring a NIS Client into a NIS Slave on an ITM-SC Client

---

- Parameters used**    The parameters used in this procedure are described below.
- NISMasterServer**    The name of the ITM-SC Server which holds the NIS database information. In a single ITM-SC Server network the NISMasterServer is the Hostname of the ITM-SC Server. In a multiple ITM-SC Server network the NISMasterServer is one of the ITM-SC Servers or Stand-alones.
- ServerNameN**        The name of any ITM-SC Server which is to be used as NIS Slaves. All NIS Slaves must be entered.
- RemoteWSName**      The name of any remote ITM-SC Client which is to be used as NIS Slaves. All NIS Slaves must be entered.



## Section: Reconfiguring a NIS slave to be a NIS Client on an ITM-SC Client

### Overview

---

**Purpose** Perform this procedure to change an ITM-SC Client from a NIS Slave into a NIS Client.



## Reconfiguring a NIS slave to be a NIS Client on an ITM-SC Client

---

**When to use** When reconfiguring a NIS Slave a NIS Client on an ITM-SC Client:  
The NIS configuration is normally done at clean install time, however it may be necessary to reconfigure NIS if the quality of the connection to the ITM-SC Server changes.

**Before you begin** Before following this procedure make sure that:

- a NIS Master is installed. All ITM-SC Servers and Stand-alones apart from the NIS Master are always NIS Slaves.
- The ITM-SC Client which is to become a NIS Client is present in the hosts file of the NIS Master.

Before performing this procedure consider the following:

- It is recommended that all ITM-SC Servers or Stand-alones in a remote office are set up as NIS Slaves. This will reduce network traffic during normal operations.

**Related information** The related concept is:

- About Network Information Service (NIS) [3-7]

### Procedure

---

**1** On the NIS Master enter the following command:  
`itmsc_nis_remove_slave_server <NISslaveServer>`

**Result:**

The following question is displayed:

Do you wish to remove slave server bristol?  
[y/n: y]

---

**2** Enter y (yes) and press **ENTER**.

---

**3** Log onto the client which is to become a NIS Client as user *root* and enter the following command:

`itmsc_nis_setup.`

**Result:**

You will be prompted for the hostname of the NIS master server.

- 
- 4 Enter the hostname for the NIS master server.

**Result:**

The following message will be displayed:

```
Is this machine a NIS (m)aster, (s)lave,  
(c)lient or (n)o NIS? [m/s/c/n: ]
```

---

- 5 Enter c (client) and press **ENTER**.

**Result:**

The user is asked for the domain name

---

- 6 Enter the domain name.

**Result:**

The following message is displayed:

```
Not an NIS server, exiting  
stopping ypbind  
stopping keyserver
```

This message is to be expected in this configuration. The stopping messages are the server parts of the NIS being stopped on the machine.

The following message is displayed:

```
Warning! You maybe about to remove any local  
EMS users from this machine Do you wish to  
continue? [y/n: y]
```

---

- 7 Select y (yes) and press **ENTER**.

**Result:**

The reconfiguration is now complete.

END OF STEPS

---



## Parameters for Reconfiguring a NIS slave to be a NIS Client on an ITM-SC Client

---

**Parameters used**    The parameters used in this procedure are described below:

**NISMasterServer**    the name of the ITM-SC Server which holds the NIS database information. In a single ITM-SC Server network the NISMasterServer is the Hostname of the ITM-SC Server. In a multiple ITM-SC Server network the NISMasterServer is one of the ITM-SC Servers or Stand-alones.

**ServerNameN**        the name of any ITM-SC Server which is to be used as NIS Slaves. All NIS Slaves must be entered.

**RemoteWSName**     the name of any remote ITM-SC Client which is to be used as NIS Slaves. All NIS Slaves must be entered.



## Section: Configuring ITM-SC for WS-NMS

### Overview

---

**Purpose** Perform this procedure to enable an ITM-SC Server to communicate with a separate ITM-NM.



## Configuring ITM-SC for WS-NMS

---

**When to use** When configuring the ITM-SC for ITM-NM support:

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

**Related information** No related information is available.

### Procedure

---

- 1 Log in as root on the ITM-SC Server and enter in the `/opt/itm/sc/toolbox/bin/` directory: `itm_sc_set_itnm_name`

**Result:**

The following options will be displayed

Current NM hostname & version settings are :

1. Add a ITM-NM (Maximum of two)
  2. Delete a ITM-NM
  3. Change the version of a ITM-NM
- 

- 2 Select option *1* and press **ENTER**.

**Result:**

A prompt for the hostname is displayed.

---

- 3 Enter the *hostname* of the WS-NMS system following by **ENTER**.

**Result:**

The configuration menu will again be displayed with the WS-NMS name and a default version number.

---

- 4 Select option *3* to change the version.

**Result:**

This will display a sub-menu.

---

- 5 Select the relevant WS-NMS from the sub-menu and correct version number.

- .....
- 6 To add the ITM-NM hostname to the */etc/hosts file* and to update the NIS maps, log on to the NIS Master as user *root* and enter the following command:

```
/opt/itm/sc/tool box/bin/itm_sc_add_host  
<hostname> <IP address>
```

**Result:**

The ITM-SC is able to communicate with the ITM-NMS.

.....

- 7 Ensure that the ITM-SC server is licensed for both the WS-NMS interface and the *Extended User Classed* feature. This information can be accessed when logged in as the user *ITM—SC Administrator* from the *tools —>licences* menu item.

**Result:**

.....

- 8 Invoke the ITM-SC user interface as *ITM—SC Administrator* and access *User Access->User Access Profiles* menu item. Select the *Edit* button to open the *Edit User Access Profiles* window.

**Result:**

.....

- 9 Select the *Add* tab and enter in the user field the username *sa*. Set the role to *Supervisor* and select *OK*.
- .....

- 10 Follow the procedure to add a user to a HP Workstation, adding a *sa* user. This user is added to the ITM-SC client workstation which when deployed with WS-NMS will become a Joint Workstation.
- .....

- 11 To ensure that PM reports can be accessed from the WS-NMS the host name and IP address of the WS-NMS client needs to be entered in the ITM-SC hosts file. This step should be completed on the *ITM-SC NIS master* for *all* WS-NMS clients that will be required to access PM reports.

The following command should be used:

```
/opt/itm/sc/tool box/bin/itm_sc_add_host  
<hostname><IP address>
```

END OF STEPS

.....



## Section: Configuring the ITM-SC for Geographic Redundancy

### Overview

---

**Purpose** Perform this procedure to enable an ITM-SC for Geographic Redundancy (GR). When adding an ITM-SC into a Geographic Redundancy scheme, the ITM-SC must be aware of all other ITM-SCs that it may want to connect to. Also all those other ITM-SCs that an ITM-SC may want to connect to must be aware that they can be contacted. This notification process is realized by adding the respective hostname and IP address to the NIS Masters of the network in question and forcing the NIS maps to the rest of the system.



## Configuring the ITM-SC for Geographic Redundancy

---

**Purpose** When configuring the ITM-SC for Geographic Redundancy:

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

- the NIS Master is not shared by one or more hosts.  
In a single client/server configuration the ITM-SC Server is NIS Master. If a NIS Master is shared by one or more of the hosts, they will be aware of each other and it is therefore *unnecessary* to perform this procedure for these machines.

**Related information** No related information is available.

### Procedure

---

**1** Log in as *root* at the NIS Master of the ITM-SC to be added to the GR scheme.

---

**2** Enter the following command for each of the hostnames and IP addresses for all the ITM-SCs that it may want to connect to:

```
i t m s c _ a d d _ h o s t < h o s t n a m e > < I P a d d r e s s >
```

---

**3** To set the location name of the ITM-SC, log in as user *root* and enter:

```
i t m s c _ s e t _ l o c a t i o n _ n a m e < l o c a t i o n n a m e >
```

---

**4** The physical GR Peer-to-Peer links may now be added.

END OF STEPS

---



## Section: Configuring PAMS Report Generation

### Overview

---

**Purpose** This section shows how to configure the ITM-SC for use with the PAMS client. Once the instructions in this document have been executed it will be possible to request reports from a PAMS client.



## Configuring PAMS Report Generation

---

**Purpose** To configure the ITM-SC for PAMS report generation perform this procedure.

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

- the ITM-SC is licensed for *Network Data Reports*

Before performing this procedure consider the following:

- There will be a delay between the time requested for the reports to be generated and the time when they are actually generated and available. It is suggested that a period of half-an-hour elapses between when a report is scheduled (to be created) and when it is requested.
- The time stamp that is embedded in the filename will be the time requested (and not time generated).

**Related information** No related information is available.

### Procedure

---

1 Log into the ITM-SC server as user *root*.

---

2 Enter the following command:

```
i t m s c _ p a m s _ s e t u p
```

Refer to the Parameters for Configuring PAMS Report Generation [2-88]for the correct format.

**Result:**

You will be prompted to enter two times, these are the times when the reports will be generated. They will be generated at these times every day).

---

3 Confirm that the times are correct.

**Result:**

The script will save the changes and will exit.

---

4 Logout of ITM-SC.

END OF STEPS

---



## Parameters for Configuring PAMS Report Generation

---

- Format of report filename** The general format of to enter is:  
<host name>\_<report-time >\_<date/time stamp>
- <hostname>** Will indicate the name of machine that the report is generated on.
- <report-time>** This will be either *iv* or *pt* (*inventory* and *port reports* respectively).
- <date/time stamp>** This format wil be *yyyymmddhhmm*. The time stamp is the time that the report is scheduled not the time that it is actually created.



## Section: Configuring PM storage

### Overview

---

**Purpose** This section provides procedures to either configure the ITM-SC for standard PM storage or Extended PM storage.



## Configuring PM storage

---

**When to use** When changing or activating PM storage.

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

**Related information** No related information is available.

### Procedure

---

**1** Shutdown the ITM-SC if it is running.

---

**2** Log into the server as user *root*.

---

**3** Enter the following command:

```
i t m s c _ c o n f i g u r e _ p m
```

#### **Result:**

The following menu will be displayed:

1. Standard PM storage
    - 15 minute data kept for 1 day (24 hours)
    - 24 hour data kept for 1 month (31 days)
  2. Extended PM storage
    - 15 minute data kept for 7 days (7 x 24 hours)
    - 24 hour data kept for 2 months (62 days)
- 

**4** Select either 1 or 2 and then select **ENTER**.

---

**5** Start the ITM-SC.

END OF STEPS

---



## Section: Configuring ITM-SC for Double Alarm Acknowledgment

### Overview

---

**Purpose** Perform this procedure to configure the ITM-SC for Double Alarm Acknowledgment.



## Configuring ITM-SC for Double Alarm Acknowledgment

---

**When to use** When double alarm acknowledgment is to be implemented as part of the maintenance philosophy.

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

- latching is set for each alarm. To set latching perform the Setting Alarm Latching procedure as can be found in the *Sub-network controller Maintenance Guide (SMG)*.

Before performing this procedure consider the following:

- Disabling the double alarm acknowledge feature is not supported.
- The double alarm acknowledgement will not work until the ITM—SC is licensed to do so.

**Related information** Related procedures are:

- Configuring ITM-SC for Alarm Beeping
- Configuring Systems Alarm Monitoring

The related concept is:

- Double Alarm Acknowledgment Concepts [3-9]

### Procedure

---

**1** Log in as *i2kadmin* on the ITM-SC and enter:

```
$EMSAPPLDIR/bin/ems_param -i
```

**Result:**

A menu driven tool is displayed. This tool will allow certain configurable parameters to be maintained.

---

**2** Choose the number next to the *double\_alarm\_acknowledge* parameter and press **ENTER**. If the parameter is not in the list press **ENTER** to go to the next page until the parameter is shown.

**Result:**

The following information is displayed:

```
Name: double_alarm_acknowledge Should alarms be double-acknowledged?
```

```
Type: BOOLEAN
```

```
Range: TRUE or FALSE
```

```
Default: FALSE
```

Value: FALSE

- 
- 3** Enter TRUE and select **ENTER**. Also true, True, t or T are allowed.

**Result:**

The following confirmation message is displayed: Changed value of double\_alarm\_acknowledge to TRUE  
Press <Enter> to continue.

- 
- 4** Press **ENTER** to continue.

**Result:**

The opening menu appears again.

- 
- 5** Enter q and press **ENTER** to quit the script.

- 
- 6** To enable the Double Alarm Acknowledgment feature license the ITM-SC for Double Alarm Acknowledgment. Refer to the *Subnetwork controller Administration Guide (SAG)* for the appropriate procedure.

END OF STEPS



## Section: Configuring LO Alarms Forwarding from ITM-SC to WS-NMS

### Overview

---

**Purpose** This procedure describes how to enable/disable the forwarding of Low Order Alarms from the ITM-SC to the WS-NMS. This is only applicable for PHASE, ADM155, ADM4/1 and ADM16 NEs.



## Configuring LO Alarms Forwarding from ITM-SC to WS-NMS

---

**When to use** When enabling or disabling the forwarding of Low Order Alarms to WS-NMS.

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

- The variable to enable lo order forwarding is not set until the customer has turned off the LO alarm reporting on a per TP basis for configured connections, except on those TP's (normally boundary ports) where receiving these alarms is important. If this variable is set without ensuring most LO alarm reporting is turned off at the TP level then fault management in WS-NMS will be swamped with alarms, and this will impact performance.

Before performing this procedure consider the following:

- LO forwarding is only applicable to PHASE, ADM155, ADM4/1 and ADM16 NEs.

**Related information** No related information is available.

### Procedure

---

**1** Login to the server as *root*

---

**2** Stop the ITM-SC by entering:  
`/opt/itm/sc/etc/ems_stop`

**Result:**

---

**3** Enter the command:  
`itmsc_set_nm_forwarding`

**Result:**

Progress information is displayed and the following question is asked:

Do you wish to enable or disable forwarding?

---

**4** Enter either *enable* or *disable*

**Result:**

The status of LO Alarm forwarding will now be displayed.

---

**5** Re-start the ITM-SC by entering:

```
/opt/itm/sc/etc/ems_start
```

```
END OF STEPS
```

---



## Section: Changing the Time Zone

### Overview

---

**Purpose** When an ITM-SC has changed its physical location it can be necessary to change the time zone on the ITM-SC Client or ITM-SC Stand-alone. Perform this procedure to change the time zone on an ITM-SC Client or ITM-SC Stand-alone.



## Changing the Time Zone

---

**When to use** Perform these steps to change the time zone on a ITM-SC Client:

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

**Related information** No related information is available.

### Procedure

---

- 1 Log in as root onto the ITM-SC and enter the following command:  
`set_parms timezone`

**Result:**

A screen, displaying a list of locations, is displayed.

---

- 2 Choose the number corresponding to your required location and press **ENTER**.

**Result:**

A list of time zones is displayed.

---

- 3 Enter the number of the time zone you require and press **ENTER**.

**Result:**

A confirmation of the selection made will be asked.

---

- 4 Confirm the selection made.

**Result:**

The time zone on the ITM-SC Client is changed.

END OF STEPS

---



## Section: Setting up Network Timing Protocol (NTP)

### Overview

---

**Purpose** This section describes how to manage NTP (Network Timing protocol).

The following procedures are described:

- Adding an NTP Synchronization source
- Enabling NTP
- Disabling NTP
- Removing NTP Synchronization source
- Changing the NTP trusted time server

**Background** In order to obtain for example a high accuracy in event reporting all ITM-SC Servers, Clients and Stand-alones can be supplied with a accurate timing source. For reasons of costs and convenience, it is not possible to equip every computer with a highly accurate timing source. It is possible to equip some number of computer acting as primary time servers to synchronize a much larger number of secondary time servers and time clients connected by a network. In order to do this, a distributed network clock synchronization protocol is required. The ITM-SC Management network can be equipped with the Network Timing Protocol (NTP) in order to distribute the timing signal. The NTP reads a NTP Server clock, transmits the reading to one or more NTP Clients and adjust each NTP Client clock as required. To obtain an accurate timing the NTP Client polls the NTP Server and records the respond time. Together with the received timestamp from the NTP Server the NTP Client is able to adjust its clock.

□

## Adding an NTP Synchronization source

---

**When to use** When adding an NTP Synchronization source to the ITM-SC Server or Client.

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

- NTP is not working when the NTP is not enabled. To enable the NTP, perform the *Enabling the NTP* procedure.

**Related information** No related information is available.

**Procedure** Perform these steps to add an NTP Synchronization source

---

**1** Log in as *root*

---

**2** Enter the command:

```
itm_sc_ntp_add_source [ <source_name> |  
<source_ip_address> ]
```

**Result:**

If no command line parameters are present, the user will be prompted for the name or IP address of the new sync source. The *<source\_name>* or *<source\_ip\_address>* will be validated.

---

**3** Reboot the ITM-SC Server or Client to activate the changes.

**Important!** To enable NTP, perform the *Enabling the NTP* procedure.

END OF STEPS

---



## Enabling the NTP

---

**When to use** When activating the NTP.

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

- the NTP synchronization source is added to the ITM-SC Server or Client.

**Related information** No related information is available.

**Procedure** Proceed with these steps to enable the NTP

---

**1** Log in as *root*

---

**2** Enter the following command: `itm_sc_ntp_enable`

**Result:**

The NTP is now enabled and the synchronization of the ITM-SC Server or Client is updated by the NTP.

END OF STEPS

---



## Disabling the NTP

---

**When to use** When disabling the NTP on an ITM-SC Server or Client.

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

- It is not required to remove the NTP synchronization sources. Disabling will deactivate the NTP.

**Related information** No related information is available.

**Procedure** To disable the NTP on a ITM-SC Client or ITM-SC Server follow these steps:

---

**1** log in as *root*

---

**2** Enter the following command: `itmssc_ntp_disable`

**Result:**

The NTP is now enabled and the synchronization of the ITM-SC Server or Client is updated by the NTP.

END OF STEPS

---



## Removing an NTP Synchronization source

---

**When to use** When removing an NTP source.

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

- the NTP is disabled on the ITM-SC Server or Client. This is done via the *Disabling the NTP* procedure.

Before performing this procedure consider the following:

- It is not required to remove the NTP synchronization sources.

**Related information** No related information is available.

**Procedure** To remove an NTP synchronization source follow these steps:

---

**1** Log in as *root*

---

**2** Enter the command:

```
itmsc_ntp_remove_source
```

**Result:**

The user will be given a list of the currently configured sync sources. The user will then be prompted to select one of the sync sources from the list to delete. The user does have the option of exiting without deleting a sync source.

---

**3** Reboot the *ITM-SC Server* or *Client* to activate the changes.

END OF STEPS

---



## Changing the NTP Trusted Time Server

---

**When to use** To change the value of the NTP trusted time server.

**Before you begin** No prerequisites or precautions are needed when changing the NTP Trusted Time Server

**Related information** No related information is available.

### Procedure

---

**1** Log in as the user *root*

---

**2** Enter the following commands successively:

```
i t m s c _ n t p _ d i s a b l e
```

```
i t m s c _ n t p _ e n a b l e
```

**Result:**

You are asked for the name or IP address of the new NTP trusted time server.

---

**3** Enter the *name* or *IP address* of the new NTP trusted Time Server.

**Result:**

The NTP trusted Time Server has changed.

END OF STEPS

---



## Section: Managing Shutdown Broadcast

### Overview

---

**Purpose** Perform one of the procedures provided to disable or enable the broadcast message sent to all connected ITM-SC Clients on shutdown.



## Enabling Shutdown Broadcast

---

**When to perform** When changing the properties of the shutdown broadcast message.

**Before you begin** No prerequisites or precautions are needed when performing these procedures.

**Related information** No related information is available.

### Procedure

---

- 1 Log in as *i2kadmin* on the ITM-SC Server and enter:

```
$SEMSAPPLDIR/bin/ems_param -i
```

**Result:**

This script invokes a menu driven tool which allows certain configurable parameters to be maintained.

---

- 2 Choose the number next to the *enable\_shutdown\_broadcast* parameter and press **ENTER**. If the parameter is not in the list press **ENTER** to go to the next page until the parameter is shown.

**Result:**

The following information is displayed:

```
Name : enable_shutdown_broadcast Enable shutdown broadcast message. If TRUE, then display a dialog on all connected clients when the ITM-SC is shutdown.
```

```
Type : BOOLEAN
```

```
Range : TRUE or FALSE
```

```
Default : FALSE
```

```
Value : FALSE
```

---

- 3 Enter TRUE and select **ENTER**. Also true, True, t or T are allowed.

**Result:**

The following confirmation message is displayed: Changed value of enable\_shutdown\_broadcast to TRUE Press <Enter> to continue.

---

**4** Press **ENTER** to continue

**Result:**

The opening menu will be displayed

---

**5** Press **q** and **ENTER** to quit the script

END OF STEPS



## Disabling Shutdown Broadcast

---

**When to use** When changing the properties of the shutdown broadcast message.

**Before you begin** No prerequisites or precautions are needed when performing these procedures.

**Related information** No related information is available.

### Procedure

---

- 1 Log in as *i2kadmin* on the ITM-SC Server and enter:

```
$SEMSAPPLDIR/bin/ems_param -i
```

**Result:**

This script invokes a menu driven tool which allows certain configurable parameters to be maintained.

---

- 2 Choose the number next to the *enable\_shutdown\_broadcast* parameter and press **ENTER**. If the parameter is not in the list press **ENTER** to go to the next page until the parameter is shown.

**Result:**

The following information is displayed:

```
Name : enable_shutdown_broadcast Enable
shutdown broadcast message. If TRUE, then
display a dialog on all connected clients
when the ITM-SC is shutdown.
```

```
Type : BOOLEAN
```

```
Range : TRUE or FALSE
```

```
Default : FALSE
```

```
Value : FALSE
```

---

- 3 Enter FALSE and select **ENTER**. Also false, False, f or Fare allowed.

**Result:**

The following confirmation message is displayed: Changed value of enable\_shutdown\_broadcast to False Press <Enter> to continue.

---

**4** Press **ENTER** to continue

**Result:**

The opening menu will be displayed

---

**5** Press **q** and **ENTER** to quit the script

END OF STEPS



## Section: Enabling Alarm Color Indication Modification

### Overview

---

**Purpose** Perform this procedure to allow a ITM-SC Client to use the alarm color resources on the ITM-SC Server. Normally the ITM-SC Client should use its own, default alarm color indications. By performing the *Configuring Colors for Alarm Severities* procedure the server will store the customized alarm color indication. By performing this procedure the ITM-SC Client will use this customized alarm color indication.



## Enabling Alarm Color Indication Modification

---

**When to use** When changing the alarm color indication as stored on the ITM-SC Server.

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

- A running ITM-SC Client will not be updated automatically. It should be restarted to take advantage of the updated colors.

**Related information** No related information is available.

### Procedure

---

- 1 Make sure the default ITM-SC Server is set to the desired server.  

---
- 2 Login to an *ITM-SC Client*.  

---
- 3 Execute a terminal window by selecting the *Lucent logo* at the VUE menu bar.  

---
- 4 Log in as user *i2kadmin*.  

---
- 5 Enter at the command line:  

```
/opt /i tm/sc/bi n/I tmscChangeCol ours
```

---
- 6 Close the terminal window.  

---
- 7 Repeat this procedure for each *ITM-SC Client*.

END OF STEPS

---



## Section: Renaming PHASE Network Elements

### Overview

---

**Purpose** Perform this procedure to rename a group of Phase Network Elements (NEs). This procedure reads the old and new Phase NE names from a file and updates all the necessary tables in the ITM-SC its database.



## Renaming PHASE Network Elements

---

**When to use** When renaming a group of PHASE NEs:

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

- The new NE names will not be updated in the ITM-NM its database. The ITM-NM needs a separate procedure to rename the nodes.

**Related information** No related information is available.

### Procedure

---

**1** Login to the ITM-SC server as *i2kadmin*.

---

**2** Change the directory to */tmp* and create a file called *nm.nodes*. This file must contain a list of old and new NE names. Each pair should be on a separate line and delimited by the pipe symbol (*|*). For example: *Phase\_old|Phase\_new*

---

**3** Enter the following command to change the name separator for the ITM-SC tool:

```
sed -e "s/|/ /" /tmp/nm.nodes > /tmp/sc.nodes
```

---

**4** Enter the following commands:

- `itm_sc_setup`
  - `ems_stop`
  - `cd $EMSAPPLDIR/bin`
  - `ems_rnode -y /tmp/sc.nodes`
- 

**5** If the previous commands are successful copy the *nm.nodes* file onto the NM host and perform the ITM-NM renaming procedure. If this is successful to, start the ITM-SC by using the following command:  
`/opt/itm/sc/etc/ems_start`

---

**6** Perform a MIB download for each NE for which its name has changed.

END OF STEPS

---



## Section: Changing Non ITM-SC Passwords

### Overview

---

**Purpose** Due to security reasons passwords must be able to change. This procedure describes how to change the password of non-ITM-SC user. Non-ITM-SC users are for example the: BaseworX user, Informix user and user root.



## Changing Non ITM-SC Passwords

---

**When to use** When changing non-ITM-SC user passwords.

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

**Related information** No related information is available.

**Procedure** .....

**1** Enter the command: `yppasswd <username>`  
.....

**2** Log in as the user for which to change the password.  
.....

**3** Follow instructions on screen.  
.....

**4** To obtain help enter: `man yppasswd`

END OF STEPS  
.....







# 3 Concepts

## Overview

---

**Purpose** In this chapter installation and reconfiguration concepts of the ITM-SC are explained.



## Section: Application Installation Concepts

### Overview

---

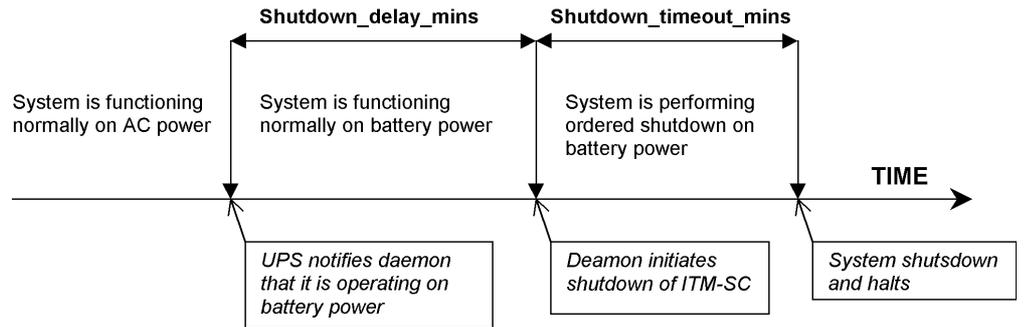
**Purpose** This section will provide the user with background information needed when performing installation tasks.



## UPS Installation

---

**Parameters** During the installation the user is asked to set the shutdown delay time and the shutdown time-out time. The shutdown delay time is the period between AC failure and start of the ITM-SC shutdown sequence. The shutdown time-out time is the period between start of the ITM-SC shutdown sequence and the actual shutdown of the UPS. This is detailed in the picture below.



If the AC power is restored before the *shutdown\_delay\_mins* period is elapsed, then the system will not be shut down.

□

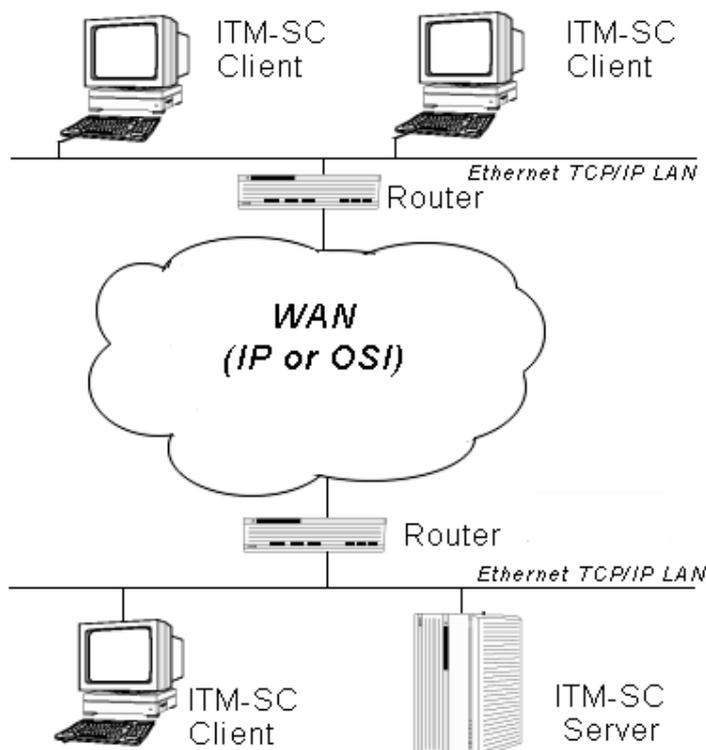
## Router Configuration Concepts

---

**Introduction** When management components like ITM-SC Client, Server and X-Terminals are connected to physically isolated Local Area Networks (LANs), it is necessary to connect those segments into one logical LAN. Interconnection of separate LANs can be provided by bridges or routers. It is also possible to connect remote sites via a Wide Area Network (WAN), which uses bridges and routers as well. An example of a network like this is given below.

In the network the deployment of bridges is supported however the advantage of deploying routers is that the potential level of traffic over the LANs is reduced. This is due to the fact that routers will only forward packets to the LAN where the addressed machine is present whereas a bridge may broadcast packets to all of the LANs it is connected to.

The connection protocol used on the LAN is TCP/IP, generally a 10 BaseT or 100 BaseT Ethernet connection. The WAN will use OSI or IP over Ethernet or Serial connection depending on the deployment of the routers/WAN.



**NIS** If routers are used then special configuration is required so that NIS data is broadcast from NIS Master to all NIS Slave across the WAN.

**Static IP routing** There are two basic manners in which to configure IP routing in a network: static and dynamic. Static routing details every IP address and defining all the routes required for each host and router. A router will need routes for all other sub-networks within the network. A host (for example ITM-SC Server) will, at minimum, only need a route to a router on its local sub-network, the IP protocol will perform redirection as required provided the router has a complete map of the network in its routing tables.

However this method the network is not prone to temporary inactivity when the routing tables get out of alignment, it must be planned in great detail. So it is tedious to modify and changes often affect a number of hosts/routers each of which must be updated.

**Dynamic routing** Dynamic routing entails designing the network topology and detailing every IP address. The routers and hosts then run a routing protocol for example RIP (Router Information Protocol) in which routers advertise known routes to other routers via broadcasts on the network. If appropriately configured the hosts also see these route advertisements and can thus direct connections to the appropriate router.

Planning dynamic routing is slightly simpler but the network activities can stop be stopped for a while when the routing tables in the hosts/routers get out of alignment and have to wait for the routing protocol time-outs to resolve the situation.

□

## Section: Application Reconfiguration Concepts

### Overview

---

**Purpose** This section will provide the user with background information needed during performing installation and reconfiguraion tasks.



## About Network Information Service (NIS)

---

**Background** Network Information Service (NIS) is used to distribute login information (user login, password and fixed privileges) to the ITM-SC manager components.

Management components discussed are:

- ITM-SC Stand-alone
- ITM-SC Server
- ITM-SC Client or ITM-SC X-Terminal Server.

These manager components do however not include Joint workstation and X-Terminals. Each of these manager components are defined with one of the NIS roles.

**NIS Roles** In total three different NIS Roles are available.

- *NIS Master:* One of the manager components is defined as the NIS Master, and it contains the master user password database. There can only be one NIS Master. An ITM-SC Server or ITM-SC Stand-alone can be configured as a NIS Master.
- *NIS Slave:* With manager configurations separated geographically and linked via e.g. a WAN, one component is defined as a NIS slave at each remote (to the NIS master) location. It has a copy of the user password database and allows the ITM-SC manager components to obtain the login information quickly and efficiently, without need to contact the NIS master over the (relatively slow) WAN. The ITM-SC Stand-alone, ITM-SC Server and ITM-SC Client or ITM-SC X-Terminal Server can be configured as a NIS Slave.
- *NIS Client:* All other manager components are defined as NIS clients, and obtain user login information from the NIS master or the NIS slave, depending on priority given. Only an ITM-SC Client can be configured as a NIS Client.

**Possible deployments** The table below indicates the possible deployments of NIS roles on the manager components. An "x" indicates a possible deployment.

Manager component\NIS role	NIS Master	NIS Slave	NIS Client
ITM-SC Stand-alone	x	x	-
ITM-SC Server	x	x	-
ITM-SC Client or ITM-SC X-Terminal Server	-	x	x

x1: During installation the ITM-SC Stand-alone is initially declared as NIS Master. By using the *Reconfiguring NIS Master into a NIS Slave on a Server or Stand-alone* procedure it is possible to change the NIS role into NIS Slave. For the ITM-SC Server and ITM-SC Client or ITM-SC X-Terminal Server the NIS roles can be set during installation. Procedures within the chapter Application Reconfiguration Procedures describe how to change the NIS role for a specific management component.

### Update in Login Information

Changes to the user login information (e.g. password) made at a ITM-SC workstation is actually made to the NIS Master, which distributes the changes to all manager components. Failure of a communication link between the NIS Master and a NIS Client or NIS Slave will mean that changes to the user passwords at one manager component either cannot be made (no link to NIS Master) or cannot be distributed to all the manager components.

### Recommendation

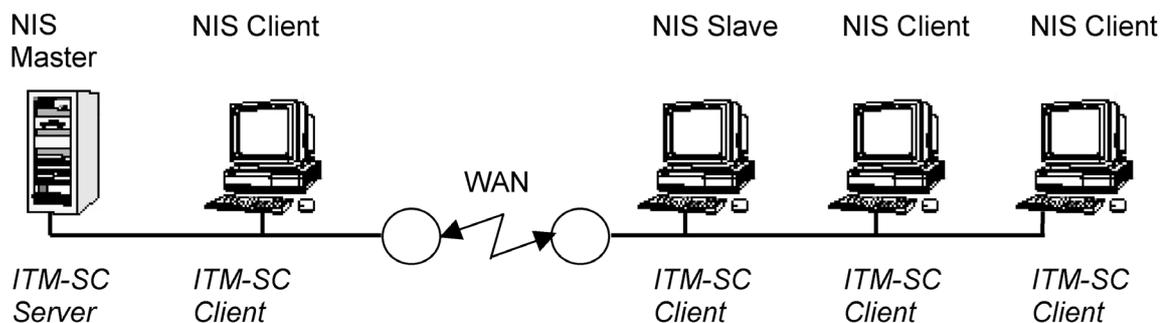
It is recommended that all ITM-SC Servers or Stand-alone's in a remote office should be set up as NIS Slaves to reduce network traffic.

### Setup of NIS Slaves

**Important!** All ITM-SC Servers declared in the ITM-SC Server installation procedure as NIS Slaves must be set up properly. If the setup is not done properly then any subsequent updating of the NIS Master maps (needed when new users are added to the system) may not work or may take a long time to complete. The system will wait for a response from a NIS Slave that does not exist.

### Example

Below an example is given how a NIS Network can be implemented in a ITM-SC client/server network. One NIS Slave is situated on the remote side of the NIS Master. The NIS Slave is updated from the NIS Master of the WAN link. To reduce traffic the NIS Clients on the remote side consult the NIS Slave. The NIS client near the NIS Master consults the NIS Master directly.



□

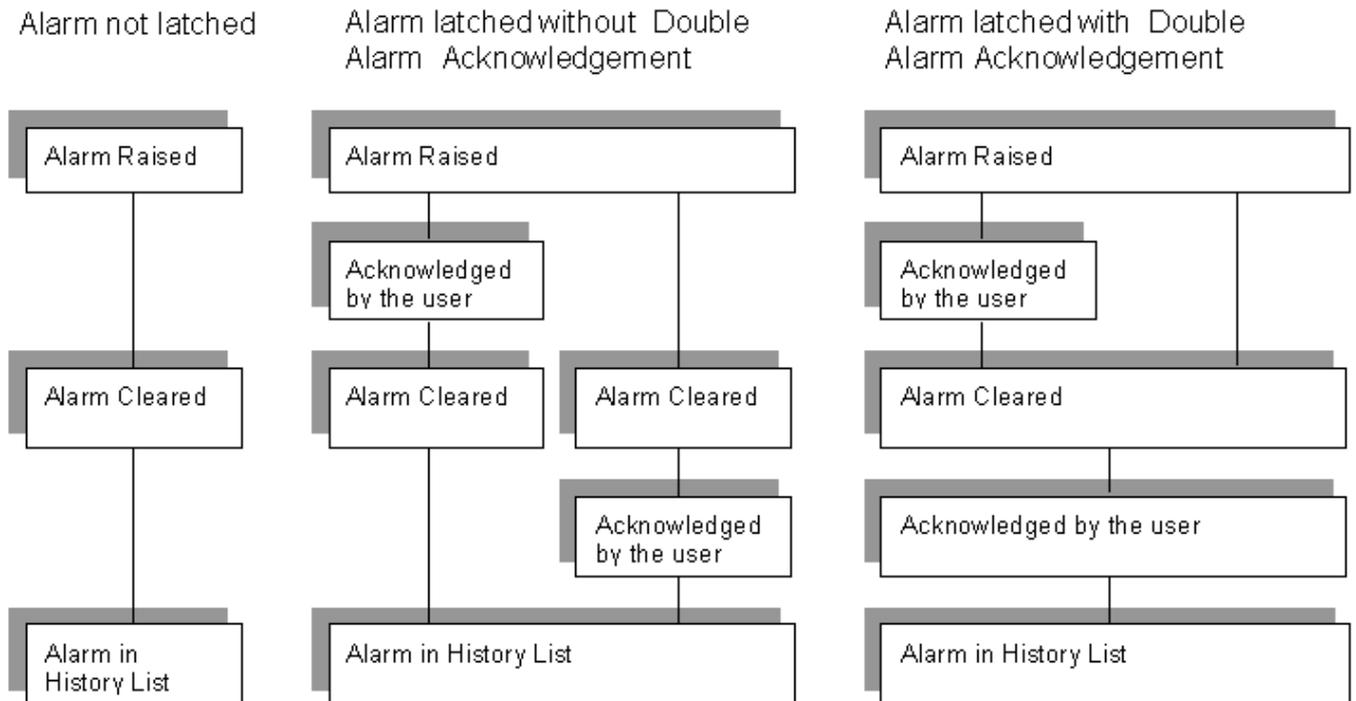
## Double Alarm Acknowledgment Concepts

---

**Background** If double alarm acknowledgment is implemented, cleared and latched alarms must be acknowledged before they are moved to the history list. Even when the alarm was acknowledged before clearance it is necessary to acknowledge it once more before it is moved to the history list. This is displayed in the right column of the picture below.

Without Double Alarm Acknowledgment cleared alarms which are already acknowledged will go to the history list directly. This is displayed in the middle column of the picture below.

Double Alarm Acknowledgment is to prevent the user to miss any clearance of alarms.



**Not latched alarms** Alarms which are not latched can go to the history list without acknowledgment. This is displayed in the left column of the picture above.

□





# 4 Using the ITM-SC Interface

## Overview

---

- 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

---

- Purpose** This section describes the more HP-Vue specific subjects such as:
- Buttons and Mouse usage.
  - The general software modules.



# Front Panel

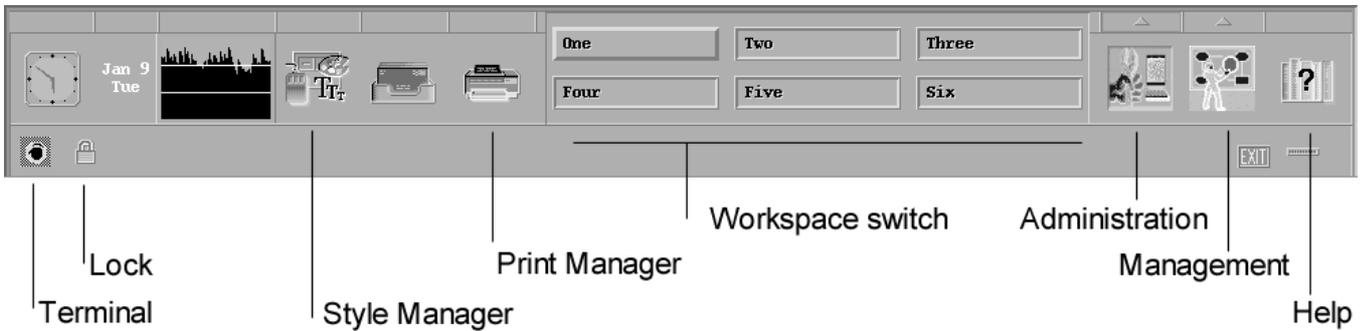
**About the ITM-SC Front Panel**

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.



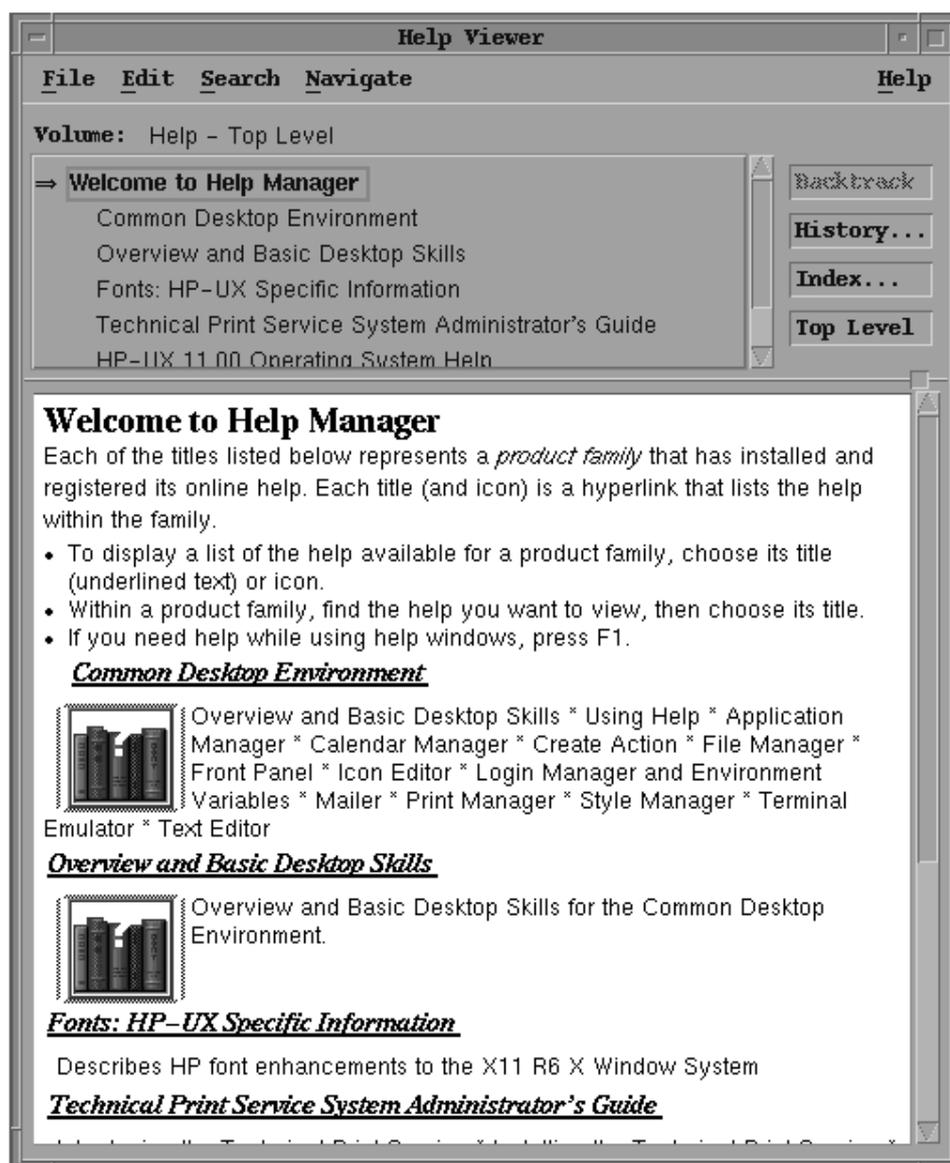
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## General Modules

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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.

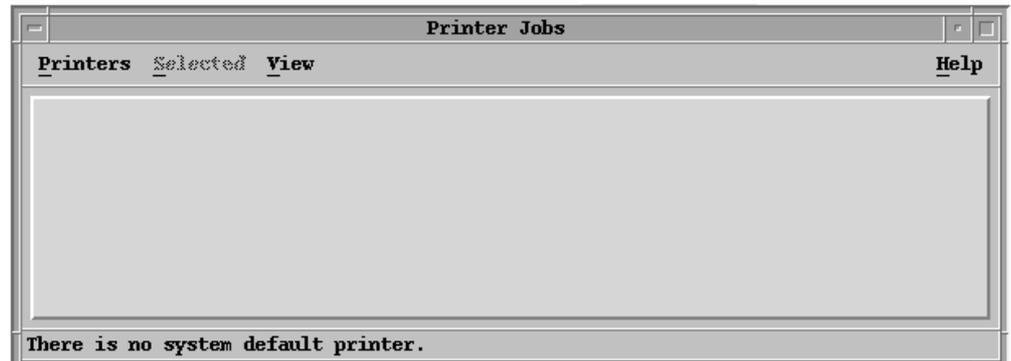
**Help Manager** The Help Manager provides access to online help for HP-VUE. This information includes coverage of workstation controls and tool use. The Help Manager menu is shown below.



- 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

---

- 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.



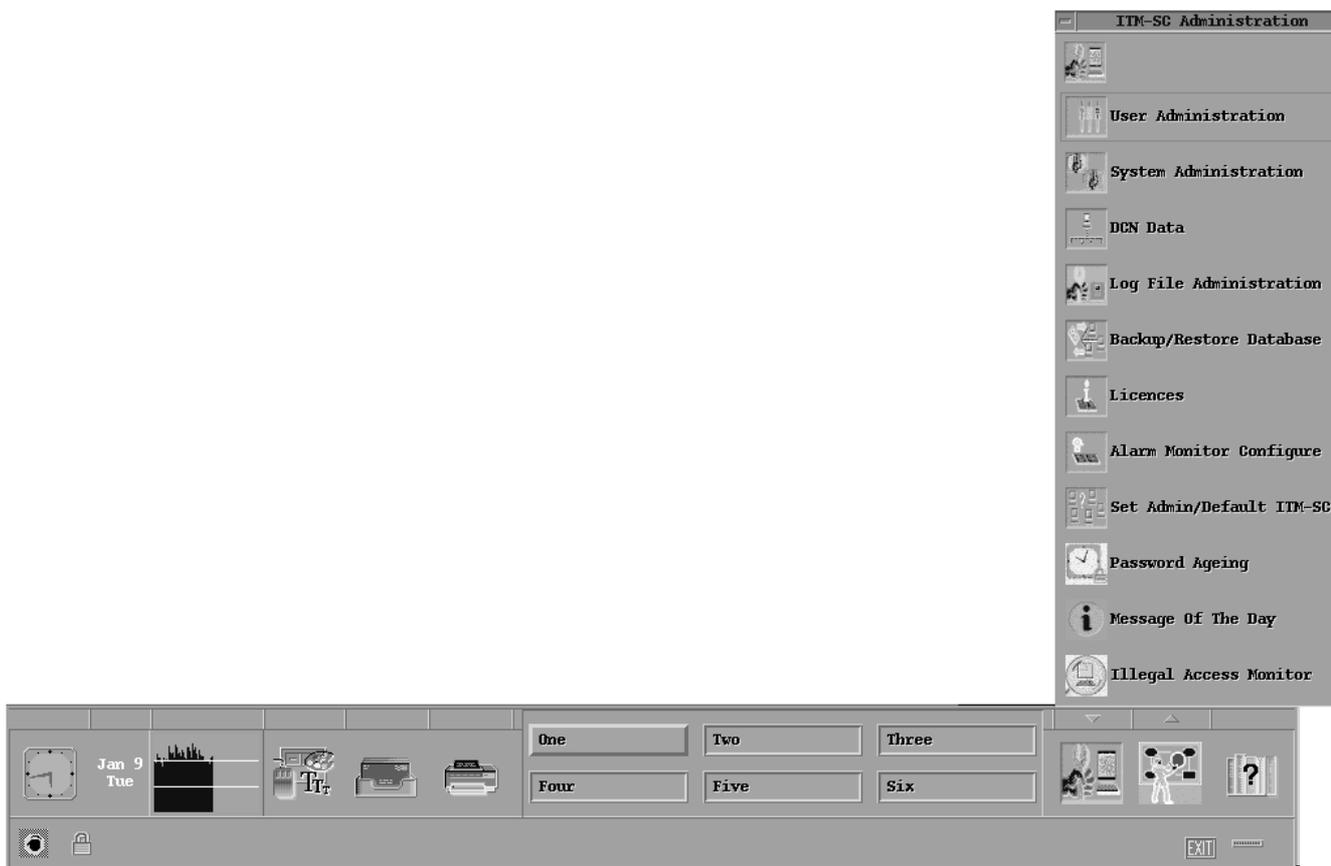
**Menu Options** Selections on the Management menu are described below:

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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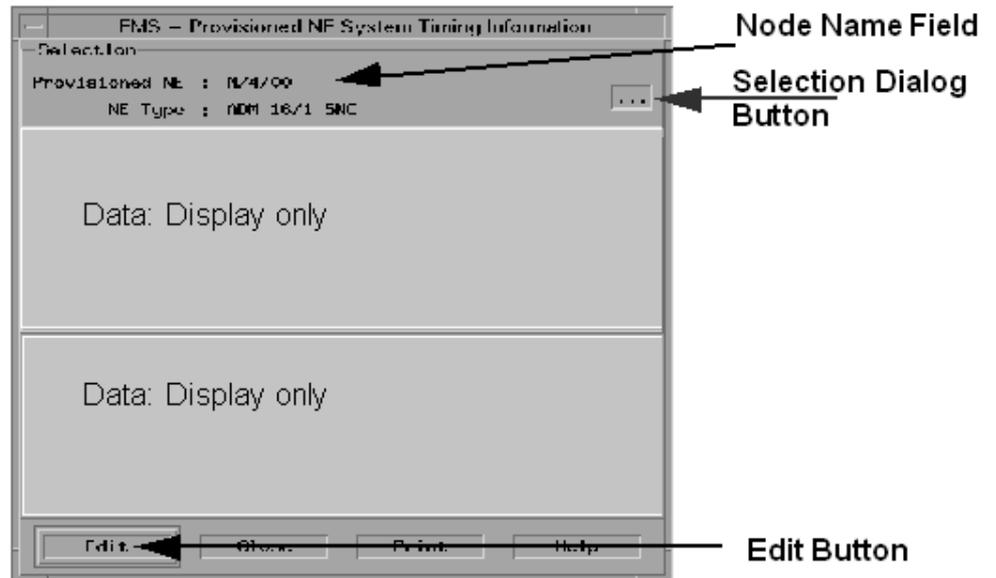
**Introduction** The Element Management System (ITM-SC) contains four types of windows:

- 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:

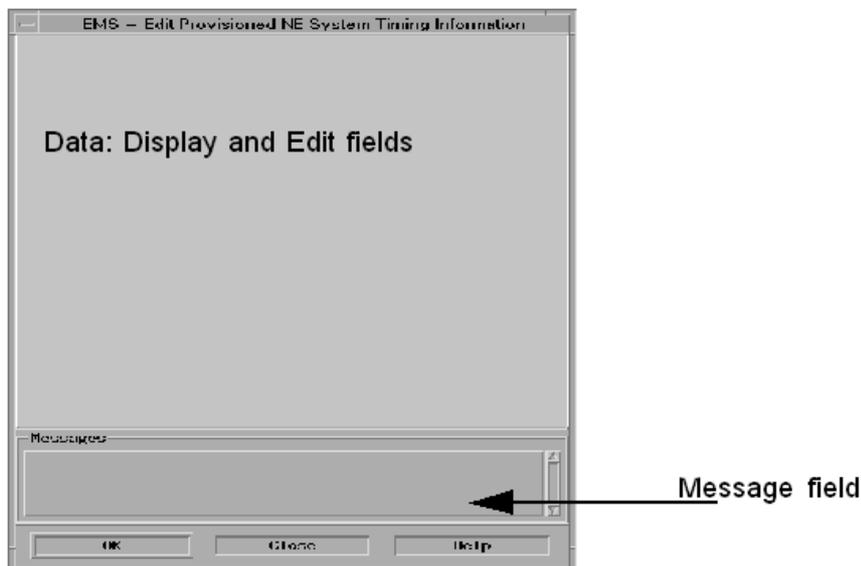
Button	Function
Apply	Executes the changes made. The window remains open to permit similar action.
OK	Accepts or executes changes and closes the window.
Edit	Provides the option to change data in shown data entry fields. A different window can be displayed.
Close	Closes the window and resumes normal 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).



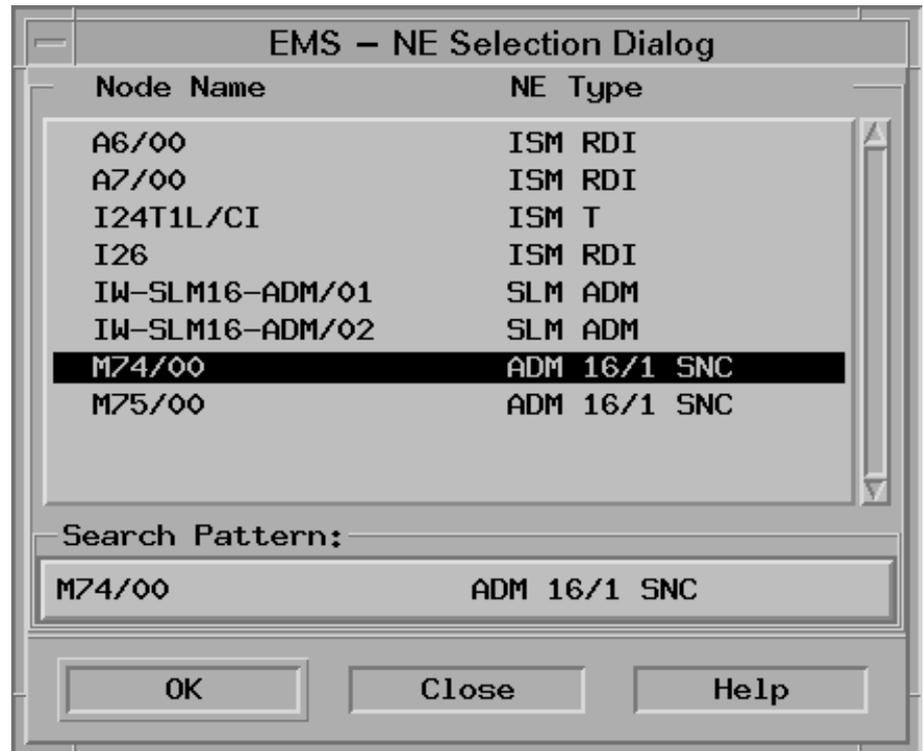
It is possible to click on the selection dialogue button to select a specific NE. When clicking the selection dialogue button a list with node names appears. From this list a node can be selected to edit or view the nodes information.

**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.

□

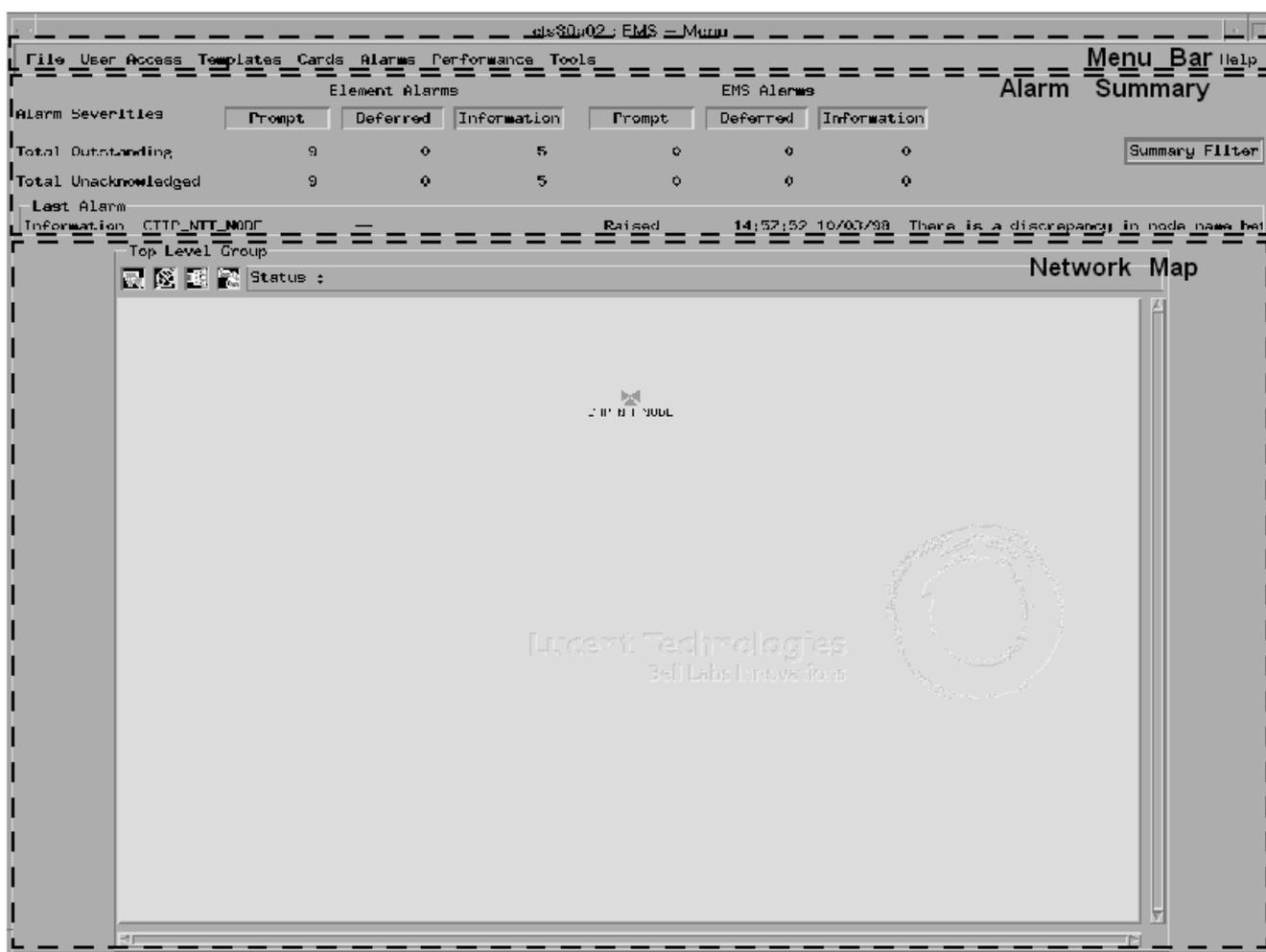
## Main EMS—Menu Window

**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:

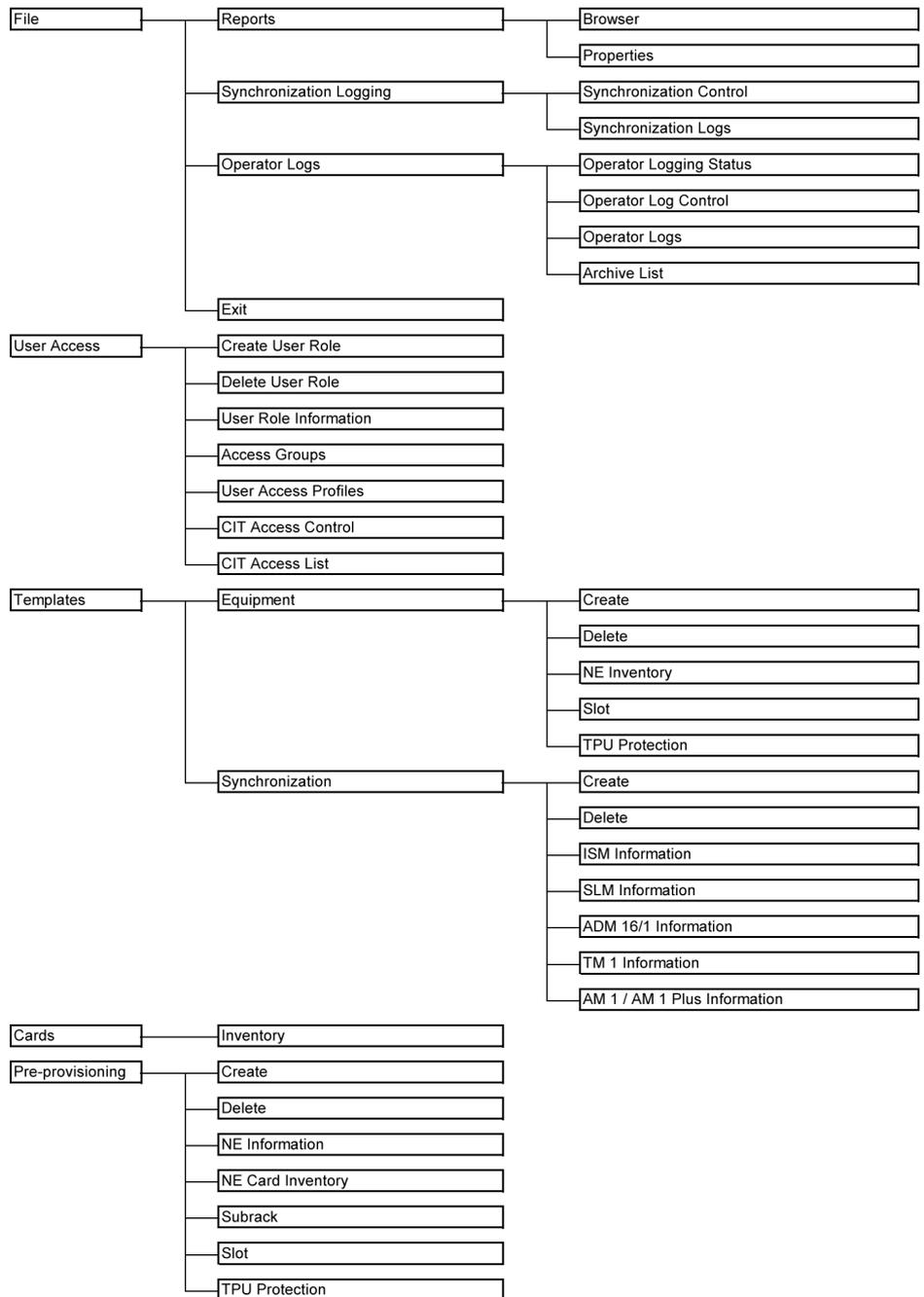
- Menu Bar.
- Alarm Summary.
- Network Map.

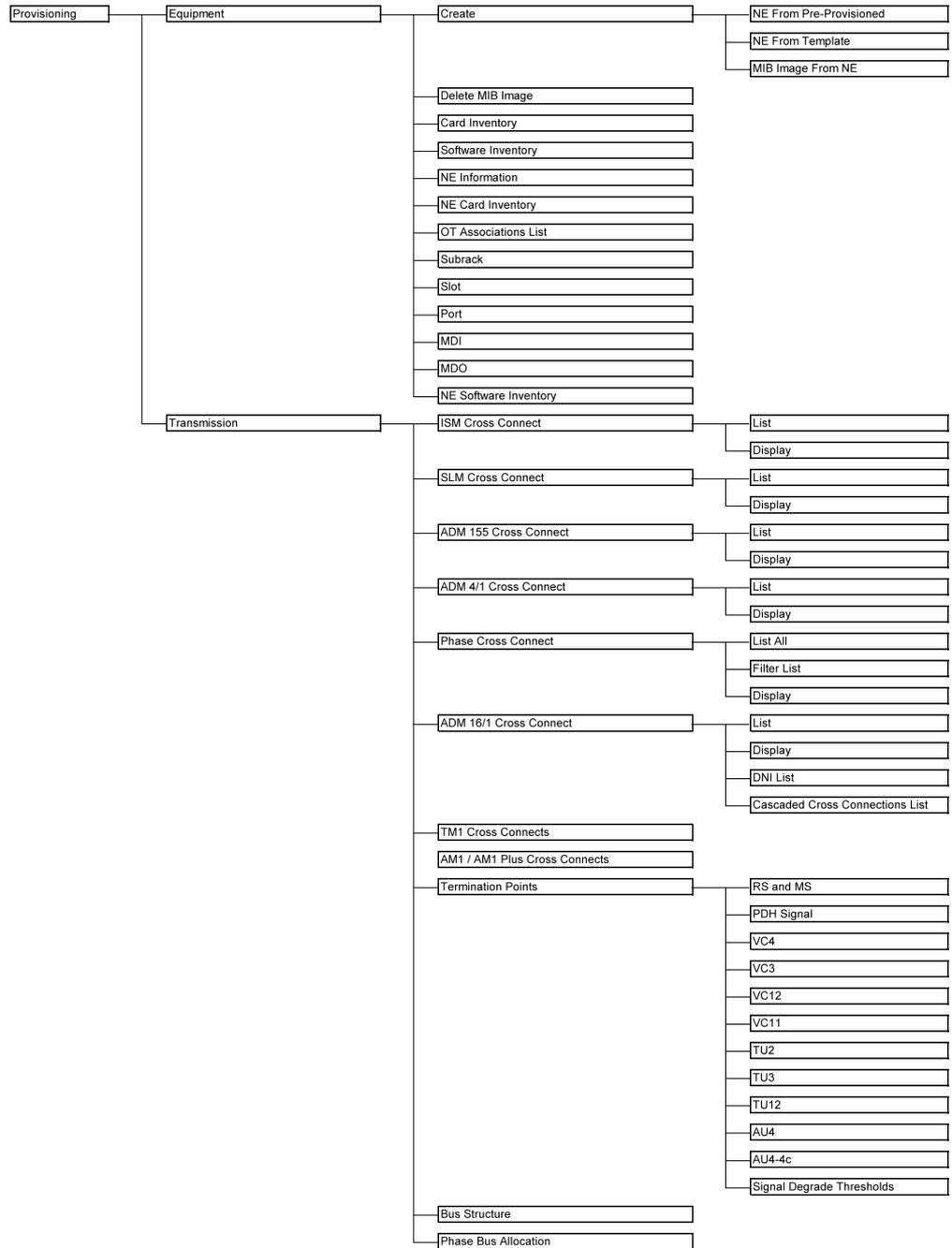
The picture below distinguishes the 3 parts.

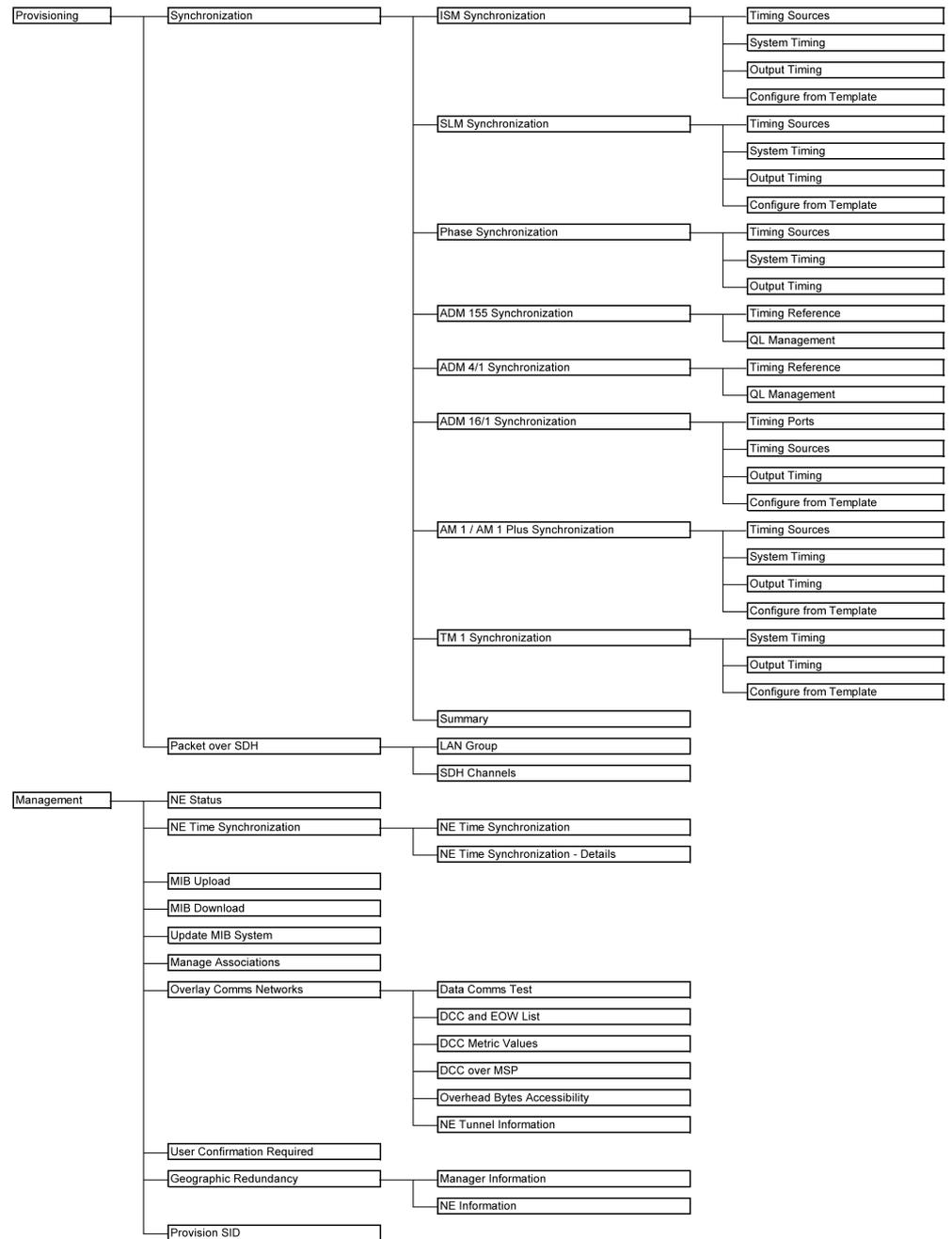


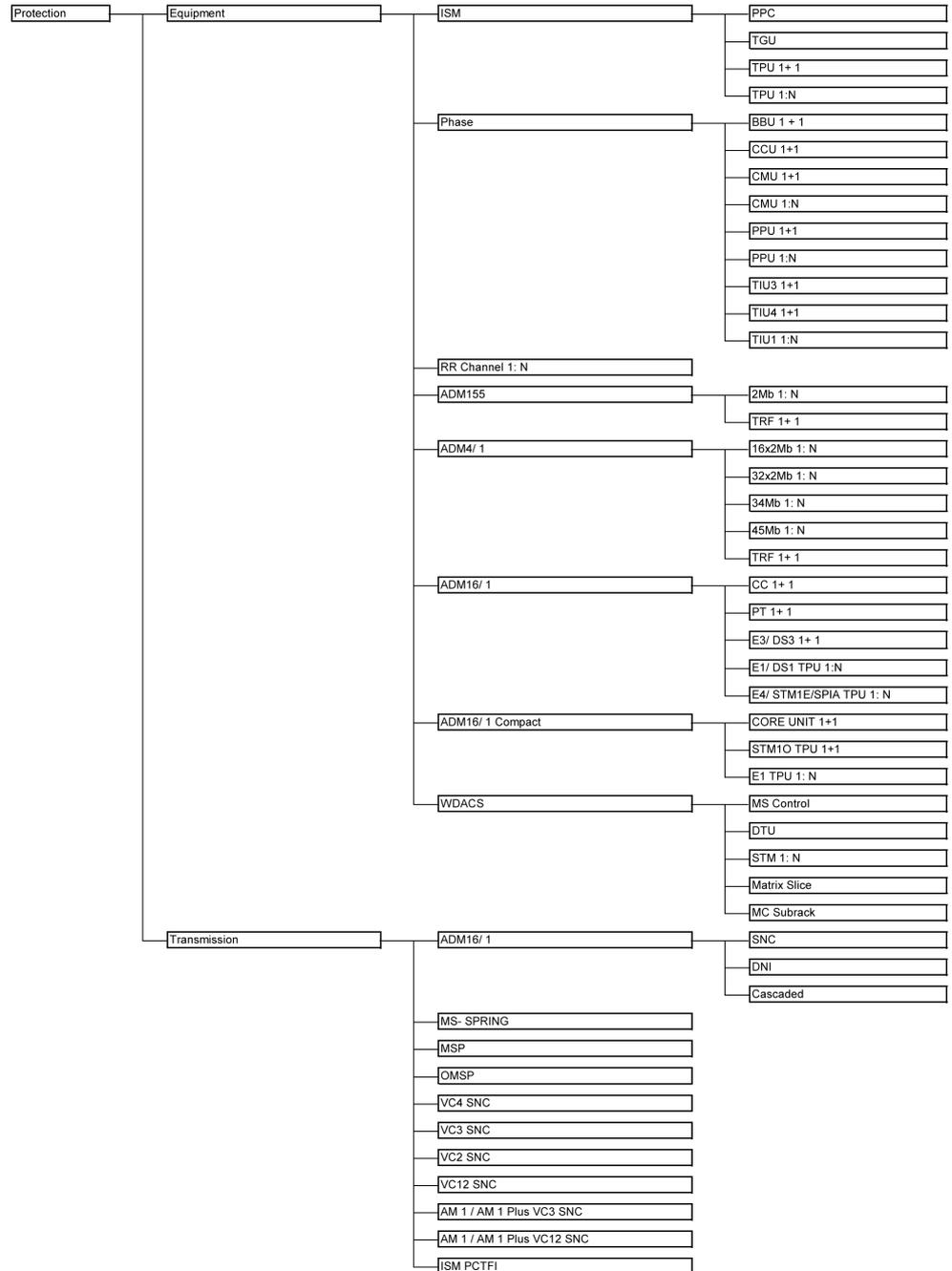
**Menu Bar** Via the Menu Bar it is possible to manage the network element. It consist of several buttons that have one or more submenus attached to it. By clicking a menu bar button, the submenus will scroll down and the submenu that is required can be selected. These submenu can, on their part, contain several sub-submenus as well.

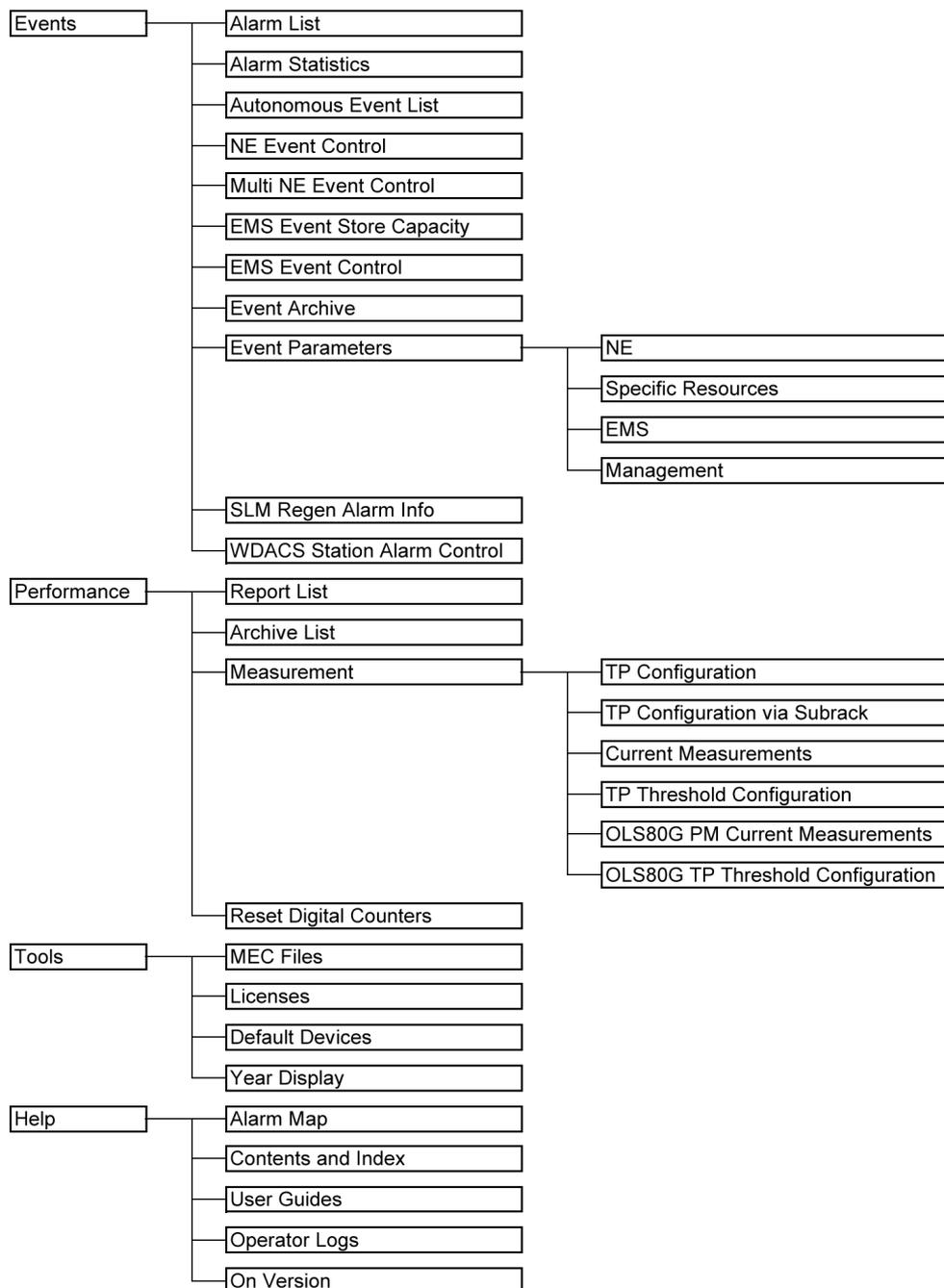
**Menu bar structure** The structure underlying the menu bar is as follows:











**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

---



## Changing Password

---

**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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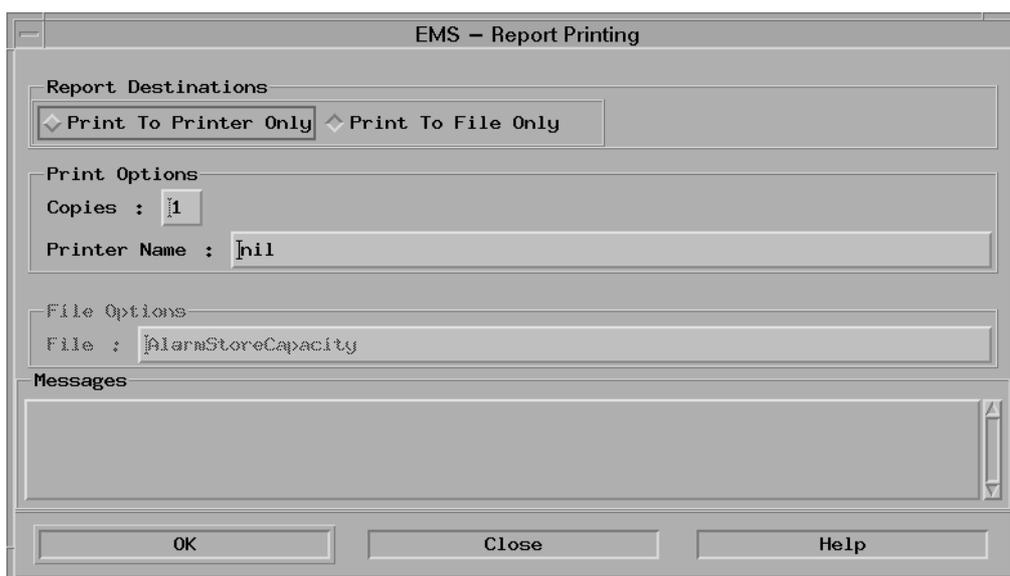
**Background** When selecting anywhere in the ITM-SC the **Print** button, system information that is shown in that window, can be sent to two different outputs. It can be printed directly to a printer or to a file (a report). A report will be stored on the ITM-SC for later use.

**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.

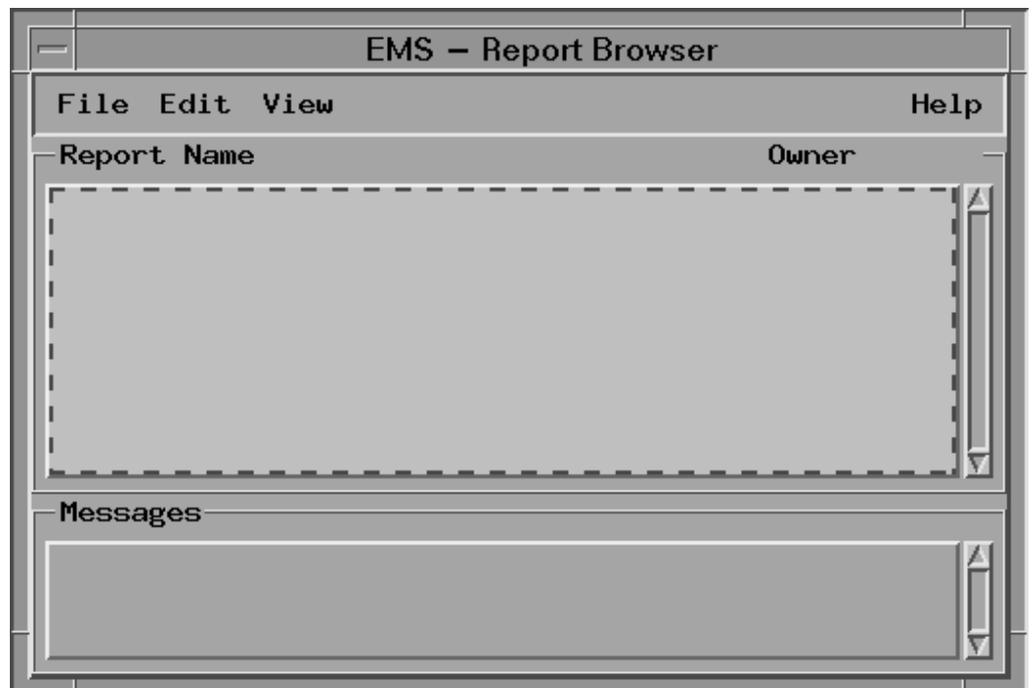


**Fields to Use** Use these fields to determine the print output:

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

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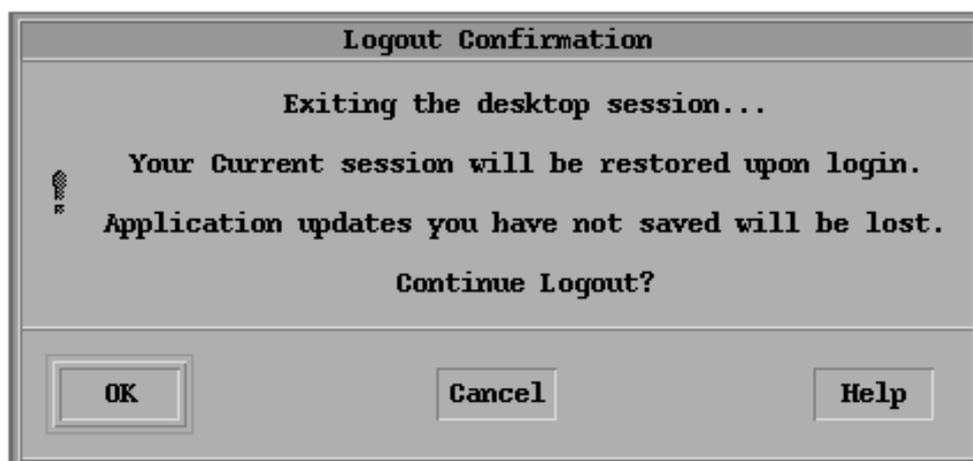
## Logout of the ITM-SC

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**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

---



## Section: ITM-SC Network Map

### Overview

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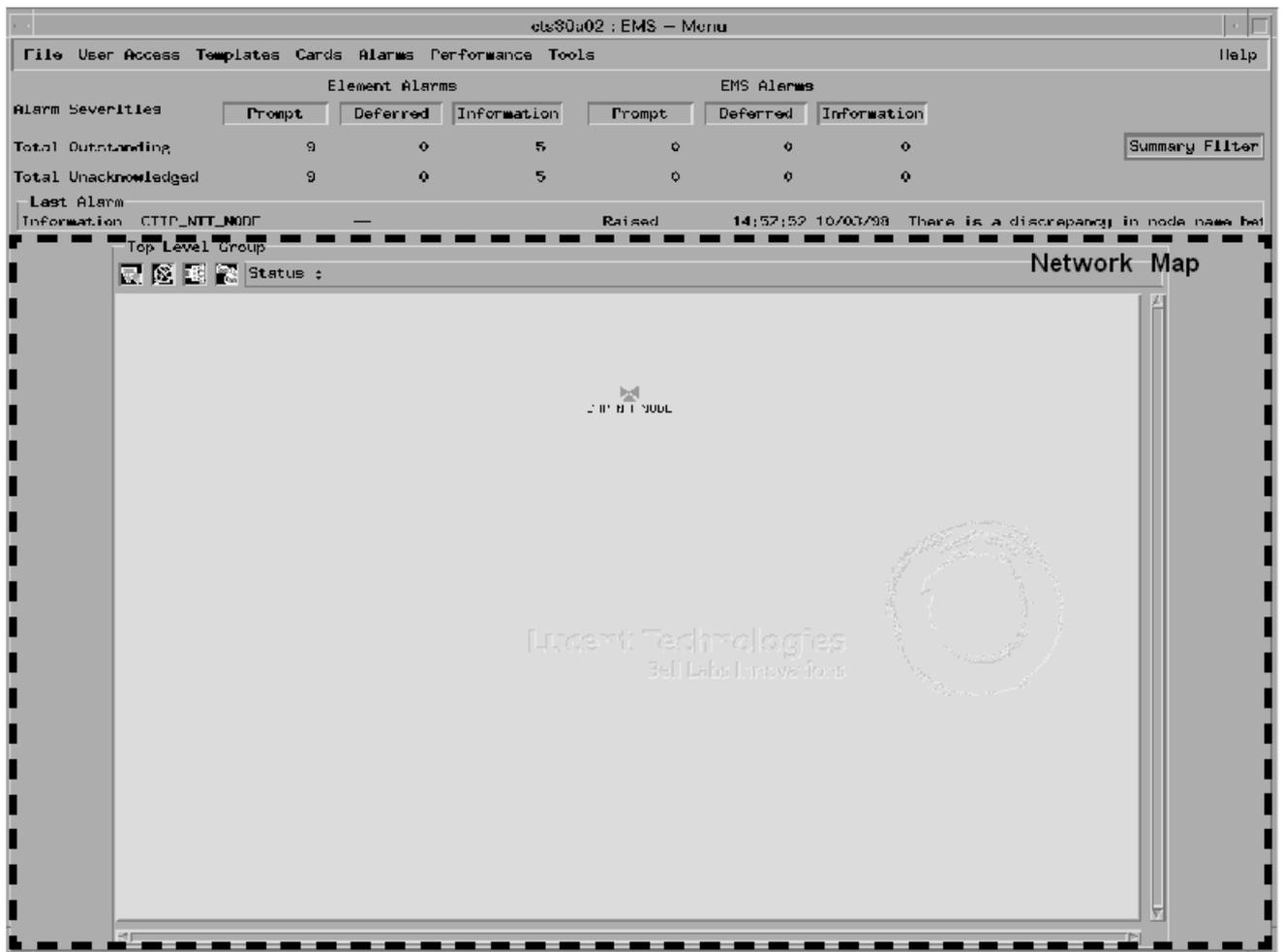
**Purpose** This section will give an description of the features and use of the Network Map as well as provide some tasks to manage the Network Map.



# 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

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**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

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**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.



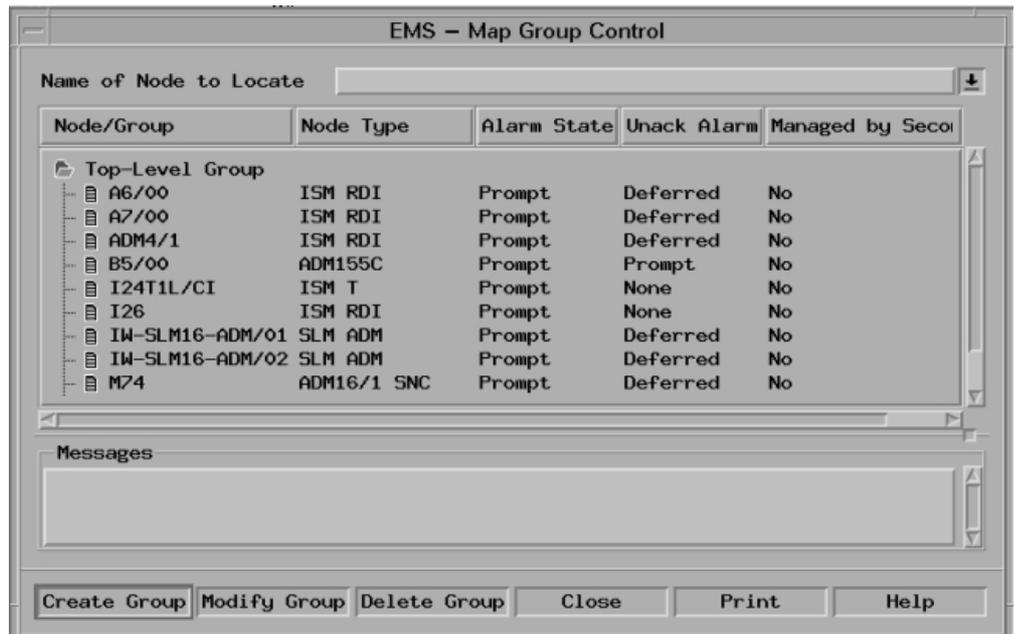
## Windows for Managing Map Groups

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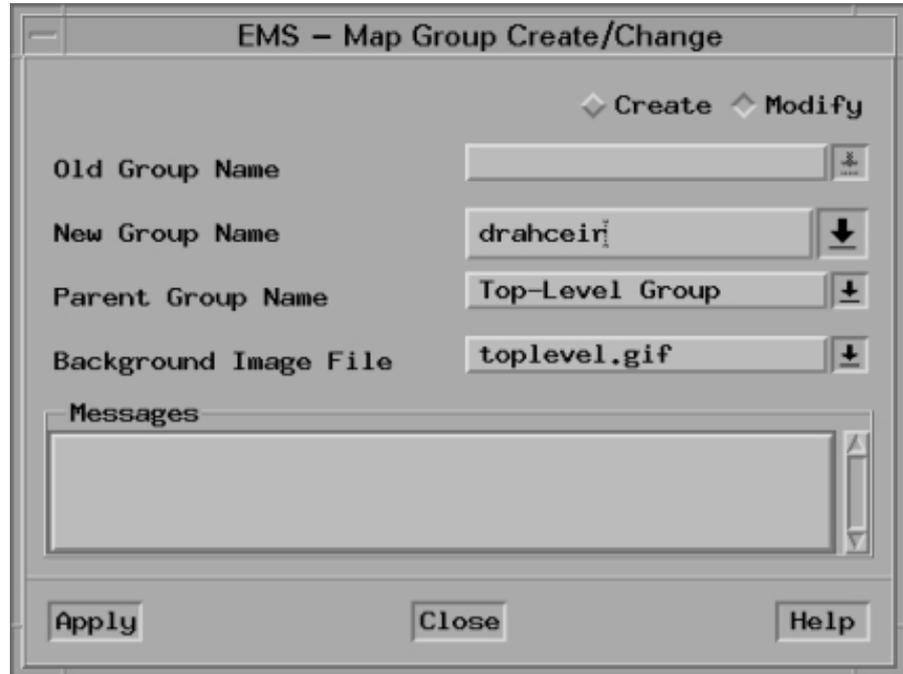
**Windows to use** The windows to be used to managing the Map Groups and their contents are:

- *EMS - Map Group Control.*
- *EMS - Map Group Create/Change.*

### EMS - Map Group Control



**EMS - Map Group  
Create/Change**



□

## Managing Map Groups Procedures

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- 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.

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- 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.

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- 7 Click on the Close button.

**Result:**

The *EMS - Map Group Control* window appears. It is possible to continue to modify Map Groups.

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- 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

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**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.

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- 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.

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- 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

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**Place NEs in Map Groups**

Follow these steps to rearrange network elements in network element groups:

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- 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.

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- 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

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# 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.

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**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.

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**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

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**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

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**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

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**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

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**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.

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**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.

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**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.

**Intergrated 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)

---

**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.

---

**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)**

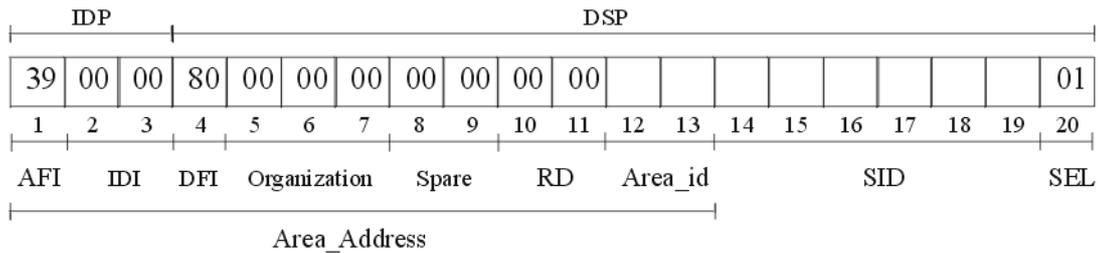
The functionality, database size and processing power required from the ITM-SC is different for each Network Element type supported. Therefore each type represents an amount of Network Element Equivalent.

**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

---

**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)

---

**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)

---

**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)

---

**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

---

**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.

---

**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.





# Index

## A

- Adding Disk Space to Root Volume, [1-81](#)
- Administration module, [4-12](#)
- Alarm Beeping
  - configure, [1-93](#)
- Alarm Color Indication
  - enable modification, [2-111](#)
- Alarm forwarding
  - configure, [2-95](#)
  - enable, [2-95](#)
- Archive disk
  - install, [2-48](#)
  - remove, [2-51](#)

## B

- Background image file, [4-40](#)
- Background Image Map file
  - install, [1-91](#)
- Button names, [4-8](#)

## C

- Cisco router
  - setup, [1-103](#)
- CSL
  - configure, [2-18](#)

## D

- Disk Mirror
  - install, [1-60](#)
  - remove, [2-25](#)
  - setup, [1-63](#)
- Disk replacement
  - replace non-root, [2-28](#)  
[2-32](#)
  - replace root, [2-36](#) [2-42](#)
- Double Alarm Acknowledgment, [3-9](#)
  - configure, [2-92](#)
  - latching, [3-9](#)

## E

- EMS - Menu window, [4-18](#)

## F

- Foreign Language
  - configure, [2-61](#)
- Front panel, [4-3](#)

## G

- Geographic Redundancy
  - configure, [2-85](#)

## H

- Help manager, [4-4](#)

## I

- Installing an ITM-SC Stand-alone, [1-3](#)

## Intranet LAN

- configure on X-Terminal, [2-20](#)

## IP routing, [3-4](#)

- dynamic, [3-5](#)
- static, [3-5](#)

## ITM-NMS/SC Co-resident Server

- install, [1-50](#)

## ITM-NMS/SC Joint Client

- install, [1-53](#)

## ITM-SC

- login, [4-26](#)
- logout, [4-33](#)

## ITM-SC Client

- install, [1-28](#)

## ITM-SC cold stand-by

- configure, [1-69](#)

## ITM-SC Combined Terminal Server

- install, [1-39](#)

## ITM-SC Server

- install, [1-16](#)
- setup to manage WDACS, [1-56](#)

## ITM-SC Server Installation, [1-15](#)

## ITM-SC Stand-alone

- install, [1-5](#)

ITM-SC Windows  
  general, [4-14](#)  
ITM-SC X-Terminal  
  add, [2-9](#)  
  remove, [2-12](#)  
ITM-SC X-Terminal Server  
  install, [1-28](#)

---

**L** Logout of the ITM-SC,  
  [4-32](#)

---

**M** Maintenance Upgrade  
  local, [2-54](#)  
  remote, [2-56](#)  
Management module, [4-11](#)  
Map group, [4-36](#)  
Map groups  
  create, [4-43](#)  
  modify, [4-44](#)  
  place NEs, [4-45](#)  
Menu bar, [4-19](#)  
Modules  
  general, [4-4](#)  
  ITM-SC specific, [4-10](#)  
Mouse usage, [4-8](#)

---

**N** NCD X-Server  
  configure, [2-14](#)

NCD X-Terminal  
  configure, [2-15](#)  
Network Information  
  Service  
  See: NIS  
Network Map, [4-35](#)  
New group name, [4-40](#)  
NIS  
  background, [3-7](#)

  deployments, [3-7](#)

  example, [3-8](#)

  roles, [3-7](#)

NIS Client  
  configure, [2-73](#)  
  remove, [2-7](#)

NIS Master  
  configure, [2-64](#)

NIS Slave  
  configure, [2-68](#) [2-78](#)  
  remove, [2-6](#)

NIS Slave Server  
  add, [2-4](#)

Non ITM-SC Passwords:  
  Changing, [2-114](#)

NTP  
  disable, [2-102](#)  
  enable, [2-101](#)

NTP Server  
  change, [2-104](#)

NTP Source  
  add, [2-100](#)  
  remove, [2-103](#)

---

**O** Old group name, [4-40](#)  
ORBIX  
  load and install, [2-58](#)

---

**P** PAMS report generation  
  configure, [2-87](#)

Parent group name, [4-40](#)

Password  
  change, [4-27](#)  
  change non itm-sc,  
  [2-115](#)

PC as a X-terminal  
  configure, [2-22](#)

Performance Monitoring  
  See: PM

PHASE NE  
  rename, [2-113](#)

PM  
  configure, [2-90](#)

Print manager, [4-5](#)

Printer  
  install, [1-89](#)

---

**R** Remote ITM-SC  
  Installation  
  create software depot,  
  [1-74](#)

  install, [1-77](#)

Report, [4-28](#)

  print, [4-30](#)

  view, [4-31](#)

Root Volume  
  add disk space, [1-81](#)

Router  
  setup Cisco, [1-103](#)

Router Configuration, [3-4](#)

Routing  
  disable dynamic, [1-101](#)  
  remove static, [1-100](#)

  set up dynamic, [1-98](#)

  set up static, [1-97](#)

---

**S** Screen saver, [4-6](#)  
Secure Web Console  
  install, [1-84](#)  
Shutdown Broadcast  
  disabling, [2-108](#)  
  enabling, [2-106](#)

Style manager, [4-5](#)

---

**T** Terminal window, [4-6](#)

Time Zone

change, [2-98](#)

---

**U** Uninterruptible Power  
System  
See: UPS

UPS

install, [1-66](#)

remove, [2-46](#)

UPS Installation, [3-3](#)

parameters, [3-3](#)

---

**W** Workspace switch, [4-5](#)

WS-NMS

configure ITM-SC for,  
[2-82](#)

