

Prepared (also subject responsible if other) EAB/UKX/VL Per Rodenvall		No. 3/1531-ANA 901 03/2 Uen		
Approved EAB/UKX/VLC Håkan Löffberg	Checked uabjda	Date 2003-03-25	Rev D	Reference File

TSP 4.0 - RUNTIME INSTALLATION INSTRUCTIONS

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1 Introduction

The purpose of this document is to provide the instructions to install and to perform general configuration of the proprietary software as well as the third-party software required for the TSP 4.0 Platform including the Network Redundancy and SS7 Stacks.

This document does not cover the installation instructions related to any applications that are loaded on top of TSP 4.0.

WARNING

**This installation procedure should only be performed by
certified installation personnel.**

1.1 Revision information

A	2002-06-05	Imcjowa	TSP 4.0 PRA Release
B	2002-06-10	Imcjowa	Updated with feedback from installation personnel.
C	2002-06-10	Imcjowa	Clarified installation procedures and removed section on editing resolv.conf file.
D	2003-03-25	uabrode	Release of RM446

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1.2 Conventions used in this document

1.2.1 Commands

All commands to be entered by the installer are in **bold**.
Each command is preceded by: <hostname><#>(</#>):<user>>

Where:

<hostname> indicates which IO you have to be connected to.

<#> indicates in which unit the command has to be executed.

</#> indicates on which other unit the command has to be executed.

<user> indicates the user that has to send the command (i.e. root, telorb or omni)

Example:

```
io1:root> cd /opt/telorb
```

Indicates that the '**cd /opt/telorb**' command is issued on IO Processor 1 by the user root.

1.2.2 Editing Files

All lines or parameters to be edited in a file will be enclosed in a shaded box.
Enter the lines or parameters exactly as shown and in the order specified, unless otherwise indicated.

Example:

```
io1/2/3/4:root > echo "Edit telorb's .cshrc file"
```

```
io1/2/3/4:root > vi /export/home/telorb/.cshrc
```

NOTE: Make sure that the following lines are in the file in the order displayed.

```
Set path=(Spath /opt/jre/bin)
setenv JAVA_HOME /opt/jre
```

In the example above, the file '/export/home/telorb/.cshrc' will be edited. In the majority of cases, the parameter, such as 'set path' will already exist but will not be set to the proper value. Search for the string 'set path' and set to the proper value, if the parameter already exists. If the parameter does not exist, add the complete line as displayed.

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1.2.3

Running Scripts

- All scripts that are run from the command line, will be enclosed in an un shaded box.
- Lines that are displayed during execution of the script, will be preceded by ****(?)**.
- Lines that there to provide information, such as parameter selection, will be preceded by **##**.
- Values to be entered by the installer will be in bold.
- Keystrokes to be entered by the installer will be bold and enclosed with **<>**.
- Anything other than a keystroke to be entered, such as a variable, will be in bold and enclosed in **<>**.

Example:

```
io1/2/3/4:root > echo "Execute the install application"
```

```
io1/2/3/4:root > cd /tmp/vbssl
```

```
io1/2/3/4:root > ./installvb
```

```
** (?) -> Hit return to continue... <RETURN>
** (?) -> Please Enter Your Name (q to quit): Ericsson
## -> Select the 1,3 and 5 options from the list to unselect the developer packages.
**      1 <RETURN>
**      3 <RETURN>
**      5 <RETURN>
**      <RETURN>
** (?) -> Enter the Visigenic Smart Agent Port [Default:14000] (q to quit): <JavaSmartAgentPort>
```

In the example above, the first line is displayed and then the installer will hit the **RETURN** or **ENTER** key to continue.

The second line is then displayed and the installer enters **'Ericsson'** and then the **'ENTER'** key.

The third line is not displayed but tells the installer which options to choose to successfully complete the installation. In this case, option **'1'** and then **'RETURN'**, option **'3'** and then **'RETURN'** and so on.

The fourth line is displayed and the installer must enter the value of the variable **'JavaSmartAgentPort'** or the default value, which is **'14000'**.

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1.2.4 Configuration using GUIs

Some sections of the installation will be performed using a Graphical User Interface (GUI). Usually, a script will be started to bring up the GUI and then the installer will proceed by either selecting certain buttons or entering values in a field.

All buttons to be selected will be in bold and will be preceded by 'Select'.

All values to be entered by the installer will be in bold and will be preceded by 'Enter'.

Example:

In the 'Netscape Enterprise Server 4.1' page:

Select: Web Publishing

Select: Web Publishing State

NOTE: Ensure that 'Web Publishing State' is set to ON.

Select: **Search**

NOTE: Ensure that 'Search State' is set to YES.

Select: Content Management

Select: Additional Document Directories

NOTE: Ensure that the following in 'Current Additional Directories' are set to:

Prefix: /help Directory:

/opt/OAM/omlite/client/help

Prefix: /search-ui Directory:

/opt/netscape/enterprise/plugins/search/ui

Note: If the prefixes are not set to the proper directory path, then edit the prefix to reflect the paths above.

Enter: <**Directory**> path as displayed above

Select: **OK**

Select: Save and Apply

NOTE: Wait for 'Your changes have been saved and applied.' Message

Select: **OK**

In the example above, the installer will click on each button in **bold** which follows 'Select:'

The installer will then enter the proper directory paths as displayed and then continue by selecting '**OK**' and then '**Save and Apply**'.

1.2.5 Actions required by the installer

In some instances throughout this installation, manual intervention will be required by the installer. All actions to be performed by the installer will be preceded by '**ACTION:**'.

Example:

ACTION: Connect a cable from the serial port of the kickstart machine to v.24 port of the Traffic Processor.
In the example above, the installer must perform the action as instructed.

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2 KickStart server installation

A cluster consists of two parts: boot-servers (IO) and clients (Traffic Processors). Generally one or two boot-servers are used to serve a number of (disk-less) clients. The servers are running Linux and contain all the software and configuration data, of which the clients download a subset. To make an initial installation of the boot-servers, an external boot-server (KickStart server) is temporary connected to the cluster. Both the KickStart and the Boot server have a standard RedHat 7.1 Server installation with patches and some extras related to TSP4.0.

2.1 Prerequisites

The kickstart server should be installed on a standard PC equipped with an Ethernet Card. You will also need information about the video board and connected display during the setup procedure.

2.1.1 Software

Before the installation you need to prepare three CDs with the following software packages.

- 190 89-LZN 901 0253/1 Rev A - RedHat 7.1 CD1
- 190 89-LZN 901 0253/2 Rev A - RedHat 7.1 CD2
- 29/190 89-LZN 901 0214/6 Rev B - TSP 4.0 Runtime Distribution CD3

ACTION: Download the Redhat 7.1 software and TSP4.0 runtime distribution and create/burn the corresponding three(3) CD's. Contact the local Ericsson support organization or download it from the following url:
<http://gask2web.ericsson.se>

2.1.2 Hardware Equipment

- Standard PC with a CDROM and a single 100Mbps Ethernet interface
- 9-pin serial null-modem cable.
- Cat5 Ethernet cable.
- PC or Laptop (Minimum: Pentium II, 256MB Memory, 5 GB Hard Disk)

2.2 Installing RedHat Linux 7.1

This chapter covers the installation of the Linux operating system for the kickstart server. Even if Linux is already installed, you need to reinstall to ensure that you get the correct version and the correct installation options.

The following headings refer to headings on the screen during the installation of Red Hat. After each action in the list below you continue to the next step by clicking the **Next** button (even if not stated in the following description).

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ACTION: Insert Red Hat CD1 in the CD drive and restart the PC.

Configure the BIOS to boot from the CD first. The procedure for this may differ depending on the type of PC, normally the F2, DEL or Backspace key is used. When leaving the BIOS setup the PC will boot from the RedHat 7.1 CD1.

Press Enter at the '**boot:**' prompt to enter the graphical installation mode.

1. Language Selection
Select: **English**
2. Keyboard Configuration
Select the appropriate keyboard layout...
(e.g. "Generic 105-key (Intl) PC", "English", "Enable dead keys")
3. Mouse Configuration
Select the appropriate mouse...
(e.g. "Microsoft/IntelliMouse(PS/2)")
4. Welcome to Red Hat Linux
Select: **Next**
5. Install Type
Select: Server System
6. Disk Partitioning
Select: Manually partition with Disk Druid

Delete all existing partitions and add new partitions according to following partition scheme in Table 1.

MOUNT POINT	SIZE	FILESYSTEM TYPE
/boot	128 MB	Linux Native
<Swap Partition>	511 MB	Linux Swap
/	1 MB + remaining space	Linux Native

7. Choose Partitions to format

The partitions (/ and /boot) are selected. Mark **Check for Bad Blocks while formatting**.

8. Network Configuration
Untick: Configure using DHCP
Tick: Activate on boot
Set IP address to: **192.168.11.1**
Set netmask to: **255.255.255.0**
Set network to: **192.168.11.0**
Set broadcast to: **192.168.11.255**
Set an appropriate hostname: **kicksrv**

NOTE: Leave the **Gateway** and **DNS** entries empty.

Network configuration for additional interfaces.
If not applicable, go to step 9.
If there is more than one interface on the PC the other interface may be configured towards another network. Contact the administrator of the network for a proper configuration

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for this network. Set the appropriate IP Address, netmask, network, broadcast, gateway and DNS.

9. Firewall Configuration
Select: No firewall

10. Language Selection
Leave "Choose the default language:" as "English (USA)".
Select the languages you want to include, but make sure to include "English (USA)".

11. Time Zone Selection
Tick: System clock uses UTC
Select appropriate time zone :(e.g. **Europe/Stockholm**)

12. Account Configuration
Enter a root password (e.g. **rootroot**) and add one or more normal users of which one must be telorb.

USER	PASSWORD	IDENTITY
telorb	tel123orb	telorb

13. Package Group Selection
Select the following packages:
• X window System
• GNOME
• KDE
• NFS Server
Tick: Select individual packages

14. Select Individual Packages and add the dialog package
Tick: Applications/System/dialog

15. X Configuration
Do not make any X configuration changes.

16. Monitor Configuration
Make the appropriate Monitor configuration

17. Customize Graphics Configuration
Make the appropriate configuration. It is recommended to test the configuration before proceeding.

18. About to Install
Click: **Next**

19. Installing packages
The file systems will now be formatted. The time it takes to complete formatting will depend on the size of the hard disk.
You can follow the progress of the installation on the screen and will be prompted to change to Red Hat CD2. Wait for the installation to complete (This should take approximately 10 minutes).

20. Bootdisk Creation
Tick: Skip bootdisk creation

21. Congratulations
Click: **Exit**
The CD should automatically be ejected, if not manually eject the CD by pressing the eject button on the PC.

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ACTION: Remove the CD.

NOTE: The PC should now reboot, but some machines may need manual intervention to complete this step. Once the PC has successfully re-booted continue to the next section.

2.2.1 Re-install pcmcia drivers (if necessary)

NOTE: If kickstart server are installed on a laptop, with pcmcia card and ethernet fails then do the following:

```
[kicksvr]:root> ifconfig -a
```

If no ip-address then re-install pcmcia.

ACTION: Insert RedHat 7.1 CD1 into cd drive

```
[kicksvr]:root> /mnt/cdrom/RedHat/RPMS/rpm -ivh kernel-pcmcia-cs-3.1.24-↔  
2.i386.rpm
```

```
[kicksvr]:root> init 6
```

2.2.2 Check and Correct System Clock

The system clock is set according to the hardware clock in the BIOS.

Check the time:

```
[kicksvr]:root> date
```

If the time needs to be modified, set the date and time by the command:

```
[kicksvr]:root> date <MMDDhhss>
```

(e.g. date 11262354 for Nov 26 23:54)

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2.3 Installing RM on KickStart server

2.3.1 Installing RedHat 7.1 upgrades and TSP 4.0 extra software

Login to the KickStart server as root user and start a terminal window (xterm).

ACTION: Insert CD3 and copy the contents to /tmp.

```
[kicksvr]:root> cp /mnt/cdrom/*.* /tmp
```

```
[kicksvr]:root> cd /tmp
```

```
[kicksvr]:root> gtar -zxvf <TSP4.0 distribution>.gtar.gz
```

```
[kicksvr]:root> chown -R telorb:telorb TSP-4.0-RM446-1-0
```

```
[kicksvr]:root> chmod -R 775 TSP-4.0-RM446-1-0
```

```
[kicksvr]:root> rm <TSP4.0 distribution>.gtar.gz
```

```
[kicksvr]:root> cd TSP-4.0-RM446-1-0/system/unix
```

```
[kicksvr]:root> tar -C /opt -xpf IO-KickStart-P1A23-2.tar
```

```
[kicksvr]:root> tar -C /opt -xpf RedHat-7.1-Upgrade-R1A02.tar
```

```
[kicksvr]:root> cp -a tools.CXP901305.R1X01.tar /opt/OS/tar/
```

```
[kicksvr]:root> cd /opt/OS/tar
```

```
[kicksvr]:root> ln -s tools.CXP901305.R1X01.tar tools.tar
```

Eject the CD (To remove a cd, right click on the CD icon and select EJECT.)

2.3.2 Run the installation script

```
[kicksvr]:root> /opt/OS/install/ks-install.sh
```

Follow the instructions from the script.

When you receive "Do you wish to run /mnt/cdrom/autorun?" answer: No.

The complete Linux System is now copied into the hard disk and all the required services are installed and configured. However due to a kernel upgrade, a reboot is required, thus the script will finish by rebooting the server.

The KickStart Server installation is now completed.

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3 IO-Processor installation

This section describes how to install the IO-processors using the KickStart server.

To make an initial installation of the IO Processors the KickStart-server is temporary connected to the cluster. The IO processors are temporarily reconfigured to act as a clients during this installation procedure. The boot is done with the PXE boot procedure from the network and started in a Linux environment in RAM in order to load information into the disks.

3.1 Prerequisites

A KickStart-server must have already been installed according to the procedure in section 2 "KickStart server installation".

The following equipment will be needed:

- KickStart Server
- Cat5 Ethernet cable
- 9-pin serial null-modem cable
- Laptop (optional)

3.2 Preparing the telorb.conf file

Select the appropriate telorb.conf template file according to your hardware configuration. The telorb.conf template files can be obtained by extracting the TSP4.0 Runtime Distribution in the KickStart server or any other host.

The template files can be found in the directory :
<Path to TSP4.0 Runtime Distribution>/config/telorb_conf.

3.2.1 Preparation Check List

To be able to modify a telorb.conf template file to suit the target zone, the following information about the zone needs to be known:

- If Geographical Network Redundancy will be used, i.e. if the TelORB system will consist of one or two zones.
- The hardware configuration of the target zone, i.e. if GEM-MICRO, GEM-MINI, GEM-MIDI or GEM-MAXI will be used. See ref[3].
- MAC addresses of all interfaces on all processors.

IMPORTANT: If you are using the console printouts to obtain the MAC address, use the MAC Address that is printed out in lower case letters (for example, 00:8b:3e:8f:34:1a) corresponding to the ethernet interface (e.g. eth0, eth1, etc...) and NOT the MAC address that is printed in upper case (for example, 00:8B:3E:8F:34:1A).

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- Data about the external network(s) to be connected to eth2 and eth3 on the IO processors, i.e. subnet, netmask, default gateway and broadcast.
- Which operating system that should run on which TelORB processor, i.e. Dicos or Linux OS.
- If VIP will be used, the following must be known:
 - 1 The IP addresses of the VIP nets. (If the VIP routers have not yet been configured, telorb.conf template files contain default values for the VIP nets, which later can be used when configuring the VIP routers.)
 - 2 The IP addresses of the VIP router links. (If the VIP routers have not yet been configured, the telorb.conf template files contain default values for the VIP router links, which later can be used when configuring the VIP routers.)
- If file servers will be used (only valid for GEM-MINI, GEM-MIDI and GEM-MAXI) it must be known which PMD-ETH processor boards that should be configured.
- The IP-address(es) of the External Time Server(s).

3.2.2

Select telorb.conf Template File to Use

The telorb.conf template files are written to correspond to the standardized GEM hardware configurations and zone names. The choice of telorb.conf template file therefore depends on the following:

1. The system configuration, i.e. if the target TelORB system consists of one or two zones.
 - One zone: Use a template file for zone 1.
 - Two zones (network redundant system): Two telorb.conf files have to be used, i.e. use one template file for zone 1 and one template file for zone 2.
2. The hardware configuration of the target zone, i.e. if GEM-MICRO, GEM-MINI, GEM-MIDI or GEM-MAXI is used

The following telorb.conf template files are available in the

<Path to TSP4.0 Runtime Distribution>/config/telorb_conf:

- GEM-MICRO, Zone 1: r14_linux_micro_zone1.telorb.conf.template
- GEM-MICRO, Zone 2: r14_linux_micro_zone2.telorb.conf.template
- GEM-MINI, Zone 1: r14_linux_mini_zone1.telorb.conf.template
- GEM-MINI, Zone 2: r14_linux_mini_zone2.telorb.conf.template
- GEM-MIDI, Zone 1: r14_linux_midi_zone1.telorb.conf.template
- GEM-MIDI, Zone 2: r14_linux_midi_zone2.telorb.conf.template
- GEM-MAXI, Zone 1: r14_linux_maxi_zone1.telorb.conf.template
- GEM-MAXI, Zone 2: r14_linux_maxi_zone2.telorb.conf.template

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3.2.3 Modify the telorb.conf File

Each telorb.conf template file is divided into two main parts, "SITE DEPENDENT CONFIGURATIONS" and "CONFIGURATIONS WHICH MUST NOT BE CHANGED".

Rename the selected telorb.conf template file , r14_linux*.template, to telorb.conf.

```
[kicksvr]:root> mv r14_linux*.template telorb.conf
```

Adjust the site dependent configuration values in the fetched telorb.conf file to suit the target zone towards which the telorb.conf file will be used. Detailed instructions about which configuration values that have to be adjusted can be found in the fetched telorb.conf file.

It is enough to modify one telorb.conf file to configure both IO processors located in the same zone. After the adjustments, it is time to configure the IO processors using the modified telorb.conf file.

IMPORTANT: If the PM-E1/T1(SS7) boards are to be used to carry SS7 traffic at a later date, make sure that the PM-E1/T1 (SS7) boards are NOT defined as Linux traffic processors, they must be defined as Dicos processors.

Once the telorb.conf file has been updated, ftp/copy it to /opt/OS in the kickstart server.

3.3 Kickstart IO Processors

3.3.1 Selecting the kickstart configuration file for IDE Hard Disks

Default configuration in IO has SCSI disks (cPCI-MXS64GX), but some early TSP releases has IDE disks (cPCI-MXP64GX). If a TSP node are equipped with IDE disks, DHCP configuration file needs to be changed.

If the IO's do have IDE disks, the /etc/dhcpd.conf in the kickstart sever must be edited. Otherwise, proceed to the next section.

DO NOT PERFORM THE FOLLOWING STEP IF YOU HAVE SCSI HARD DISKS.

```
[kicksvr]:root> vi /etc/dhcpd.conf
```

**** For each interface change the lines**

`"/opt/TSP-4.0/kickstart/ks-io-scsi-eth0.cfg";`

to

`"/opt/TSP-4.0/kickstart/ks-io-ide-eth0.cfg";`

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3.3.2 Set the IO identity

Enter the id of the IO1-Processor that will be kickstarted. Enter 1 for IO1.

```
[kicksvr]:root> vi /opt/OS/IO.id
```

1

3.3.3 Check resolv.conf file

If you have additional network interface and set DNS on that interface, you may get /etc/resolv.conf file. Move it temporarily to another name, e.g. resolv.conf.orig, then reboot the kick start server.

3.3.4 Connect KickStart server to IO1 magazine

ACTION: Connect an ethernet cable from the kickstart server to “TEST” port on GEM cabinet (SCB on the right in the same magazine as IO). Pull out all other io:s to prevent io1 to boot from other io:s (should boot from kickstartserver).

3.3.5 Connect console port on IO

ACTION: Connect serial communications port in kickstart server (or a laptop) to V.24 serial port on IO, with serial null-modem cable.

INFO: This is to see the logs during the installation ONLY.

Use minicom if using the kickstart server (See Appendix 7.4.1 LINUX: MINICOM) or hyperterminal from a laptop running windows NT.

3.3.6 Changing IO BIOS Settings to boot from LAN

Reset the IO processor and configure the board's BIOS to boot from LAN 2-1 by doing the following steps:

1. Enter the BIOS setup menu by pressing the **DEL** (or **Backspace**) character in console window.
2. Go to the “BIOS FEATURES SETUP” menu (“Virus Protection, Boot Sequence...”) by pressing the ‘down arrow’ key once and press **Enter**.
3. Select “**Boot from LAN first**” by pressing the ‘down arrow’ key 4 times.
4. Change BIOS boot location to **LAN 2-1** by pressing the ‘+’ or ‘-’ key.
5. Quit the “BIOS FEATURES SETUP” Menu” by pressing the **Esc** key.

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6. Go to "SAVE & EXIT SETUP" menu ("Save Data to CMOS & Exit SETUP") by pressing the 'up arrow' 3 times and press **ENTER**
7. Answer 'y' to "SAVE to CMOS & EXIT (Y/N)?" and press **ENTER**

Once the BIOS settings are saved, the processor will reboot and start the software installation.

3.3.7 Software Package Installation

You can follow the progress of the installation which will be done in the following main steps:

1. Starting the Linux kernel and fetching KickStart configuration.
2. RedHat: Formatting file systems
3. RedHat: Package installation
4. RedHat: Post Install
5. TSP 4: Configurations
6. TSP 4: Mounting KickStart Server
7. TSP 4: Applying RedHat patches
8. TSP 4: Installing RPMS
9. TSP 4: Host Configuration
10. TSP 4: Installing KickStart files
11. TSP 4: Installing tools.tar

Note:

If install does not start, verify that PXE and DHCP daemons are running on the kickstart server.

```
[kicksvr]:root> ps -ef | grep -i pxe
```

If PXE are not started try to restart PXE.

```
[kicksvr]:root> service pxe restart
```

```
[kicksvr]:root> ps -ef | grep -i dhcpd
```

If DHCPD are not started try to restart DHCPD.

```
[kicksvr]:root> service dhcpd restart
```

Before kickstart IO, make sure file /etc/resolv.conf is empty. If not, move it so /etc/resolv.conf.orig.

```
[kicksvr]:root> cat /etc/resolv.conf
```

Wait for the installation to complete.

INFO: When IO installation is completed, you will see the "Congratulations" dialogue.

If IO1 has just been kickstarted:

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ACTION: Disconnect the Kickstart Server by removing the Ethernet connection between the cabinet and the kickstart server. Once this is done, press **Enter** from the console to reboot the IO processor and change the BIOS settings back to boot from hard disk by following the steps in the next section.

If IO2 has just been kickstarted:

ACTION: Press **Enter** from the console to reboot the IO processor and change the BIOS settings (interrupt boot with DEL) back to boot from hard disk by following the steps in next section.

3.3.8 Resetting the IO BIOS Settings to boot from Hard Disk

1. Enter the BIOS setup menu by pressing the **DEL** (or backspace) character in the terminal window.
2. Go to the “BIOS FEATURES SETUP” menu (“Virus Protection, Boot Sequence...”) by pressing the ‘down arrow’ key once and press **Enter**.
3. Select “**Boot from LAN first**” by pressing the ‘down arrow’ key 4 times.
4. Change the BIOS boot location to **None** by pressing the ‘+’ or ‘-’ key
5. Quit the “BIOS FEATURES SETUP” Menu” by pressing the **Esc** key.
6. Go to the “SAVE & EXIT SETUP” menu (“Save Data to CMOS & Exit SETUP”) by pressing the ‘up arrow’ 3 times and press **ENTER**
7. Answer ‘y’ to “SAVE to CMOS & EXIT (Y/N)?” and press **ENTER**

Once the BIOS settings are saved, the processor will reboot.

3.3.9 Installation Complete

After reboot, the IO installation is complete. The IO is installed with a default root password “rootroot” and a default telorb password “tel123orb”.

3.3.10 Kickstart IO2 from IO1

If IO2 has not been kickstarted yet, proceed with this section. Otherwise, go to the next section.

ACTION: Make sure that the Kickstart Server is disconnected from the cabinet.

Once IO1 has been successfully kickstarted, IO1 will act as the kickstart server for IO2.

In order to kickstart IO2, follow the installation steps starting from section [] [Connect console port on IO](#) [3.3.5] .

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3.4 Configure IO1 and IO2

Once the IO:s are installed successfully, proceed with setting the proper time and timezone.

IMPORTANT: This section should be performed on both IO1 and IO2

3.4.1 Start the timeconfig utility

Login to the IO as telorb and change to root user.

```
io1/2:telorb> su -
```

```
io1/2:root> cd /usr/sbin
```

```
io1/2:root> ./timeconfig
```

Set Hardware clock to GMT

The 'Configure Timezones' GUI will appear.

The cursor will immediately be in the 'Hardware clock set to GMT' section.

Enter: <Space Bar> until a '*' appears in the [].

Select Local TIMEZONE

In the 'Configure Timezones' GUI:

Enter: <Tab> key to move into the list of timezones

Enter: Move the <Up> and <Down> arrow keys until your local timezone is highlighted

Save the settings:

Enter: <Tab>

Enter: <Enter> key to select OK

3.4.2 Set the date and time

```
io1/2:root> date
```

NOTE: If the time and/or the date is incorrect, set it:

```
io1/2:root> date MMDDhhmm
```

Note:

MM is the Month (12 for December)

DD is the Date

hh is the hour

mm is the minute

```
io1/2:root> exit
```

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3.4.3 Define the default gateway on the IO

A route to a gateway router can be defined by adding the gateway IP-address in the /etc/sysconfig/network-scripts/ifcfg-eth2/3 file.

Update the ifcfg-eth2 or ifcfg-eth3 file using eth2 or eth3 whichever is currently used to reach the IO from the external network.

```
io1/2:telorb> su -
```

If eth2 is used as the interface to access the external network from the IO:

```
io1/2:root> vi /etc/sysconfig/network-scripts/ifcfg-eth2
```

```
# Add the following to the file where GATEWAY = IP Address of the Gateway #
GATEWAY= <Gateway IP Address>
```

If eth3 is used as the interface to access the external network from the IO:

```
io1/2:root> vi /etc/sysconfig/network-scripts/ifcfg-eth3
```

```
# Add the following to the file where GATEWAY = IP Address of the Gateway #
GATEWAY= <Gateway IP Address>
```

Check the routing table before restarting the network service.

```
io1/2:root> netstat -rn
```

Restart the network services.

```
io1/2:root> service network restart
```

Check the routing table and verify that the default gateway is now defined. Look for 0.0.0.0 under the Destination column and the gateway IP Address under the Gateway column.

```
io1/2:root> netstat -rn
```

3.4.4 Create .telnetrc file

Create a .telnetrc file which is useful for the xterm console logs.

```
io1/2:telorb> vi /home/telorb/.telnetrc
```

```
# Add the following to the file in IO1 #
io1 unset interrupt
# Add the following to the file in IO2 #
io2 unset interrupt
```

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3.4.5 Update PATH in .bash_profile

```
io1/2:telorb> vi /home/telorb/.bash_profile
```

Append the following parts in bold to PATH parameter

```
PATH=$PATH:$HOME/bin:sbin:/opt/telorb/codearchive/iom_scripts: /opt/java/bin
```

3.5 Upgrade SCB/GESB FW

3.6 Upgrade SCB/GESB Loadable Software

NOTE: The SCB/GESB loadable software needs to be upgraded. The software is contained within the **tools.CXP901305.R1X01.tar**.

The SCB/GESB software is upgraded by rebooting the SCB/GESB.

ACTION: For each SCB and GESB in the cabinet, remove them one by one (one by one to keep power in magazine) from their slots for 10 seconds and plug them back. Make sure all the screws are fastened. Once the board is plugged back in, the new software will automatically be downloaded from the IO.

3.6.1 Verify that each SCB/GESB is alive.

Ping each SCB and GESB.

```
io1:telorb> ping [IP_Address_Network_A_for_each_SCB/GESB]
```

```
io1:telorb> ping [IP_Address_Network_B_for_each_SCB/GESB]
```

3.7 Configuring SSH

The SSH Client (/usr/bin/ssh) is a program for connecting to a remote host and executing commands on that host. It replaces tools such as telnet, rlogin, rsh, and provides secure encrypted communications between two untrusted hosts over an insecure network. X11 connections and arbitrary TCP/IP ports can also be forwarded over the secure channel.

3.7.1 Generating private and public key pairs

From an SSH Client, login to IO1 as "telorb", using password based authentication for example:

```
[ssh client]> ssh telorb@host io1]
```

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Generate DSA Key Pairs for User "telorb"

```
io1:telorb> /usr/bin/ssh-keygen -b 1024 -t dsa
```

- 1) Generating public/private dsa key pair.
- 2) Enter file in which to save the key (/home/telorb/.ssh/id_dsa):
[Press ENTER]
- 3) Enter passphrase (empty for no passphrase): [Press ENTER]
- 4) Enter same passphrase again: [Press ENTER]
- 5) Your identification has been saved in /home/telorb/.ssh/id_dsa.
- 6) Your public key has been saved in /home/telorb/.ssh/id_dsa.pub.
- 7) The key fingerprint is:
- 8) 35:1b:ba:0b:94:a8:2b:d8:9e:a5:99:76:62:63:f7:f5 telorb@io1.localdomain

3.7.2

Generate DSA Key from IO2

From an SSH Client, login to IO2 as "telorb", using password based authentication for example "ssh telorb@host_io2"

Generate DSA Key Pairs for User "telorb"

```
io2:telorb> /usr/bin/ssh-keygen -b 1024 -t dsa
```

- 1) Generating public/private dsa key pair.
- 2) Enter file in which to save the key (/home/telorb/.ssh/id_dsa):
[Press ENTER]
- 3) Enter passphrase (empty for no passphrase): [Press ENTER]
- 4) Enter same passphrase again: [Press ENTER]
- 5) Your identification has been saved in /home/telorb/.ssh/id_dsa.
- 6) Your public key has been saved in /home/telorb/.ssh/id_dsa.pub.
- 7) The key fingerprint is:
- 8) 35:1b:ba:0b:94:a8:2b:d8:9e:a5:99:76:62:63:f7:f5 telorb@io1.localdomain

3.7.3

Copy telorb public key from IO1 to IO2

```
io1:telorb> scp /home/telorb/.ssh/id_dsa.pub ↔  
io2:/home/telorb/.ssh/authorized_keys2
```

3.7.4

Copy telorb public key from IO2 to IO1

```
io2:telorb> scp /home/telorb/.ssh/id_dsa.pub ↔  
io1:/home/telorb/.ssh/authorized_keys2
```

INFO: At this point, public key authentication is enabled and since the keys were created with an empty passphrase, it should be possible for the telorb user to login to IO2 from IO1 (and vice versa) without being prompted for a password.

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3.7.5 Verify that ssh works without passwords between IO1 and IO2

```
io1:telorb> ssh io2
```

```
io1:telorb> exit
```

```
io2:telorb> ssh io1
```

```
io2:telorb> exit
```

3.7.6 Change default shell for telorb user

```
io1/io2> su -
```

```
io1/io2> vi /etc/passwd
```

```
# Change /bin/csh to /bin/bash
```

```
telorb:x:101:501:TelORB user:/home/telorb:/bin/bash
```

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4 TSP4.0 RUNTIME DISTRIBUTION Software Configuration

4.1 Preparing the telorb.epct file

4.1.1 TSP 4.0 Software Release Versions

The TSP 4.0 platform software can be referenced by the product number, **ANA/90103/2**. Each Release Message (RM), Change Message (CM) or Emergency Correction (EC) can be identified by the ANA/90103/2 version.

The software version can be activated by setting the default version of the software distribution to the desired product versions. Table 1 is to be used to determine what software level is to be activated for a particular release.

TSP 4.0 Software Release	ANA/90103/2 Version
RM446 (Baseline)	R4B02

Table 1 TSP 4.0 Product Versions

4.1.2 Untar TSP4.0 Runtime Software to IO1

Before starting this section, make sure that all the IO's have been kickstarted with the latest TSP4.0 kickstart server files. Download/Copy <TSP4.0 distribution>.gtar.gz file to /home/telorb in IO1.

ACTION: Download/Copy the TSP4.0 Runtime Distribution to /home/telorb in IO1

```
io1:telorb> cd /home/telorb
```

```
io1:telorb> su
```

Untar TSP 4.0 Runtime Distribution software:

```
io1:root> gtar -zxvf <TSP4.0 distribution>.gtar.gz
```

```
io1:root> chown -R telorb:telorb TSP-4.0-RM446-1-0
```

```
io1:root> chmod -R 775 TSP-4.0-RM446-1-0
```

```
io1:root> rm <TSP4.0 distribution>.gtar.gz
```

```
io1:root> exit
```

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4.2 Create the telorb.epct file

The following are the 4 standardized GEM hardware configurations available for TSP 4.0:

- **GEM-MICRO**: Consists of 10 Pentium processors of which 2 are used as IO processors. The 2 IO processors are located in magazine 0, slots 1 & 5. The 2 TelORB processors, used as Dicos loaders, are located in magazine 0, slots 9 & 11.
- **GEM-MINI**: Consists of 21 Pentium processors of which 2 are used as IO processors. The 2 IO processors are located in magazine 1, slot 1 and in magazine 2, slot 1, respectively. The 2 TelORB processors, used as Dicos loaders, are located in magazine 0, slot 9 and in magazine 1, slot 9, respectively.
- **GEM-MIDI**: Consists of 31 Pentium processors of which 2 are used as IO processors. The location of the 2 IO processors and the 2 TelORB processors, used as Dicos loaders, is the same as for GEM MINI.
- **GEM-MAXI**: Consists of 42 Pentium processors of which 2 are used as IO processors. The location of the 2 IO processors and the 2 TelORB processors, used as Dicos loaders, is the same as for GEM MINI.

The telorb.epct template file should be selected based on the hardware configuration that TSP4.0 is to be installed on.

4.2.1 Preparation Check List

To be able to modify an epct template file to suit the target zone, the following information about the zone is necessary to know (in following order in the epct file):

- If Geographical Network Redundancy will be used, i.e. if the TelORB system will consist of one or two zones.
- The hardware configuration of the target zone(s), i.e. if GEM-MICRO, GEM-MINI, GEM-MIDI or GEM-MAXI will be used.
- The name of the target zone.
- Which operating system that should run on which TelORB processor, i.e. Dicos or Linux OS.
- If Database Disk Logging will be used. (Database Disk Logging allows changes to selected persistent data, stored in the TelORB database, to be logged to hard disks on the IO processors. This can be used by applications to make sure that all updates to critical information, such as subscriber account payments in a prepaid system, will be recovered even if the entire zone should reload.)
- If VIP will be used, the following must be known:
 1. The IP addresses of the VIP router links. (If the VIP routers have not yet been configured, the epct template files contain default values for the VIP router links, which later can be used when configuring the VIP routers.)
 2. The VIP address of the zone.

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- MAC addresses of all interfaces on all processors.
IMPORTANT: If you use the console printouts to obtain the MAC address, use the MAC Address that is printed out in lower case letters (for example, 00:8b:3e:8f:34:1a) corresponding to the ethernet interface (e.g. eth0, eth1, etc...) and NOT the MAC address that is printed in upper case (for example, 00:8B:3E:8F:34:1A).
- Time zone and daylight saving times at the zone location.
- IP addresses of the remote DNS servers.
- IP addresses of the external interfaces of the IO processors.
- If file servers will be used (only valid for GEM-MINI, GEM-MIDI and GEM-MAXI) it must be known which PMD-ETH processor boards that should be configured. In addition to the items listed above, the sizes of the Java Heap, Java Capsule Heap and Java Permanent Heap may have to be adjusted to suit your applications.

Create a telorb.epct file using the epct template file and add your specific VIP configuration. The epct template file can be found in the directory <Path to TSP4.0 Distribution>/config once the TSP4.0 runtime distribution has been extracted in /home/telorb.

The Node Management Pools for the epct files need to be modified in the telorb.epct according the guidelines specified in the “POOL DISTRIBUTION” part of Appendix A.

IMPORTANT: If the PM-E1/T1(SS7) boards are to be used to carry SS7 traffic at a later date, make sure that the PM-E1/T1 (SS7) boards are NOT defined as Linux traffic processors, they must be defined as Dicos processors.

ACTION: Once the telorb.epct has been updated, make sure it is copied to /opt/telorb/system in IO1.

```
io1:telorb> cp telorb.epct /opt/telorb/system
```

4.3 Install TSP 4.0 RUNTIME DISTRIBUTION software

4.3.1 Create setup.csh file in IO1

Create a setup.csh file

```
io1:telorb> mkdir -p /opt/telorb/config
```

```
io1:telorb> vi /opt/telorb/config/setup.csh
```

Add/Remove/Modify any elements in the setup.csh required by the application.

NOTE: The IP Addresses used in “win” may need to be modified depending on the specific hardware configuration. They are IP Addresses for the initial loader and loader.

```
#!/bin/csh -x
```

```
# TelORB Distribution
```

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```

set TELORB_VERSION = TSP-4.0-RM446-1-0
# User's development environment configuration (Do not Change)
setenv EP_WORKSPACE /opt/telorb/config
# User's system compiled application.
# It defines the parent directory of the 'loadingGroup' directory.
setenv DICOS_FILESYSTEM_ROOT /opt/telorb/axe
# TelORB Distribution
set TELORB_ROOT = /home/telorb/STELORB_VERSION
pushd $STELORB_ROOT > /dev/null
source ./setup.csh
popd > /dev/null
alias epct epct -f loadingGroup01_1 -f loadingGroup01_2 -d /opt/telorb/axe -Fv
# win for a Mini/Midi/Maxi Configuration
alias win /opt/telorb/codearchive/iom_scripts/win -th 172.16.0.9 -th 172.16.8.9 -th 172.16.0.11 -th 172.16.8.11 -n -s
echo -n "TSP 4.0 Software Level = ANA/90103/2 "
epgetattr version ANA/90103/2
echo "-----"

```

```
io1:telorb> chmod 755 /opt/telorb/config/setup.csh
```

4.3.2 Create win.csh file in IO1 and IO2

Create a win.csh file

```
io1/2:telorb> mkdir -p /opt/telorb/config
```

```
io1/2:telorb> vi /opt/telorb/config/win.csh
```

Note: The IP Addresses used in “win” may need to be modified depending on the specific hardware configuration. They are IP Addresses for the initial loader and loader.

```

#!/bin/csh -x
# win for a Mini/Midi/Maxi Configuration
alias win /opt/telorb/codearchive/iom_scripts/win -th 172.16.0.9 -th 172.16.8.9 -th 172.16.0.11 -th 172.16.8.11 -n -s

```

```
io1/2:telorb> chmod 755 /opt/telorb/config/win.csh
```

4.3.3 Create .tcshrc file in IO1 and IO2

```
io1/2:telorb> vi /home/telorb/.tcshrc
```

```

# Add the following line in the file #
source /opt/telorb/config/win.csh

```

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4.3.4 Activate TSP4.0 RUNTIME in IO1

After the installation is completed, TSP4.0 RUNTIME DISTRIBUTION can be activated by setting the default version of the distribution to the RM446 product version : ANA/90103/2 R4B02.

```
io1:telorb> cd /home/telorb/TSP-4.0-RM446-1-0
```

```
io1:telorb> tcsh
```

```
io1:telorb> source /opt/telorb/config/setup.csh
```

Note: Do not care about fault message “not found”, when doing source for the first time.

```
io1:telorb> ./setDefaultVersion ANA/90103/2 R4B02
```

4.3.5 Perform epct in IO1

Perform the epct using the updated telorb.epct file.

```
io1:telorb> cd /opt/telorb/system
```

If an application is to be included in the epct, make sure an application epct file is created and that the software is configured with “epconfig s –r Application_SW”.

Perform the epct with telorb.epct (and with the Application epct file if available)

```
io1:telorb> epct telorb.epct
```

4.3.6 Copy loadingGroup01_2 to IO2

```
io1:telorb> cd /opt/telorb/axe/
```

```
io1:telorb> scp -r loadingGroup01_2 io2:/opt/telorb/axe
```

```
io1:telorb> rm -rf loadingGroup01_2
```

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4.3.7 Create required directories in both IO1 and IO2

In IO1

```
io1:telorb> mkdir -p /opt/telorb/axe/mysql-data

io1:telorb> mkdir -p /opt/telorb/axe/reporterLogs/PlatformMeasures

io1:telorb> mkdir -p /opt/telorb/axe/reporterLogs/iomeasures

io1:telorb> mkdir -p /opt/telorb/axe/reporterLogs/SignalingMeasures
```

In IO2

```
io2:telorb> mkdir -p /opt/telorb/axe/reporterLogs2/PlatformMeasures

io2:telorb> mkdir -p /opt/telorb/axe/reporterLogs2/iomeasures

io2:telorb> mkdir -p /opt/telorb/axe/reporterLogs2/SignalingMeasures
```

4.4 Configuration of TCAP ITU stack.

NOTE. TCAP ITU, ISUP SIGTRAN ITU and SCTP could not coexist.

This section should only be performed if TCAP ITU stack are used.

4.4.1 Extract DCM in IO1

Proceed with this section ONLY if you want to introduce SS7 TCAP ITU Stack.

```
io1:telorb> tcsh

io1:telorb> source /opt/telorb/config/setup.csh

io1:telorb> cd `epgetpath IDP/LOGDAEMON`/included/<=>
LM_LOGDAEMON- LogDaemon/
```

Copy the config files to /opt/telorb/logd

```
io1:telorb> cp -r distribution /opt/telorb/logd

io1:telorb> chmod 777 /opt/telorb/logd

io1:telorb> rm /opt/telorb/logd/cp.cnf
```

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Copy the DCM to /opt/DCM

```
io1:telorb> cd `epgetpath IDP/DCM`/included/LM_DCM-Dcm/distribution
```

```
io1:telorb> su
```

```
io1:root> mkdir -p /opt/DCM
```

```
io1:root> cp -R * /opt/DCM
```

```
io1:root> chown -R telorb:telorb /opt/DCM
```

```
io1:root> chmod -R 775 /opt/DCM
```

```
io1:root> exit
```

4.4.2 Copying and configuring the CNF and BIT files for TCAP ITU stacks

Copy the .bit and .cnf files to

/opt/telorb/axe/loadingGroup01_1/mirrored/cnf19003_cxc1320957_3_R1B01.
bit, e1pmcsetup.cnf, oam.cnf, cp_tcap_itu.cnf, pcf_tcap_itu.cnf

```
io1:telorb> cd `epgetpath IDP/E1T1DRIVER01`/config
```

```
io1:telorb> mkdir -p /opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

```
io1:telorb> cp 19003_cxc1320957_3_R1B01.bit ↔  
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

```
io1:telorb> cp e1pmcsetup.cnf ↔  
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

```
io1:telorb> cd `epgetpath IDP/EINSS7ITU`/config
```

```
io1:telorb> cp oam.cnf /opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

```
io1:telorb> cp cp_tcap_itu.cnf ↔  
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

```
io1:telorb> cp pcf_tcap_itu.cnf ↔  
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

```
io1:telorb> chmod +w ↔  
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/oam.cnf
```

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```
io1:telorb> chmod +w ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/cp_tcap_itu.cnf
```

```
io1:telorb> chmod +w ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/pcf_tcap_itu.cnf
```

4.4.3 Edit cp_tcap_itu.cnf file in IO1

Proceed with this section ONLY if you want to introduce SS7 TCAP ITU Stack.

```
io1:telorb> cd /opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

```
io1:telorb> vi cp_tcap_itu.cnf
```

```
# Modify the below IP Addresses with your VIP Address for the Cluster and the Internal IP
#address of IO1 The following example shows the VIP Address as 172.30.39.102 and IO1
#Internal IP address as 172.16.0.1.
MSGIPA=CP_MANAGER,VIP_ADDRESS1:1234,VIP_ADDRESS2:1234
LOGLDIPA=IO1_INTERNAL_ADDRESS:6998
```

```
io1:telorb> cp cp_tcap_itu.cnf /opt/telorb/logd/cp.cnf
```

4.4.4 Edit pcf_tcap_itu.cnf file in IO1

```
io1:telorb> cd /opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

```
io1:telorb> vi pcf_tcap_itu.cnf
```

Note: Edit the pcf_tcap_itu.cnf and update the BE , FE and instance ID

```
# Modify the BE and FE fields to reflect SS7 processor number (Processor_ID) and
# Instance_ID. Where the Instance_ID is unique for each Processor.
# For example, below indicates that the SS7 processor board(PM-E1/T1) is Processor6
# with Instance_ID=1 and Processor7(PM-E1/T1) with Instance_ID=2.
# See /opt/telorb/system/telorb_SS7_Driver.epct for pool allocation of SS7 stack Driver
# Pools.
BE|6|1|/cnf/be.cnf
BE|7|2|/cnf/be.cnf
FE|6|1|/cnf/fe0.cnf
FE|7|2|/cnf/fe1.cnf
```

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4.4.5 Creation of the NMM/BE/FE CNF files for TCAP ITU stacks using DCM

The installer must customise the SS7 stack configuration, based on the customer SS7 network which is not in the scope of this document.

This section describes the steps to configure the stacks using DCM and a default DCM config file that defines 2 FE's and 2 BE's.

```
io1:telorb> cd `epgetpath IDP/DCM`/config
io1:telorb> cp 2BE_2FE_2Linkset_16Links_ITU_TCAP.dcm /opt/DCM/
io1:telorb> chmod +w /opt/DCM/2BE_2FE_2Linkset_16Links_ITU_TCAP.dcm
io1:telorb> cd /opt/DCM
io1:telorb> ./ss7dcm (to open up DCM browser)
```

Use DCM to create cnf files. **File-> Open** the dcm template file provided from the CM443 package, "**2BE_2FE_2Linkset_16Links_ITU_TCAP.dcm**".

Go to **SS7 system -> Physical Architecture -> OAM -> Right Click on Properties**

In **CP Manager Host:**,
Enter: **<VIP Address of the Cluster>**

Select Local in Distribution Mode

Enter <path to distribute for example,
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/ > under the heading **Local Config Location**.

For Network Redundancy, you must update your DCM file for each ZONE to introduce the secondary point code of your zone and the routeset used for the ss7 heartbeat between the 2 zones. Perform the steps in Appendix B and once completed continue with the next step.

Right Click on **Control Panel** within **Physical Architecture**

Click on **NMM** all the **BE** and **FE**

Click on **Distribute config**

This will copy the *.cnf files to
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/

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```
io1:telorb> ls -lrt /opt/telorb/axe/loadingGroup01_1/mirrored/cnf/*.*
```

Click on **Close** in the **DCM Control Panel** Close the **OAM** GUI by clicking on the “**X**” located at the top right hand corner.

Action: Save and Close the DCM GUI by clicking on **File / Save** then **File / Exit**.

4.5 Configuration of ISUP SIGTRAN ITU

NOTE. TCAP ITU, ISUP SIGTRAN ITU and SCTP could not coexist.

This section should only be performed if ISUP SIGTRAN ITU is used.

4.5.1 Define Stack Environment Variables on TelORB OS

```
io1:telorb> telnet <IP Address of Loader 1> 8000
```

NOTE: The default telnet shell port is 8000, but if this has been modified use the modified port number instead of 8000.

```
** No registred users. Free access.
** TelORB shell - welcome
```

Verify that the following environment variables.

```
[Loader 1] $ /> cd env
[Loader 1] $ /env> printenv
RECONNECTION_DELAY = 1000
MIXED_STANDARDS = FALSE
TAKEOVER_time = 3000
TRACE_ON = FALSE
```

If they are not shown, set then by entering the commands below:

```
[Loader 1] $ /env> setenv TAKEOVER_time 3000
```

```
[Loader 1] $ /env> setenv RECONNECTION_DELAY 1000
```

```
[Loader 1] $ /env> setenv MIXED_STANDARDS FALSE
```

```
[Loader 1] $ /env> setenv TRACE_ON FALSE
```

```
[Loader 1] $ /env> quit
```

4.5.2 Extract EIN SS7 stack software to /home/telorb/

```
io1:telorb> tcsh
```

```
io1:telorb> source /opt/telorb/config/setup.csh
```

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Copy the config files to /opt/telorb/logd

```
io1:telorb> cd `epgetpath IDP/LOGDAEMON`/included/<=>
LM_LOGDAEMON- LogDaemon
```

```
io1:telorb> cp -r distribution /opt/telorb/logd
```

```
io1:telorb> chmod 777 /opt/telorb/logd
```

```
io1:telorb> rm /opt/telorb/logd/cp.cnf
```

Copy the DCM to /opt/DCM

```
io1:telorb> cd `epgetpath IDP/DCM`/included/LM_DCM-Dcm/distribution
```

```
io1:telorb> su
```

```
io1:root> mkdir -p /opt/DCM
```

```
io1:root> cp -R * /opt/DCM
```

```
io1:root> chown -R telorb:telorb /opt/DCM
```

```
io1:root> chmod -R 775 /opt/DCM
```

```
io1:root> exit
```

4.5.3 Copying and configuring the CNF files for EIN ITU stacks

Copy the .cnf-files to /opt/telorb/axe/loadingGroup01_1/mirrored/cnf
oam.cnf,
cp_isup_sigtran_itu.cnf,
pcf_isup_sigtran_itu.cnf

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```

io1:telorb> cd `epgetpath IDP/EINSS7ISUPSIGTRANITU`/config

io1:telorb> cp oam.cnf /opt/telorb/axe/loadingGroup01_1/mirrored/cnf

io1:telorb> cp cp_isup_sigtran_itu.cnf ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf

io1:telorb> cp pcf_isup_sigtran_itu.cnf ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf

io1:telorb> chmod +w /opt/telorb/axe/loadingGroup01_1/mirrored/cnf/oam.cnf

io1:telorb> chmod +w ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/cp_isup_sigtran_itu.cnf

io1:telorb> chmod +w ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/pcf_isup_sigtran_itu.cnf

```

4.5.4 Edit cp_isup_sigtran_itu.cnf file in IO1

```

io1:telorb> cd /opt/telorb/axe/loadingGroup01_1/mirrored/cnf

io1:telorb> vi cp_isup_sigtran_itu.cnf

```

```

# Modify the below IP Addresses with your VIP Address for the Cluster and the
Internal IP address of IO1 The following example has 2 VIP addresses assigned to it and
IO1 internal IP address.
MSGIPA=CP_MANAGER,VIP_ADDRESS1:1234,VIP_ADDRESS2:1234
LOGLDIPA=IO_INTERNAL_ADDRESS:6998

```

```

io1:telorb> cp cp_isup_sigtran_itu.cnf /opt/telorb/logd/cp.cnf

```

4.5.5 Edit pcf_isup_sigtran_itu.cnf file in IO1

```

io1:telorb> vi pcf_isup_sigtran_itu.cnf

```

Note: Edit the pcf_isup_sigtran_itu.cnf and update the BE, FE and instance ID

```

# Modify the BE and FE to reflect SS7 processor number for example, Processor6
# Since it is a monolithic stack, only one FE and BE can be defined. Any Dicos traffic
processor can be selected to run the FE/BE. In this example, 6 means the 6th processor counted from the first
processor
BE|6|0|cnf/be.cnf
FE|6|0|cnf/fe0.cnf

```

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4.5.6 Creation of the BE/FE CNF files for EIN ITU stacks using DCM

The installer must customise the SS7 stack configuration based on the customer's specific configuration which is not in the scope of this document.

This section describes the steps to configure the stacks using DCM and a DCM config file that defines 1 FE and 1 BE. In this step, we are using ISUP_SIGTRAN_1APS_to_1SG.dcm as the default dcm template. The installer must decide on which dcm template to choose, if any.

```
io1:telorb> cd `epgetpath IDP/DCM`/config

io1:telorb> cp ISUP_SIGTRAN_1APS_to_1SG.dcm /opt/DCM/

io1:telorb> chmod +w /opt/DCM/ISUP_SIGTRAN_1APS_to_1SG.dcm

io1:telorb> cd /opt/DCM

io1:telorb> ./ss7dcm (to open up DCM browser)
```

Use DCM to create cnf files. **File-> Open** the dcm template file provided from the CM445 upgrade package

For example, use **ISUP_SIGTRAN_1APS_to_1SG.dcm** for Application Server connecting to Signalling Gateway and use **ISUP_SIGTRAN_1IPS_to_1IPS.dcm** for IP Server connecting to IP Server.

Go to **Physical Architecture->OAM** , right Click on **"Properties"**

In "CP Manager Host:",

Enter: **<VIP Address of the Cluster>**

Select **Local** in **Distribution Mode**

Enter <path to distribute>

for example, /opt/telorb/axe/loadingGroup01_1/mirrored/cnf/ > under the heading Local Config. Location.

Right Click on "Properties" in "IP Address #0" within SS7 System/Logical Architecture/Logical Stack/M3UA/Local IP Addresses

Enter the VIP Address of the node for IP Address #0

Right Click on "Properties" in "SP IP Address #0" within SS7 System/Logical Architecture/Logical Stack/M3UA/Signalling Processes/Signalling Process #0/SP IP Addresses

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Enter the SP IP Address for **SP IP Address #0**

Right Click on “**Control Panel**” within **Physical Architecture**

Click on the **BE** and **FE**

Click on **Distribute config**

This will copy the *.cnf files to /opt/telorb/axe/loadingGroup01_1/mirrored/cnf/

```
io1:telorb> ls -lrt /opt/telorb/axe/loadingGroup01_1/mirrored/cnf
```

Action: Save and Close the DCM GUI by clicking on **File / Save** then **File / Exit**.

4.6 Configuration of SCTP STACK

NOTE. TCAP ITU, ISUP SIGTRAN ITU and SCTP could not coexist.

This section should only be performed if SCTP STACK is used.

4.6.1 Define Stack Environment Variables on TelORB OS

```
io1:telorb> telnet <IP Address of Loader 1> 8000
```

NOTE: The default telnet shell port is 8000, but if this has been modified use the modified port number instead of 8000.

```
** No registred users. Free access.  
** TelORB shell - welcome
```

```
[Loader 1] $ /> cd env
```

```
[Loader 1] $ /env> printenv
```

```
RECONNECTION_DELAY = 1000  
MIXED_STANDARDS = FALSE  
TAKEOVER_time 3000  
TRACE_ON = FALSE
```

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NOTE: Verify that the following environment variables are present and set as per above. If they are not set then enter the commands as below.

```
[Loader 1] $ /env> setenv TAKEOVER_time 3000
```

```
[Loader 1] $ /env> setenv RECONNECTION_DELAY 1000
```

```
[Loader 1] $ /env> setenv MIXED_STANDARDS FALSE
```

```
[Loader 1] $ /env> setenv TRACE_ON FALSE
```

```
[Loader 1] $ /env> quit
```

4.6.2 Copy EIN SS7 stack configuration files

```
io1:telorb> tcsh
```

```
io1:telorb> source /opt/telorb/config/setup.csh
```

```
io1:telorb> cd `epgetpath IDP/LOGDAEMON`/included/<=>
LM_LOGDAEMON-LogDaemon
```

Copy the config files to /opt/telorb/logd

```
io1:telorb> cp -r distribution /opt/telorb/logd
```

```
io1:telorb> chmod 777 /opt/telorb/logd
```

```
io1:telorb> rm /opt/telorb/logd/cp.cnf
```

Copy the DCM to /opt/DCM

```
io1:telorb> cd `epgetpath IDP/DCM`/included/LM_DCM-Dcm/distribution
```

```
io1:telorb> su
```

```
io1:root> mkdir -p /opt/DCM
```

```
io1:root> cp -R * /opt/DCM
```

```
io1:root> chown -R telorb:telorb /opt/DCM
```

```
io1:root> chmod -R 775 /opt/DCM
```

```
io1:root> exit
```

4.6.3 Copying and configuring the CNF files for EIN ITU stacks

Copy the .cnf-files to /opt/telorb/axe/loadingGroup01_1/mirrored/cnf
oam.cnf,
cp_sctp_user.cnf,
pcf_sctp_user.cnf

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```

io1:telorb> cd `epgetpath IDP/EINSS7ISUPSIGTRANITU`/config

io1:telorb> cp oam.cnf /opt/telorb/axe/loadingGroup01_1/mirrored/cnf

io1:telorb> cd `epgetpath IDP/EINSS7SCTP`/config

io1:telorb> cp cp_sctp_user.cnf /opt/telorb/axe/loadingGroup01_1/mirrored/cnf

io1:telorb> cp pcf_sctp_user.cnf /opt/telorb/axe/loadingGroup01_1/mirrored/cnf

io1:telorb> chmod +w /opt/telorb/axe/loadingGroup01_1/mirrored/cnf/oam.cnf

io1:telorb> chmod +w ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/cp_sctp_user.cnf

io1:telorb> chmod +w ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/pcf_sctp_user.cnf

```

4.6.4 Edit the cp_isup_sigtran_itu.cnf file

```

io1:telorb> cd /opt/telorb/axe/loadingGroup01_1/mirrored/cnf

io1:telorb> vi cp_sctp_user.cnf

```

```

# Modify the below IP Addresses with your VIP Address for the Cluster and the
Internal IP address of IO1 The following example has 2 VIP addresses assigned to it and
IO1 internal IP address.
MSGIPA=CP_MANAGER,VIP_ADDRESS1:1234,VIP_ADDRESS2:1234
LOGLDIPA=IO1_INTERNAL_ADDRESS:6998

```

```

io1:telorb> cp cp_sctp_user.cnf /opt/telorb/logd/cp.cnf

```

4.6.5 Edit the pcf_sctp_user.cnf file

```

io1:telorb> vi pcf_sctp_user.cnf

```

Note: Edit the pcf_sctp_itu.cnf and update the FE and instance ID

```

# Modify the FE to reflect SS7 processor number for example, Processor6.
# Since it is a monolithic stack, only one FE can be defined. Any Dicos traffic processor
can be selected to run the FE.
FE|6|0|/cnf/fe.cnf

```

4.6.6 Creation of the FE CNF files for EIN ITU stacks using DCM

The installer must customise the SS7 stack configuration based on the customers specific configuration which is not in the scope of this document.

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This section describes the steps to configure the stacks using DCM and a default DCM config file that defines 1 FE.

```
io1:telorb> cd `epgetpath IDP/DCM`/config

io1:telorb> cp SCTP_STACK.dcm /opt/DCM/

io1:telorb> chmod +w /opt/DCM/SCTP_STACK.dcm

io1:telorb> cd /opt/DCM

io1:telorb> ./ss7dcm (to open up DCM browser)
```

Use DCM to create cnf files. **File-> Open** the dcm template file provided from the CM445 upgrade package.

Right Click on "Properties" within Physical Architecture/OAM
Select Local in Distribution Mode:

Enter **<path to distribute>** for example,
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/ under the heading **Local Config. Location:**

Right Click on "**Control Panel**" within **Physical Architecture**

Click on the **FE**

Click on **Distribute config**

This will copy the *.cnf files to
/opt/telorb/axe/loadingGroup01_1/mirrored/cnf/

```
io1:telorb> ls -lrt /opt/telorb/axe/loadingGroup01_1/mirrored/cnf/*.*
```

Action: Save and Close the DCM GUI by clicking on **File / Save** then **File / Exit**.

4.7 Configuration for Network Redundancy

This section should be performed only if network redundancy is used

4.7.1 Copy Platform NetRed Pots to mirrored directory

```
io1:telorb> cd /opt/telorb/axe/loadingGroup01_1/mirrored/config
```

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Create a new directory that will contain the Net Red POTs required for TSP .

```
io1:telorb> mkdir -p NetSharedPOTs/TSP
```

```
io1:telorb> cd NetSharedPOTs/TSP
```

Copy TSP NetRed POT to new directory

```
io1:telorb> cp /home/telorb/TSP-4.0-RM446-1-0/config/<->
NetSharedPOT/TSP4- NetShared-POT.config .
```

4.7.2 Configure the Network Redundancy Static Routing tables

Create the static-routes file on IO1 and IO2 of ZONE1 and ZONE2.

```
io1/2:ZONE1/2:telorb> su -
```

```
io1/2:ZONE1/2:root> cd /etc/sysconfig
```

```
io1/2:ZONE1/2:root> vi static-routes
```

```
# Add the following static routes for Network Redundancy #
# Remember which ZONE you are in when editing the static-routes file.
# Use the example below and Replace 172.17.16.0 with your remote Zone network A IP
Address, replace 172.16.24.0 with your remote Zone network B IP Address, replace
172.17.0.31 with the IP Address of the Local Router Network A interface and replace
172.17.8.31 with the IP Address of the Local Router Network B interface #
eth0 net 172.17.16.0 netmask 255.255.248.0 gw 172.17.0.31
eth1 net 172.17.24.0 netmask 255.255.248.0 gw 172.17.8.31
```

Reload the network interfaces (can be verified with /sbin/ifconfig):

```
io1/2:ZONE1/2:root> /etc/init.d/network reload
```

4.8 Perform an initial load

Start consoles for each processor and do reset on each of them. Make sure the INITIAL dicos loader loads before the second loader.

Wait for “Total functionality” to be displayed on the TelORB Processor consoles.

NOTE: Make sure the kickstart server is disconnected from the Cabinet or the initial load will hang.

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4.9 Configure mirrored files

4.9.1 Create configuration files in the mirrored directory

```
io1:telorb> su -
```

```
io1:root> tcsh
```

```
io1:root> source /opt/telorb/config/setup.csh
```

```
io1:root> mkdir -p
```

```
↔/opt/telorb/axe/loadingGroup01_1/mirrored/config/ALEX/databases
```

```
io1:root> mkdir -p ↔
```

```
/opt/telorb/axe/loadingGroup01_1/mirrored/config/ALEX/writable
```

```
io1:root> mkdir -p ↔
```

```
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/toolbox/webapps
```

```
io1:root> mkdir -p ↔
```

```
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/FaultManagement/data
```

```
io1:root> mkdir -p /opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/↔  
ConfigurationManagement
```

```
io1:root> mkdir -p ↔
```

```
/opt/telorb/axe/loadingGroup01_1/mirrored/config/PMF/IOmeasures/config
```

```
io1:root> mkdir -p ↔
```

```
/opt/telorb/axe/loadingGroup01_1/mirrored/config/PMF/LinuxMeasures/config
```

4.9.2 Give access to the configuration directories from the TP

```
io1:root> chown -R telorb:telorb /opt/telorb/axe/loadingGroup01_1
```

```
io1:root> chmod -R 777 /opt/telorb/axe/loadingGroup01_1
```

```
io2:telorb> su -
```

```
io2:root> chown -R telorb:telorb /opt/telorb/axe/loadingGroup01_2
```

```
io2:root> chmod -R 777 /opt/telorb/axe/loadingGroup01_2
```

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4.9.3 Edit Alexserv conf files

```
io1:root> cd `epgetpath IDP/ALEXSERV`/config

io1:root> cp alexserv.conf ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/ALEX

io1:root> cd /opt/telorb/axe/loadingGroup01_1/mirrored/config/ALEX

io1:root> chmod 755 *
```

Edit the alexserv.conf file.

```
io1:root> vi alexserv.conf
```

```
# Insert the following text and Modify the "VIP_Address" to indicate the actual VIP address : #
# alexserv configuration file
Omnidaemon: 192.168.63.100:9229
HttpdProto: https:/
HttpdHost: VIP_Address
BodyAttrs: 'bgcolor="#ffffff"link="#0000ed" vlink="#551a8a" alink="#ff0000"'
SearchHighlight: '<font color="#ff0000"><b><i> ' </i></b></font>'
TempPath: "/tmp/alextemp/"
LanguageCodes: es=Spanish (ES);ja=Japanese (JA);fr=French (FR);pb=Portuguese (PB)
# CharEncoding: EUC-JP
```

4.9.4 Create sys_structure.conf

Create a config file called sys_structure.conf which is needed to access the CPI documentation. Edit the file so that it looks exactly as indicated.

```
io1:root> cd /opt/telorb/axe/loadingGroup01_1/mirrored/config/ALEX

io1:root> vi sys_structure.conf
```

```
#Omnidaemon system structure configuration file
Name:      "TSP"
Label:     "-"
Level:     0
Path:      /opt/telorb/axe/loadingGroup01_1/mirrored/config/ALEX/databases
IndexFile: -
```

```
io1:root> chmod 666 sys_structure.conf
```

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4.9.5 Create omnidaemon.conf

Create a config file called omnidaemon.conf. Edit the file so that it looks exactly as indicated.

```
io1:root> vi omnidaemon.conf
```

```
# Insert the following text : #
# omnidaemon configuration file
#
WellKnownPort      9229
ServerComment      "Active Library Explorer Installation at XXX"
User                daemon
Group               daemon
LogFile             "/usr/tmp/omnidaemon.log"
CacheFile           "/usr/tmp/omnidaemon.cache"
LibraryPath         "/opt/telorb/axe/loadingGroup01_1/mirrored/config/ALEX/sys_structure.conf"
AnnotationDb        "/opt/telorb/axe/loadingGroup01_1/mirrored/config/ALEX/writable/"
# End of configuration file
```

```
io1:root> chmod 666 omnidaemon.conf
```

4.9.6 Edit targetaddr.dat

Modify the SNMP client data configuration file only if you have an SNMP client machine.

```
io1:root> cd `epgetpath IDP/SNMPAGENT`/config
```

```
io1:root> cp targetaddr.dat ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/FaultManagement/data
```

```
io1:root> cd ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/FaultManagement/data
```

```
io1:root> vi targetaddr.dat
```

```
# Modify/Add name(s) and IP Address(es) of the SNMP client(s) #
[client 1]
name=<SNMP Client1>
ip=<IP_ADDRESS>
port=162
status=active
tagList=default nisse
```

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4.9.7 Edit toolbox.conf

```
io1:root> cd `epgetpath IDP/OMTOOLBOX`/config

io1:root> cp toolbox.conf ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/toolbox/webapps

io1:root> cd ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/toolbox/webapps

io1:root> vi toolbox.conf
```

#Modify VIP_IP_address

Toolbox.baseurl = https://<VIP_IP_address>/

If you have network redundancy, uncomment the redundancyClient part of the toolbox.conf

Make sure the following lines are un-commented. Update the redundancyClientConfig.home as indicated below.#

```
redundancyClientConfig.buttonlabel = Redundancy Client
redundancyClientConfig.type = html
redundancyClientConfig.home = /opt/3rdParty/jakarta-tomcat-3.2.3/webapps/redundancyClient
redundancyClientConfig.html = redundancyClient.html
redundancyClientConfig.lifetime = 21600
redundancyClientConfig.description = Redundancy Client
```

```
io1:root> chmod 777 /opt/telorb/axe/loadingGroup01_1/↔
mirrored/config/NM/toolbox/webapps toolbox.conf
```

4.9.8 Edit nm.conf

```
io1:root> cd `epgetpath IDP/LINUXCOMMONSERVICES`/config

io1:root> cp nm.conf /opt/telorb/axe/loadingGroup01_1/↔
mirrored/config/NM/ConfigurationManagement

io1:root> cd /opt/telorb/axe/loadingGroup01_1/↔
mirrored/config/NM/ConfigurationManagement

io1:root> vi nm.conf
```

#Modify VIP_IP_address

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```
VIPEXternalAddress =<VIP_IP_address>
```

```
io1:root> chmod 777 nm.conf
```

4.9.9 Set permissions for mirrored directories

```
io1:root> chown -R telorb:telorb /opt/telorb/axe/loadingGroup01_1/mirrored
```

```
io1:root> exit
```

```
io2:root> chown -R telorb:telorb /opt/telorb/axe/loadingGroup01_2/mirrored
```

```
io2:root> exit
```

4.10 MySQL configuration

4.10.1 Install MySQL client in IO1

```
io1:root> cd `epgetpath`↔  
IDP/LOGGINGSP/included/LM_LOGGINGSPLoggingSP/client
```

```
io1:root> rpm -ivh MySQL-client-3.23.44-1.i386.rpm
```

4.10.2 Edit the logging.conf file

```
io1:root> cd `epgetpath`↔  
IDP/LOGGINGSP/included/LM_LOGGINGSPLoggingSP/config
```

```
io1:root> chmod 666 logging.conf
```

```
io1:root> vi logging.conf
```

```
# Change the LoggingHost IP addr with the VIP address of the cluster. Make  
sure there are no spaces after the IP Address #
```

```
LoggingHost <VIP_IP_address>
```

4.10.3 Verify that mysql is running

ACTION: Telnet to each linux TP containing the MySQLLinuxPool and verify that mysql is running only on one linux TP.

```
io1:root> telnet <To each Linux TP with MySQLLinuxPool>
```

```
[telorb@Linux_TP]$ /etc/rc.d/init.d/mysql status
```

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If mysql is running you will see the following printout:

```
** /usr/bin/mysqladmin  Ver 8.23 Distrib 3.23.49, for pc-
linux-gnu on i686

** Copyright (C) 2000 MySQL AB & MySQL Finland AB & TCX
DataKonsult AB

** This software comes with ABSOLUTELY NO WARRANTY. This is
free software,

** and you are welcome to modify and redistribute it under
the GPL license

** Server version          3.23.49

** Protocol version        10

** Connection              Localhost via UNIX socket

** UNIX socket             /var/run/mysqld/mysqld.sock

** Uptime:                 2 min 54 sec

** Threads: 1  Questions: 57  Slow queries: 0  Opens: 6
Flush tables: 1  Open tables: ** 0 Queries per second avg:
0.328
```

```
[telorb@Linux_TP]$ exit
```

If mysql is NOT running, proceed with the following steps:

ACTION: Telnet to the last linux TP (as defined in the epct file) containing the MysqlLinuxPool.

```
io1:root> telnet <Last Linux TP with MysqlLinuxPool>
```

```
[telorb@Linux_TP]$ su -
```

```
bash# cd /opt/telorb/axe/loadingGroup01_1/codeArchive/mysql.IDP_MYSQL
```

```
bash# rpm -ivh --nodeps mysql.LM_MYSQL.Code.R4D01.i486-linux
```

```
bash# /etc/rc.d/init.d/mysql status
```

```
bash# exit
```

```
[telorb@Linux_TP]$ exit
```

4.10.4 Verify that mysql is working

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```
io1:root> mysqladmin -h <VIP_Address> -umysql -pmysql create test1
```

```
io1:root> mysqladmin -h <VIP_Address> -umysql -pmysql drop test1
```

```
** Dropping the database is potentially a very bad thing to do.
** Any data stored in the database will be destroyed. Do you really want to
drop the 'test1' database [y/N] y
** Database "test1" dropped
```

4.10.5 Initialize logging DB

```
io1:root> cd `epgetpath IDP/LOGGINGSP`/included/<=>
LM_LOGGINGSP-LoggingSP/scripts
```

```
io1:root> ./initializeDatabase.sh
```

```
** Initializing the logging and backup databases ...
** Finish the initialization of the logging and backup
** databases.
```

4.10.6 Create Logging Table

```
io1:root> ./start_ApplicationDBTableCreator.sh /opt/telorb/axe/ <=>
loadingGroup01_1/mirrored/config/NM/logging/data/JIM/JIM.dtd
```

```
io1:root> ./start_LoggingUpdate.sh /opt/telorb/axe/loadingGroup01_1/<=>
mirrored/config/NM/logging/data/JIM/JIM.sql
```

4.10.7 Reconfigure DicosApplog

```
io1:root> ./reconfigureApplog.sh
```

4.10.8 Check that the JIM tables are created

```
io1:root> mysql -h <VIP_IP_Address> -umysql -pmysql logging
```

```
mysql> show tables;
```

```
** +-----+
** | Tables_in_logging |
** +-----+
** | Application       |
** | JIM               |
** | LoggingSeparator  |
** | XMLDBMSKey        |
** | criteria          |
** +-----+
```

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```
** 5 rows in set (0.00 sec)
mysql> quit;
```

4.10.9 Preparation for changes for the new applog

Create logging/config directory

```
io1:root> mkdir -p ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/logging/config
```

```
io1:root> chown telorb:telorb ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/logging/config
```

```
io1:root> exit
```

Make a copy of logging.conf

```
io1: telorb > cd `epgetpath IDP/LOGGINGSP`/included/LM_LOGGINGSP ↔
LoggingSP/config
```

```
io1: telorb > cp logging.conf ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/logging/config/
```

Edit logging.conf

```
io1:telorb> cd ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/NM/logging/config
```

```
io1:telorb> chmod 775 logging.conf
```

```
io1:telorb> vi logging.conf
```

# Update the path for LogDirectory to what is shown below #	
LogDirectory	/opt/telorb/logSQL/axe/applog

4.10.10 Update applog directory

```
io1:/telorb> cd /opt/telorb/axe/applog
```

```
io1:/telorb> cp applog.ApplicationList.orig ↔
applog.ApplicationList
```

4.11 HTTPS (secure webserver) instructions

This section shows the steps required to generate a “self-signed server certificate” for use with the TSP 4.0 implementation of the secure Apache/Tomcat web server. Because of the need for the server certificate to match the actual VIP IP, we need to generate a server key (*server.key*) and a server certificate (*server.crt*) on io1 (and io2). Apache (from the linux tp's) will check for these 2 files in the /opt/telorb/axe/loadingGroup01_1/mirrored/config/SSL directory, which needs to be created. When it finds these files, it will copy them onto the linux tp and use them locally from there.

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```
io1:telorb> mkdir -p /opt/telorb/axe/loadingGroup01_1/mirrored/config/SSL
```

NOTE: Two files are needed: *sign.sh* which is a script used to sign the certificates, and *ca.config* which *script.sh* requires. You can place these files in the `/opt/telorb/axe/loadingGroup01_1/mirrored/config/SSL` and use them from there.

```
io1:telorb> tcsh
```

```
io1:telorb> source /opt/telorb/config/setup.csh
```

```
io1:telorb> cd `epgetpath IDP/APACHE`/config
```

```
io1:telorb> cp *.* /opt/telorb/axe/loadingGroup01_1/mirrored/config/SSL
```

```
io1:telorb> su -
```

```
io1:root> cd /opt/telorb/axe/loadingGroup01_1/mirrored/config/SSL
```

NOTE: The “<server key passphrase>” is any passphrase you want, for example, telorb.

```
io1:root> openssl genrsa -des3 -out server.key 1024
```

```
** Enter PEM pass phrase: <server key passphrase>
** Verifying password - Enter PEM pass phrase: <server key passphrase>
```

```
io1:root> cp server.key server.key.orig
```

```
io1:root> openssl rsa -in server.key.orig -out server.key
```

```
** read RSA key
** Enter PEM pass phrase: <server key passphrase>
```

```
io1:root> openssl req -new -key server.key -out server.csr
```

```
** Country Name (2 letter code) [AU]:SE
** State or Province Name (full name) [Some-State]:Stockholms LAN
** Locality Name (eg, city) []:Stockholm
** Organization Name (eg, company) [Internet Widgits Pty Ltd]:LM Ericsson Telephone Company
** Organizational Unit Name (eg, section) []:TSP
** Common Name (eg, YOUR name) []:Enter_VIP_IP_Address
** Email Address []: [Enter]
```

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```

** Please enter the following 'extra' attributes
** to be sent with your certificate request
** A challenge password []: [Enter]
** An optional company name []: [Enter]

```

```
io1:root> openssl genrsa -des3 -out ca.key 1024
```

```

** Enter PEM pass phrase: <server key passphrase>
** Verifying password - Enter PEM pass phrase: <server key passphrase>

```

```
io1:root> openssl req -new -x509 -days 3650 -key ca.key -out ca.crt
```

```

** Enter PEM pass phrase: <server key passphrase>
** Country Name (2 letter code) [AU]:SE
** State or Province Name (full name) [Some-State]:Stockholms LAN
** Locality Name (eg, city) []:Stockholm
** Organization Name (eg, company) [Internet Widgits Pty Ltd]: LM Ericsson Telephone Company
** Organizational Unit Name (eg, section) []:TSP
** Common Name (eg, YOUR name) []:LM Ericsson Telephone Company
** Email Address []: [Enter]

```

```
io1:root> chmod 777 sign.sh
```

```
io1:root> ./sign.sh server.csr
```

```

** CA signing: server.csr -> server.crt:
** Using configuration from ca.config
** Enter PEM pass phrase: <server key passphrase>
** Check that the request matches the signature
** Signature ok
** The Subjects Distinguished Name is as follows
**   countryName      :PRINTABLE:'SE'
**   stateOrProvinceName :PRINTABLE:'Stockholms LAN '
**   localityName     :PRINTABLE:'Stockholm'
**   organizationName  :PRINTABLE:'LM Ericsson Telephone Company'
**   organizationalUnitName:PRINTABLE:'TSP'
**   commonName       :PRINTABLE:'Your VIP Address'
**   emailAddress      :IA5STRING:''
** Certificate is to be certified until May 15 02:23:34 2012 GMT (3650 days)
** Sign the certificate? [y/n]: y

```

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```

** 1 out of 1 certificate requests certified, commit? [y/n]: y
** Write out database with 1 new entries
** Data Base Updated
** CA verifying: server.crt <-> CA cert
** server.crt: OK

```

```
io1:root> exit
```

4.12 PMF Core Configuration

4.12.1 Edit telorb.pmf.properties file

```

io1:telorb> cd `epgetpath IDP/PMFCORE`/config

io1:telorb> chmod 666 telorb.pmf.properties

io1:telorb> vi telorb.pmf.properties

```

```

# Make sure that TelOrb_NS_IPAddress = VIP Address #
# Make sure that TelOrb_NS_Port = 7111 #
# Change the Tracelevel to 0 #
TelOrb_NS_IPAddress=<VIP_Address>
TelOrb_NS_Port=7111
TraceLevel=0

```

4.12.2 Copy telorb.pmf.properties file to PMF mirrored directories

```

io1:telorb> cp telorb.pmf.properties ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/PMF/LinuxMeasures/config

io1:telorb> cp telorb.pmf.properties ↔
/opt/telorb/axe/loadingGroup01_1/mirrored/config/PMF/IOmeasures/config

```

4.13 Platform and Disk Measures Configuration

4.13.1 Configure Platform Measures

ACTION: In order for the platform measures XML reports to be generated in: /opt/telorb/axe/reporterLogs/PlatformMeasures, import the LDIF file **PlatformMeasures.ldif** via the ldap browser. See Appendix C for Details.

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4.13.2 Configure SSH on IO1

```
io1:root> ssh-keygen -t dsa -N "" -f /root/.ssh/id_dsa

** Generating public/private dsa key pair.
** Your identification has been saved in /root/.ssh/id_dsa.
** Your public key has been saved in /root/.ssh/id_dsa.pub.
** The key fingerprint is:
**5f:8b:e9:65:08:d5:30:11:51:c7:58:c3:59:04:20:7a
root@io1.localdomain

io1:root> cp /root/.ssh/id_dsa.pub /root/.ssh/authorized_keys2

io1:root> cp /root/.ssh/id_dsa /opt/telorb/axe/loadingGroup01_1<=>
/mirrored/config/PMF/IOmeasures/config/id_dsa_io1

io1:root> chmod 644 <=>
/opt/telorb/axe/loadingGroup01_1/mirrored/config/PMF/IOmeasures/config/*

io1:root> exit
```

4.13.3 Configure SSH on IO2

```
io2:root> ssh-keygen -t dsa -N "" -f /root/.ssh/id_dsa

** Generating public/private dsa key pair.
** Your identification has been saved in /root/.ssh/id_dsa.
** Your public key has been saved in /root/.ssh/id_dsa.pub.
** The key fingerprint is:
**5f:8b:e9:65:08:d5:30:11:51:c7:58:c3:59:04:20:7a
root@io1.localdomain

io2:root> cp /root/.ssh/id_dsa.pub /root/.ssh/authorized_keys2

io1:root> cp /root/.ssh/id_dsa /opt/telorb/axe/loadingGroup01_2<=>
mirrored/config/PMF/IOmeasures/config/id_dsa_io2

io2:root> chmod 644 <=>
/opt/telorb/axe/loadingGroup01_2/mirrored/config/PMF/IOmeasures/config/*

io2:root> exit
```

4.13.4 Configure IO Measures

ACTION: In order for the IO measures XML reports to be generated in:
/opt/telorb/axe/reporterLogs/iomeasures, import the LDIF file
DiskMeasures.ldif via the ldap browser. See Appendix C for Details.

4.13.5 Load Signalling Measures LDIF file

If TCAP ITU Stack are installed, the signalling measures ldif file must be imported.

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ACTION: In order for the SS7 Signalling measures XML reports to be generated in:

/opt/telorb/axe/reporterLogs/SignalingMeasures

import the LDIF files SigMeas.ldif via the ldap browser.

See Appendix C for details.

4.13.6 Create a backup and zone reload

In TelORBManager, create a backup and perform a zone reload so that the configuration files for Node Management are read by the linux traffic processors.

4.13.7 Verify creation of XML files

Check that PMF Measures XML files are created in
IO1:/opt/telorb/axe/reporterLogs/PlatformMeasures and
IO2:/opt/telorb/axe/reporterLogs2/PlatformMeasures

Check that Disk Measures XML files are created
IO1:/opt/telorb/axe/reporterLogs/iomeasures and
IO2:/opt/telorb/axe/reporterLogs2/iomeasures

4.14 Network redundancy configuration

4.14.1 Create Remote Zone via TelORBManager

Connect to TelORBManager

1. Click on the "NetRed?"Card within TelORBManager
2. Within the "Remote Zones" window
3. Click: Add Remote Zone
4. A new window pops up.
5. In the "Enter Zone number:", where <Remote Zone ID> is 1 if remote zone is ZONE-1
6. and 2 if the remote zone is ZONE-2.
7. Enter: <Remote Zone ID>

4.14.2 Edit .ini files for Redundancy

Manually edit the .ini files of the RedundancyCLI and RedundancyClient on all linux traffic processors. This workaround must be performed on all Linux traffic processors everytime a Linux traffic processors reloads or a Zone Reload occurs.

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ACTION: Telnet to each and every Linux Traffic Processor and perform the following:

```
[telorb@hn0 telorb]$ cd /opt/3rdParty/RedundancyCLI_SE/config
```

```
[telorb@hn0 telorb]$ su
```

```
bash-2.04# vi config.ini
```

```
# Change the Identifier for the local node to 2
```

```
TELORB_LOCAL_NODE_ID 2
```

```
# Change the Identifier for the remote node to 1
```

```
TELORB_REMOTE_NODE_ID 1
```

```
bash-2.04# cd /opt/3rdParty/<->
jakarta-tomcat-3.2.3/webapps/redundancyClient/config
```

```
bash-2.04# vi configForApplet.ini
```

```
# Change the Identifier for the local node to 2
```

```
TELORB_LOCAL_NODE_ID 2
```

```
# Change the Identifier for the remote node to 1
```

```
TELORB_REMOTE_NODE_ID 1
```

```
bash-2.04# exit
```

```
[telorb@hn0 telorb]$ exit
```

NOTE: This section must be repeated if ever the Linux Traffic Processor is reloaded or a zone reload occurs. This is a workaround for the problem:CCS00011840

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5 References

- [1] TSP 4.0: EXTERNAL KICKSTART SERVER INSTALLATION
(30/1551-1/FCP 101 1454 Uen Rev A)
- [2] TSP 4.0: INITIAL IO-PROCESSOR INSTALLATION FROM KICKSTART SERVER
(40/1551-1/FCP 101 1454 Uen Rev A)
- [3] TSP 4.0 HW configurations at pre-release and PRA
(UAB/L-01:225 Uen Rev A)
- [4] Internal IP addresses in TSP4.0 (UAB/UT-02:004 Uen Rev B)
- [5] TELORB-R14 LINUX /TSP4.0) patch 6 delivery note (20/10947-1/FCP101 1454 Uen)

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7 APPENDIX

7.1 APPENDIX A NM IDP/POOL Distributions

7.1.1 NM IDP Distribution

Process	IDP	TelORB/Dicos Pool	TelORB/Linux Pool
Provisioning and Configuration Management			
JIM	JIM	JimPool	N/A
JIM LDAP	JIMLDAP	N/A	LDAPLinuxPool
JIM SNMP	JIMSNMP	N/A	SNMPLinuxPool
Configuration Management	CONFIGURATION MANAGEMENT	CMMModelPool	NMLinuxPool WebLinuxPool
Common Services			
Common services	COMMONSERVICES	CommonServicesPool	N/A
NM Common	LINUXCOMMONSERVICES	N/A	NMLinuxPool
Crypto Server	cryptoServer	cryptoPool	N/A
OM Toolbox	OMTOOLBOX	N/A	WebLinuxPool
Logging	LOGSQL	N/A	LoggingLinuxPool
QueryTool	QUERYTOOL	N/A	WebLinuxPool
Fault Management			
IRP Adaptor	IRPREPORTER	N/A	ECNPool
SNMP Agent	SNMPAGENT	N/A	FMSNMPPool
Live Alarm Display	LAD	N/A	WebLinuxPool
Performance Management			
PM Dashboard	PMD	PmdPool	WebLinuxPool
PMFCore	PMFCORE	PmCPool, PmFPool	N/A
	PMFUNIX	N/A	UnixCommonPool
Platform Measures	PMPLATFORMMEASURES	PlatformMeasuresPool	N/A
		IoMeasuresPool	N/A
Linux Measures	LINUXMEASURES	N/A	UnixCommonPool
IO Measures	IOMEASURES	N/A	UnixCommonPool
3PP			
Apache	APACHE	N/A	WebLinuxPool
Tomcat	TOMCAT	N/A	WebLinuxPool
LDAP Browser	LDAPBROWSER	N/A	WebLinuxPool
Xerces	XERCES	N/A	NMLinuxPool
JDBC	JDBC	N/A	NMLinuxPool
MySQL	MYSQL	N/A	MysqlLinuxPool
ECN	ECN	N/A	ECNPool
Xalan	XALAN	N/A	NMLinuxPool
OroMatcher	OROMATCHER	N/A	NMLinuxPool
XMLDB	XMLDB	N/A	NMLinuxPool
Alex Server	ALEXSERV	N/A	AlexservPool
EIN SS7 Stack			
TCAP ITU	EINSS7ITU	PCFmaster_itu_Pool, PCFslave_itu_Pool	
	E1T1DRIVER01	EINSS7DRIVERPool	
ISUP_SIGTRAN_ITU	EINSS7ISUPSIGTRANITU	PCFmaster_isup_sigtran_itu_Pool PCFslave_isup_sigtran_itu_Pool	

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7.1.2 NM Pool Distribution

JimPool	On at least 2 Dicos(Traffic) – redundant and scalable
CommonServicesPool	On at least 2 Dicos(Traffic) – redundant and scalable
CryptoPool	On 2 Dicos(Traffic) – redundant
CMMModelPool	On 2 Dicos(Traffic) – redundant
LoggingLinuxPool	On 2 Processors Linux – redundant
LDAPLinuxPool	On at least 2 Processors Linux – redundant and scalable
SNMPLinuxPool	On at least 2 Processors Linux – redundant and scalable
WebLinuxPool	On at least 2 Processors Linux – redundant and scalable
ECNPool	On at least 2 Processors Linux – redundant and scalable
NMLinuxPool	On all Processors Linux
PlatformMeasuresPool	On all Dicos (including 2 Loaders)
PmCPool	On at least 2 Dicos(Traffic) – redundant and scalable
PmFPool	On all Dicos(Traffic Only)
PmdPool	On at least 2 Dicos(Traffic) – redundant and scalable
AlexservPool	On 2 Processors Linux– redundant
IoMeasuresPool	On at least 2 Dicos(Traffic) – redundant and scalable
FMSNMPPool	On at least 2 Processors Linux
ECNPool	On at least 2 Processors Linux
MysqlLinuxPool	On 2 Processors Linux - redundant
PCFmaster_itu_Pool	On the 2 Dicos loaders
PCFslave_itu_Pool	On all Dicos Traffic Processors
EINSS7DRIVERPool	On all Dicos traffic processors(PM-E1/T1) that are used as Ront End Processors
NetRedMonitorsPool	On 2 Dicos Loaders
PCFmaster_isup_sigtran_itu_Pool	On 2 Dicos Loaders
PCFslave_isup_sigtran_itu_Pool	On all Dicos traffic processors

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7.2 APPENDIX B LdapBrowser

7.2.1 Configuring the client ldap browser

7.2.1.1 LdapBrowser on Client Machine

Download and install the ldapbrowser version 2.8.1 on a client machine from the following

url:<http://www.iit.edu/~gawojar/ldap/download.html>

7.2.1.2 Define a Session

Start the ldapbrowser from the client machine once it has been downloaded and installed. Once the GUI is started configure the host and port according to your needs.

In the 'Connect' GUI:
Select: Session List
Select: New

In the 'Edit Session' GUI:
Select: Session

In the 'Host' parameter:
Enter: <VIP Address>

In the 'Port' parameter:
Enter: 7323

In the 'Version' parameter:
select: 2

In the 'Base DN' parameter:
Enter: applicationName=platform,nodeName=jambala

Make sure that the 'SSL' is unchecked.
Make sure that the 'Anonymous bind' is unchecked.

In the 'User DN:' parameter:
Enter: administratorName=jambala,nodeName=jambala

In the 'Password' parameter:
Enter: pokemon
Select: Save

Rename the newly created session:
In the 'Connect' GUI:
select: Session List

Highlight 'new' within the Session List: window
Select: Rename

In the Rename Session GUI:
In the Enter new name parameter:

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Enter: <name of the cabinet>
Select: OK

Verify that you can connect:
In the 'Connect' GUI:
Select: Session List

Highlight 'session name' created and renamed earlier within the Session List:
window
Select: Connect

At the bottom left hand corner of the LDAPBrowser should indicate
Connected.

7.3 APPENDIX C IMPORTING LDIF FILES

This Section assumes that LDAP Server is started and the installation of the client Ldapbrowser has already been completed.

ACTION: Download **DiskMeasures.ldif** and **PlatformMeasures.ldif** from the following directory in IO1: <TSP4.0 Runtime Distribution>/system/TelORB/IDP_PMF CORE_R4A07-PMFCORE/config to the machine where the client Ldapbrowser is running.

Start the Ldapbrowser.
Once the GUI is started configure the host and port according to your needs.

In the 'Connect' GUI:
Select: Session List
Select: **New**

In the 'Edit Session' GUI:
select: Session

In the 'Host' parameter:
Enter: <VIP Address>

In the 'Port' parameter:
Enter: **7323**

In the 'Version' parameter:
select: **2**

In the 'Base DN' parameter:
Enter: applicationName=PmApplication,nodeName=jambala
Make sure that the 'Anonymous bind' is unchecked.

In the 'User DN:' parameter:
Enter: administratorName=jambala,nodeName=jambala

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In the 'Password' parameter:

Enter: pokemon

Select: **Save**

Rename the newly created session:

In the 'Connect' GUI:

Select: Session List

Highlight '**new**' within the Session List: window

Select: **Rename**

In the Rename Session GUI:

In the Enter new name parameter:

Enter: **PMF**

Select: **OK**

Verify that you can connect:

In the 'Connect' GUI:

Select: Session List

Highlight the **PMF** session created

Select: Connect

At the bottom left hand corner of the LDAPBrowser should indicate
Connected.

Import DiskMeasures.Ldif

You should get on the left hand side of the main window of the browser the following line:

"applicationName=PmApplication,nodeName=jambala"

Select: applicationName=PmApplication,nodeName=jambala

Select: LDIF

Select: IMPORT

In the LDIF Import Window, select the browse button and another window will appear called "Choose file".

Within the Choose file window, go to directory in the client machine where DiskMeasures.Ldif was downloaded from IO1.

Select: DiskMeasures.ldif

In the File name parameter:

Select: OK

In the LDIF Import Window, you will see the selected file, make sure that "Add only" is selected

Select: IMPORT

You should get the message "**Finished Read 3 total entries. All successfully imported**". This means that the configuration data has been successfully installed.

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Select: **OK**

Import PlatformMeasures.ldif

In the LdapBrowser:

Select: **applicationName=PmApplication,nodeName=jambala**
Select: **LDIF**
Select: **IMPORT**

In the LDIF Import Window, select the browse button and another window will appear called "Choose file".

Within the Choose file window, go to directory in the client machine where PlatformMeasures.ldif was downloaded from IO1.

Select: **PlatformMeasures.ldif**

In the File name parameter:

Select: **OK**

In the LDIF Import Window, you will see the selected file, make sure that "**Add only**" is selected

Select: **IMPORT**

You should get the message "**Finished Read 8 total entries. All successfully imported**". This means that the configuration data has been successfully installed.

Select: **OK**

Import SigMeas.ldif

In the LdapBrowser:

Select: **applicationName=PmApplication,nodeName=jambala**
Select: **LDIF**
Select: **IMPORT**

In the LDIF Import Window, select the browse button and another window will appear called "Choose file".

Within the Choose file window, go to directory in the client machine where PlatformMeasures.ldif was downloaded from IO1.

Select: **SigMeas.ldif**

In the File name parameter:

Select: **OK**

In the LDIF Import Window, you will see the selected file, make sure that "**Add only**" is selected

Select: **IMPORT**

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You should get the message "Finished Read 8 total enries. All successfully imported". This means that the configuration data has been successfully installed.

select: **OK**

7.4 Appendix D terminal settings

There are a large number of hardware/software solutions that can be used for communication via the serial console. For communication with the cPCI-MXP64GX and cPCIMXS64GX

based boards, the serial console should be configured to use the following serial settings:

- Speed 38400 bps,
- 8 Data Bits,
- No Parity,
- 1 Stopbit

The serial console should also be configured to send the **DEL** (or Backspace) character code.

7.4.1 LINUX: MINICOM

In order to make changes to the BIOS, the following "Terminal settings" (Ctrl-A T) are recommended:

- Terminal emulation: ANSI
- Backspace key sends: DEL

Minicom's serial settings can be changed by writing Ctrl+A O and selecting "Serial port setup". Minicom can be configured to use the same serial settings (e.g. 38400 8N1) by default" on the appropriate serial port, by storing the parameters in a minicom rc file.

For example if minicom is started with an argument e.g. "minicom S0I", minicom will read the file /etc/minirc.S0I.

An example minicom rc file: /etc/minirc.S0I

```
pr port /dev/ttyS0
pu baudrate 38400
pu bits 8
pu parity N
pu stopbits 1
pu minit
```

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pu mreset
pu rtscts No
pu backspace DEL