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Tekelec Platform**

TPD Initial Product Manufacture

Release 5.0+

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Oracle Communications Tekelec Platform TPD Initial Product Manufacture, Release 5.0+

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Important Notices



CAUTION: Use only the procedure downloaded from Oracle Technology Network (OTN) (<http://www.oracle.com/technetwork/indexes/documentation/oracle-comms-tekelec-2136003.html>).

Before upgrading your system, access **My Oracle Support** web portal (<https://support.oracle.com>) and review any Alerts that may be related to the System Health Check or the Upgrade.

Before beginning this procedure, contact [Oracle Support](#) to inform them of your upgrade plans.

1. INTRODUCTION

1.1 Purpose and Scope

This document details the procedure for installing the Operating System on Oracle approved hardware.

The intended audiences for this document are the Oracle manufacturing engineers who will work with manufacturing technicians to build the systems. It will also be useful to test and development engineers who need to rebuild systems in the lab. Customer Service staff may also benefit from the information contained within this document. The Initial Product Manufacture (IPM) will be used for all Oracle approved hardware at Oracle manufacturing and Lab facilities.

This document applies to various TPD releases, starting with TPD 5.0. Some of the figures in this document were captured on a server running a TPD version older than 5.0, so they should be used as a sample and not as exact text.

The following items are considered out of the scope of this document:

- Application Server unpacking
- Application Server assembly
- Application Server diagnostics and acceptance testing
- Application Server application install/upgrade
- Application Server platform upgrade
- Specific part/configuration information for the terminal device (or equivalent) and null modem serial cable used to initiate and monitor the IPM process
- Use of a VGA monitor and PC keyboard to initiate and monitor the IPM process on T1200
- Use of the Platform Management and Configuration (PM&C) Application to initiate and monitor the IPM process.

1.2 My Oracle Support

Web portal (preferred option): My Oracle Support (MOS) at <https://support.oracle.com/>

Phone: +1.800.223.1711 (toll-free in the US),

Or retrieve your local hotline from Oracle Global Customer Support Center at <http://www.oracle.com/support/contact.html>

Make the following selections on the Support telephone menu:

Select **2** for New Service Request

Then select **3** for Hardware, Networking, and Solaris Operating System Support

Then either

- select **1** for **Technical Issues**,
When talking to the agent, please indicate that you are an existing Tekelec customer.
Note: Oracle support personnel performing installations or upgrades on a customer site must obtain the customer Support Identification (SI) number prior to seeking assistance.
OR
- select **2** for **Non-Technical Issues**, for example, for My Oracle Support (MOS) registration.
When talking to the agent, mention that you are a Tekelec customer new to MOS.

1.3 References

- [1] <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00729544/c00729544.pdf>
- [2] Oracle Integrated Lights Out Manager (ILOM) 3.1 Quick Start Guide, E24524-06, Feb 2014

1.4 Glossary

This section lists terms and acronyms specific to this document.

Table 1: Glossary

Acronym	Meaning
BIOS	Basic Input Output System
CD	Compact Disk
c-Class	HP marketing term for their enterprise blade server platform
DVD	Digital Versatile Disc
GRUB	Grand Unified Bootloader
iLO	HP Integrated Lights-Out
ILOM	Oracle Integrated Lights Out Manager
IPM	Initial Product Manufacture – the process of installing TPD on a hardware platform
KVM	Kernel-based Virtual Machine
MBR	Master Boot Record
OS	Operating System (e.g. TPD)
PM&C	Platform Management & Configuration
RMM	Remote Management Module
RMS	Rack Mount Server
T1200	TekServer III
TPD	Tekelec Platform Distribution
USB	Universal Serial Bus
VSP	Virtual Serial Port

2. PRE-INSTALLATION SETUP

2.1 Installation Prerequisites

The following items are required in order to IPM a server:

- A properly assembled server.
- Appropriate IPM Media Kit
- A terminal device (or equivalent) and null modem serial cable to initiate and monitor the IPM process:
 - T1200 requires a serial cable to RJ45 console port (also see Appendix G–IPM’ing T1200 using the Intel Remote Management Module (RMM)).
 - HP G5 rack mount servers require a VGA display and USB keyboard for BIOS management, and a serial cable to DB9 console port for TPD loading.
 - Newer HP rack mount servers and Oracle rack mount servers require a VGA display and USB keyboard for BIOS management, as well as an iLO/ILOM network connection with web-browser-equipped workstation for TPD loading.

Note: A VGA monitor and keyboard are viable for alternative access on the rack mount servers to execute the IPM process.

Note: The ILOM Remote Console Redirection only works with the 32-bit version of Java.

Note: Do not connect to the Oracle ILOM serial console during IPM. This can cause issues during post IPM when configuring BIOS/ILOM settings. Best case, you will be kicked out of the console when this configuration is being done. Worst case this will cause the BIOS/ILOM configuration to fail causing IPM to fail.

In general, ANSI standard terminal emulations are supported. As of this writing, the following terminal emulations are known to work: ANSI BBS, VT-52, VT-100, VT-102, VT-220, and VT-320. Console serial port settings are specified in manufacturing documentation for your hardware platform. As of this writing, the settings are as follows:

Table 2: Console serial port settings

System	Baud Rate	Data Bits	Parity	Stop Bits	Flow Control
T1200	115200	8	None	1	None
HP G5 rack mount servers	115200	8	None	1	None

Notes:

1. Default password(s) will be changed by the manufacturing process –or– will be disclosed to customer with recommendation to change. Standard Linux commands are used to change user passwords.
2. To login as root, contact **Oracle Support**.

2.2 System Configuration

Assemble and configure the system as appropriate and documented in the applicable application installation setup guides.

2.3 Network Connections

None.

2.4 Serial Connections

A serial connection to the console port is required to initiate and monitor the progress of the IPM installation. The location and type of the connection varies by system:

Table 3: Console port connections

System	Port type	Port location
T1200	RJ45 – Serial	Back of unit
HP G5 Rack Mount Servers	DB9 – Serial	Back of unit
HP G6 and newer HP Rack Mount Servers	iLO VGA or serial	Accessed via network
Oracle Rack Mount Servers	ILOM VGA or serial	Accessed via network

2.5 Verify System Health

1. Verify a null modem serial interface cable connects the terminal device to the server console port. Refer to Table 2 for console port settings and to **Error! Reference source not found.** for the type and location of the console port.
2. Power on the terminal device (if necessary) and establish a connection to the server console port.
3. Power on the server using the following instructions:

Table 4: Power-on instructions

System	Instructions
T1200	Attach power cables to both power inputs, enable power, and press the power button located on the front of the chassis. Verify that the ON LED is green.
HP Rack Mount Servers	Attach power cables to both power inputs. If the power LED in the middle of the power button on the front of the server is not illuminated green press the power button.
Oracle Rack Mount Servers	Attach power cables to both power inputs. While the Service Processor is booting the tiny LED by the “SP” label will flash. Once that becomes steady green and the LED by the “OK” label does a slow blink press the power button. The “OK” LED will blink faster when the server is booting.
Blade Servers	Insert the blade server into a configured and powered enclosure. Press the power button on the front of the blade if the power LED in the middle of the power button is not illuminated green.

2.6 Time Estimates

Table 5: Time Estimates for IPM in Minutes

	Phase	Setup	Media Check	OS CD/DVD	Initial Reboot	Syscheck
	Activity	Cable and Power up	Optional step to check media	IPM Install of OS	OS Boot	System health check
TPD	This Step	5	5	15	15	2
	Cumulative	5	10	25	40	42
TPD scrub 3 146 GB Disks	This Step	5	5	60	4	1
	Cumulative	5	10	70	74	75
TPDnoraid scrub diskconfig=HPHW 2 300 GB Disks	This Step	5	5	90	6	1
	Cumulative	5	10	100	106	107
TPDnoraid X4-2 with 2 300GB Disks using USB	This Step	5	N/A	10	6	1
	Cumulative	5	5	15	21	22

Note: The above times are estimates and will vary depending on the release of TPD being installed as some versions have more RPMs than others, the speed of the drives being installed onto, and the IPM media used, like USB, CD/DVD, or virtual media. Virtual media has other factors that will cause the time to vary, like network latency. If you need a better estimate of time for your specific installation, you will need to recreate your exact scenario.

3. SOFTWARE INSTALLATION AND VALIDATION PROCEDURES

3.1 Setting Server's CMOS clock

The date and time in the server's CMOS clock must be set accurately before running the IPM procedure. There are a number of different ways to set the server's CMOS clock. The following method requires the least number of external resources. See Appendix C for other alternatives.

Note: The IPM installation process managed by PM&C for blade servers automatically sets the server's CMOS clock, so there is no need to set the server CMOS clock when using PM&C.

3.2 Setting the CMOS clock and other BIOS parameters from the BIOS setup screen

Setting the clock and other BIOS parameters from the BIOS setup screen does not require TPD to be installed.

1. A few seconds after the server is powered on, as soon as you see the first bit of output on the screen, press the respective key three (3) times to access the BIOS setup screen.
 - On T1200 use the F2 key
 - On HP G Series using a VGA display and USB keyboard, use the F9 key
 - On Oracle Rack Mount Servers using a VGA display and USB keyboard, use the F2 key

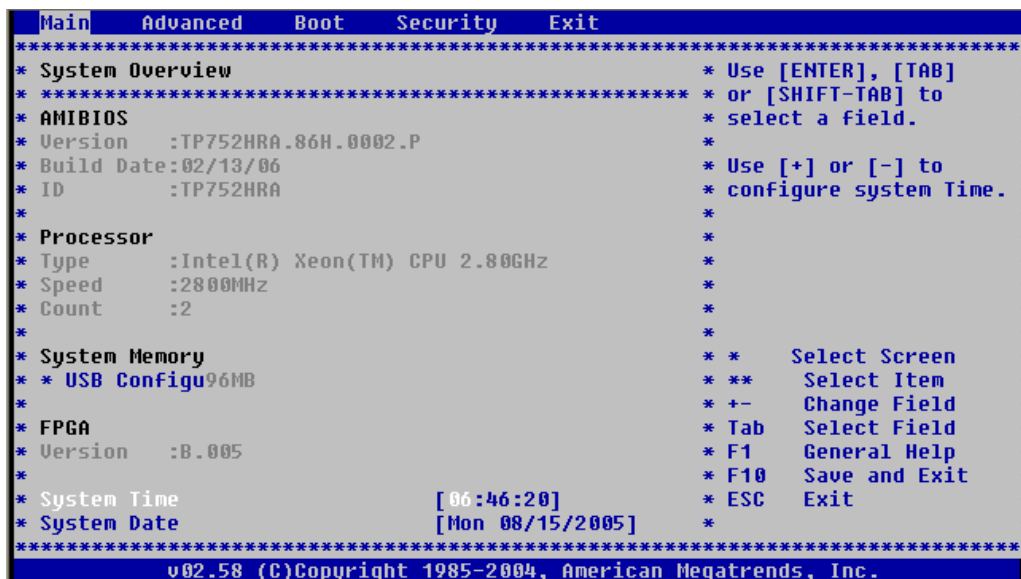


Figure 1: Example Main BIOS Screen

2. Set the server date and time to GMT (Greenwich Mean Time).
3. If the server is a HP G6 or newer rack mount server, then configure the iLO serial port as described in Appendix H.
4. Check for specific application BIOS settings and apply those. See Appendix H for TPD required settings for your respective server type. If there are no settings listed in the Appendix for your server type, then no changes (from the default) are needed.

5. If the server is a T1200 or Oracle Rack Mount Server, scroll to the exit screen using the arrow keys.
6. Exit from the BIOS screen, saving changes.

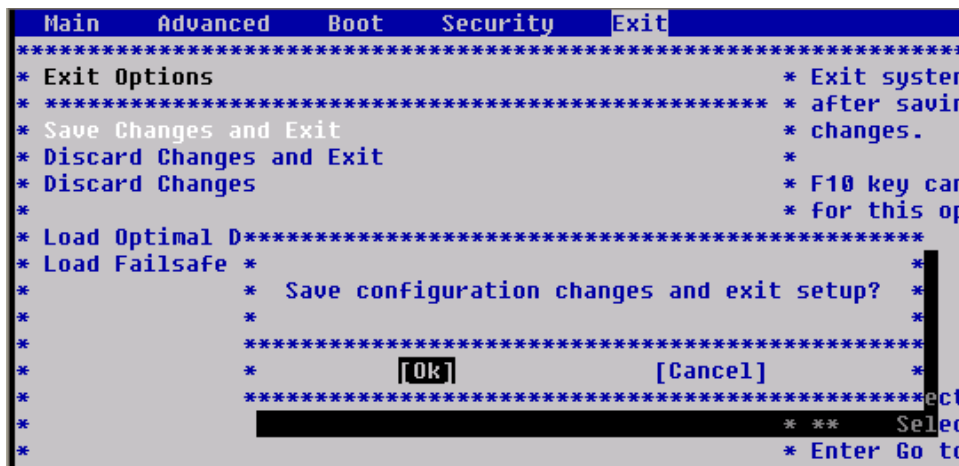


Figure 2: Example Exit BIOS Screen

7. If the server is a HP DL360 G5 or HP DL380 G5 machine, then configure the boot controller as described in Appendix E.
8. If the server is a HP DL380 G6 or G7 machine and you are on a TPD release prior to TPD 6.0, you need to verify there is a logical disk configured on the internal disk array. See Appendix F.

3.3 OS IPM Install

The IPM installation media must now be inserted into the system. Installation will then begin by resetting (or power cycling) the system so that the BIOS can find and then boot from the IPM installation media. The reboot steps are different for the different rack mount servers.

Note: On the HP G5 rack mount servers, this procedure can be accomplished by using either a DB9 serial cable plugged into the serial port in the back of the unit, or the VGA monitor and keyboard.

Note: On the HP G6 and newer HP and all supported Oracle Rack Mount Servers, this procedure can be accomplished by either configuring an IP address on the iLO/iLOM and accessing the console using the iLO/iLOM, or the VGA monitor and keyboard. The remote media function of the iLO/iLOM can also be used to provide access to the installation media. See Appendix I for instructions on configuring the iLO/iLOM.

3.3.1 Rack mount servers – Boot from CD/DVD/USB

1. Insert the OS IPM media (CD/DVD or USB) into the CD/DVD tray/USB slot of the Application Server.
2. Power cycle the server:
 - a) For T1200 servers, hold the power button in until the server turns off, then release. Wait 5 seconds, then press the power button and release it again to power on the system.
 - b) For HP rack mount servers, hold the power button in until the button turns amber, then release. Wait 5 seconds, then press the power button and release it again to power on the system.
 - c) For Oracle Rack Mount Servers, hold the power button in until the “OK” LED turns off, and starts a slow blink. Wait 5 seconds and press the power button and release it again to power on the system. In a second or 2 the “OK” LED will start to blink faster as the system powers up.
3. For some servers you must select a boot method so that the server does not boot directly to the hard drive.
 - a) For T1200 servers, the server should boot to CD/DVD/USB before hard disk.
 - b) For HP rack mount servers, hit F11 when prompted to bring up the boot menu and select the appropriate boot method.
 - c) For Oracle Rack Mount Servers, hit F8 when prompted to bring up the Boot Pop Up Menu then select the appropriate boot method.
4. Proceed to steps in section 3.4.

3.4 IPM Command line procedures

1. Figure 3 is a sample output screen indicating the initial boot from the install media was successful. The information in this screen output representative of TPD 6.0.0.

```

Welcome to Tekelec Platform Distribution!
Release: 6.0.0_80.7.1
Arch: x86_64
For a detailed description of all the supported commands and their options,
please refer to the Initial Platform Manufacture document for this release.
In addition to linux & rescue TPD provides the following kickstart profiles:

[ TPD | TPDnoraid | TPDblade | TPDcompact | HDD ]

Commonly used options are:

[ console=<console_option>[,<console_option>] ]
[ primaryConsole=<console_option> ]
[ rdate=<server_ip> ]
[ scrub ]
[ reserved=<size1>[,<sizeN>] ]
[ diskconfig=HPHWC[,force] ]
[ drives=<device>[,device] ]
[ guestArchive ]

To install using a monitor and a local keyboard, add console=tty0

boot: _

```

Figure 3: Example boot from media screen, TPD 6.0.0

2. Optional Step: If media has not been previously verified, perform a media check now; refer to Appendix B Media Check.
3. The command to start the installation is dependent upon several factors, including the type of system, knowledge of whether an application has previously been installed or a prior IPM install failed, and what application will be installed.

Note: Text case is important, and must be typed exactly.

If installing on a server that has never had an application installed (a “fresh install”), start the IPM process by entering the **TPD** command at the boot prompt. Note that there are other boot targets and options available. The following is a description of the alternative boot targets:

- **TPD** – To install with software RAID. The number of software RAID enabled partitions will vary depending on the TPD release. This target is appropriate for T1200.
- **TPDnoraid** – To install on first device found. Creates a /boot partition and five logical volumes. Very useful for machines that do not require software RAID because they already include hardware RAID. This target is appropriate for servers using hardware RAID setup instead of software.
- **TPDcompact** – To install using the minimum disk space. Create a boot partition and a / (root) partition. This target is not intended for production use.
- **TPDblade** – To install to one disk with blade partition config. Create a /boot partition and five logical volumes. This target is similar to TPDnoraid but some platform partitions are smaller.

- **rescue** – To enable rescue mode.
- **HDD** – This option allows you to boot to the default hard drive after booting from IPM media. This is used when the server has been rebooted while IPM media was left in the DVD/CD-ROM drive.

If the server has had an application installed (and is not a “fresh install”), if its state is not known, or if recovering from a failed installation, start the IPM process by including the **scrub** option with your IPM command. Warning: Make sure you understand the behavior of the “scrub” option (as described in paragraph D.3 on page 41) before using it.

Some applications require disk space to be set aside for use other than being part of the vgrout LVM volume group. See the installation documentation for the application to determine if this is needed and if so, how much space needs to be reserved. The **reserved** option provides this ability to set aside one or more partitions. For more information on the option, see section D.1.

When installing to a server with more than one drive, it may be desired to limit the TPD installation to a subset of the drives. For example, it may be desired to perform a **TPDnoraid** installation to a drive other than the first. If this special handling is desired, use the **drives** option to specify the device names to which TPD should be installed. This is specifically applicable to HP G5 rack mount servers configured with external disk drives. In this configuration one will most likely need to specify the parameter(s) to the **drives** option as the specific logical drive(s) for the internal RAID. For more information on the option, see section D.2.

TPD supports automatically reconfiguring the disk drives on HP G6 and newer rack mount and blade servers, and all supported Oracle Rack Mount Servers so the TPD installation can use hardware mirroring (RAID 1). The method to do this depends on the version of TPD you are installing and the hardware. Please note that this disk reconfiguration mode is not supported on HP G5 and older equipment. This command will reconfigure the onboard RAID controller to support hardware mirroring if passed with the **force** option. Any data on any disk drive managed by the onboard RAID controller may be lost during this reconfiguration, however, no data will be lost if the disks are already in the desired configuration.

Starting with TPD 6.0, when IPMing HP G6 and newer hardware (and any Oracle hardware in the TPD release that supports it) the correct **diskconfig** option is appended to the IPM command, without the **force** option, if no **diskconfig** or **drives** option is passed. This option will verify the disk configuration is correct before proceeding with the install. If the configuration is not correct, it will stop the installation without changing the disk configuration so you can reboot and start over manually passing the **diskconfig** option you want with the **force** option. If you want to install TPD on a system with a non-standard configuration, you should manually configure the disks and use the **drives=<device>** option to IPM onto a specific device. To force the reconfiguration of the disks for all supported servers mentioned above you would pass **diskconfig=HWRAID,force**.

In TPD 5.X the **diskconfig** option is not automatically added to the IPM command so you have to include it. The option for **diskconfig** to IPM HP G6 and newer servers is **diskconfig=HPHW**. To force the reconfiguration of the disks it would be **diskconfig=HPHW, force**.

Refer to **Appendix D IPM command options** for all TPD IPM command options.

How long the IPM process will take will be determined by the size and speed of the disk drives installed in the server. See Table 5 for time estimates. No status is printed to the screen for several hours as the scrub option is run. If one or more disk drives in the server has any hardware errors, the time required to run a scrub will rise dramatically.

After entering the command to start the installation, the Linux kernel will load, as in the following screenshot:

```

please refer to the Initial Platform Manufacture document for this release.
In addition to linux & rescue TPD provides the following kickstart profiles:

    [ TPD ; TPDnoraaid ; TPDblade ; TPDbladeraaid ; TPDnocons ; T1200sol ; HDD ]

Commonly used options are:

    [ console=<console_option>[,<console_option>] ]
    [ rdate=<server_ip> ]
    [ scrub ]
    [ reserved=<size1>[,<sizeN>] ]
    [ diskconfig=HPC6[,<force>] ]
    [ drives=<device>[,<device>] ]

To install using a monitor and a local keyboard, add console=tty0

boot: TPD
Loading vmlinuz.....
Loading initrd.img.....
.....
Ready.
    
```

Figure 4: Example kernel loading output

4. After a few seconds, additional messages will begin scrolling by on the screen as the Linux kernel boots, and then the drive formatting and file system creation steps will begin:

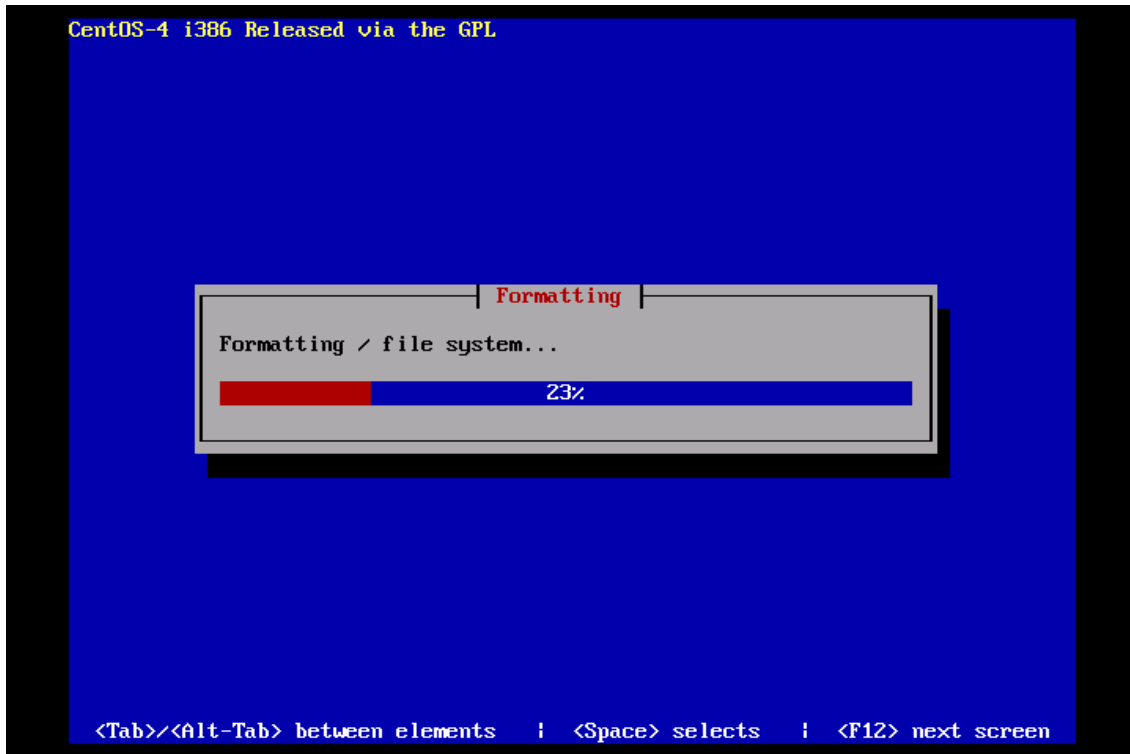


Figure 5: Example file system creation screen

- 5. Once the drive formatting and file system creation steps are complete, the following screen will appear indicating that the package installation step is about to begin.

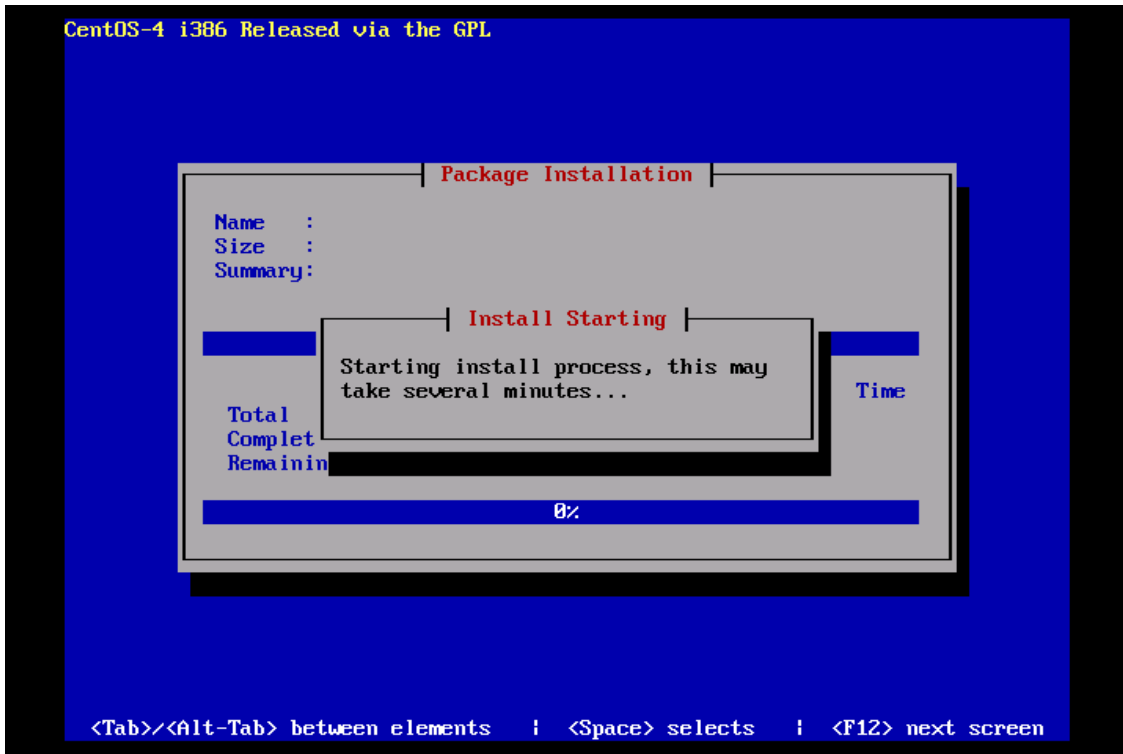


Figure 6: Example package installation screen

- Once the screen shown in Figure 6 appears, it may take several minutes before anything change. However, after a few minutes, you will see a screen similar to that below, showing the status of the package installation step. For each package, there will be a status bar at the top indicating how much of the package has been installed, with a cumulative status bar at the bottom indicating how many packages remain. In the middle, you will see text statistics indicating the total number of packages, the number of packages installed, the number remaining, and current and projected time estimates:

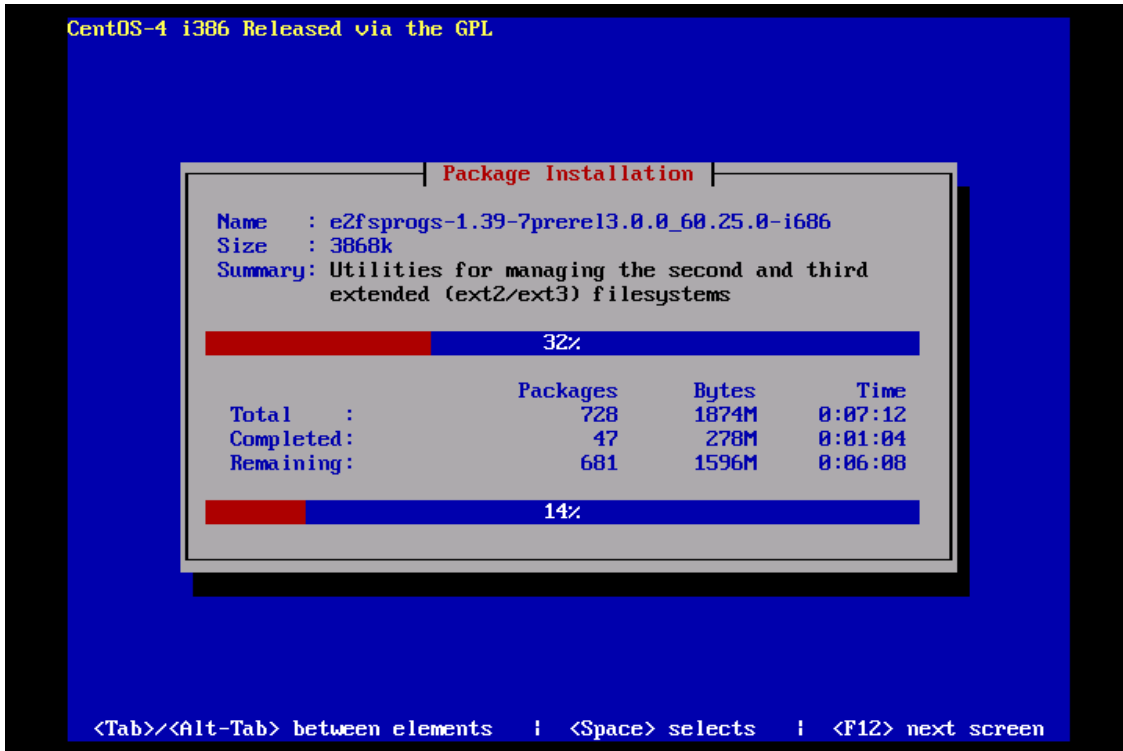


Figure 7: Example installation statistics screen

7. Once all the packages have been successfully installed, the following screen will appear, letting you know the installation process is complete. Remove the installation media (DVD or USB key) and then press <ENTER> to reboot the system.

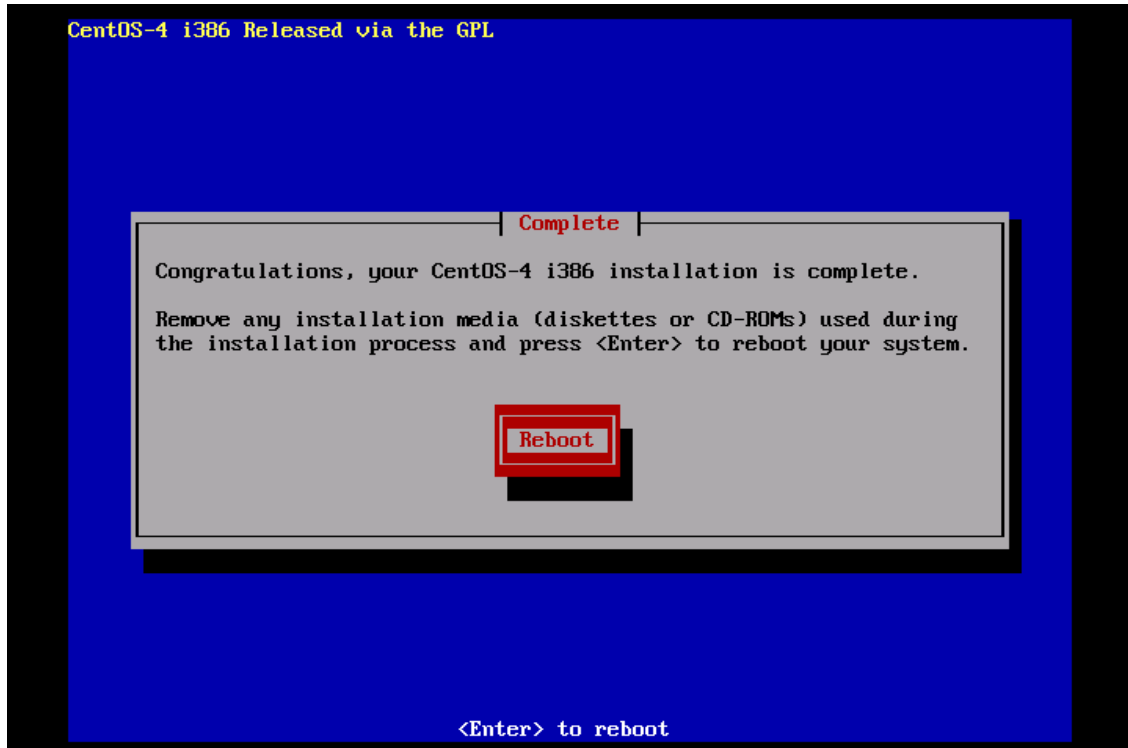


Figure 8: Example installation complete screen

8. After a few minutes, the BIOS screen will appear again, followed by several messages about each of the Ethernet ports in the system, and finally followed by the following message printed by the boot loader, indicating that it is booting the new IPM load.

```
Booting 'TPD i386 (2.6.18-1.2849preel3.1.0_61.7.0)'  
root (hd0,0)  
Filesystem type is ext2fs, partition type 0xfd  
kernel /vmlinuz-2.6.18-1.2849preel3.1.0_61.7.0 ro root=/dev/md2 8250,nr_uares=  
32 console=tty0 console=ttyS0,115200  
[Linux-bzImage, setup=0x1e00, size=0x1d9306]
```

Figure 9: Example boot loader output

Note: It is possible that the system will reboot several times during the IPM process. No user input is required if this occurs.

9. A successful IPM platform installation process will result in a user login prompt.

3.5 Post-Install Processing

Login as user syscheck, and the system health check will run automatically. This will check the health of the server, and print out an “OK” if the tests passed, or a descriptive error of the problem if anything failed. The screenshot below shows a successful run of syscheck, where all tests pass, indicating the server is healthy.

```
CentOS release 4.4 (Final)
Kernel 2.6.18-1.2849prere13.0.0_60.52.0 on an i686

tokyo login: syscheck
Password:
Last login: Mon Jul 17 11:27:41 from 10.25.61.126
Running modules in class hardware...
                                OK

Running modules in class proc...
                                OK

Running modules in class disk...
                                OK

Running modules in class system...
                                OK

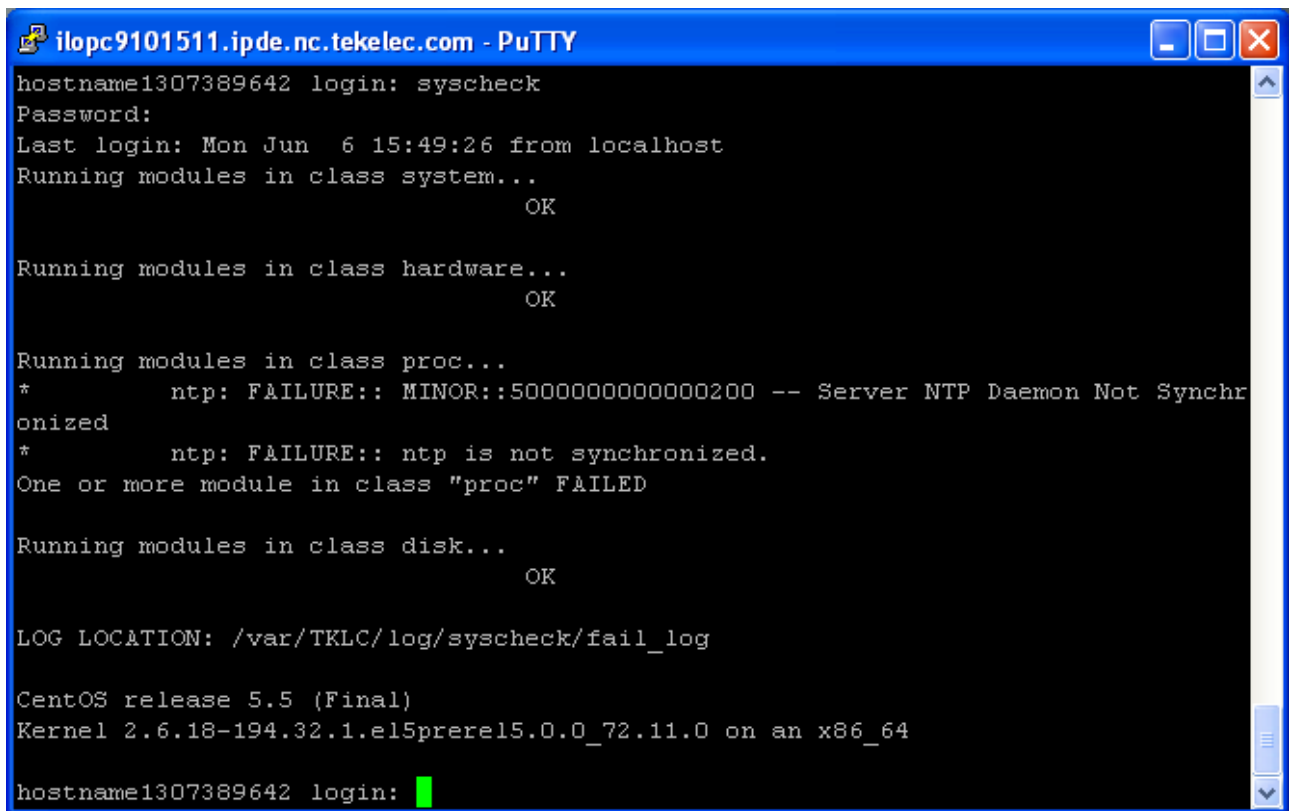
LOG LOCATION: /var/TKLC/log/syscheck/fail_log

CentOS release 4.4 (Final)
Kernel 2.6.18-1.2849prere13.0.0_60.52.0 on an i686

login: █ |
```

Figure 10: Example successful syscheck output

Since an NTP server will not normally be configured at this point, syscheck may fail due to the NTP test as shown in Figure 11: Example syscheck output with NTP error. The syscheck NTP test will not give this failure during the first 20 minutes after the server is booted up. The error shown in Figure 11 is acceptable and can be ignored.

A screenshot of a PuTTY terminal window titled "ilopc9101511.ipde.nc.tekelec.com - PuTTY". The terminal displays the output of a syscheck command. It shows the hostname "hostname1307389642", the user "login: syscheck", and the password prompt "Password:". The output includes the last login time "Mon Jun 6 15:49:26 from localhost" and the execution of syscheck modules for "system", "hardware", "proc", and "disk". The "proc" class fails due to an NTP synchronization error, with the message: "* ntp: FAILURE:: MINOR::5000000000000200 -- Server NTP Daemon Not Synchronized" and "* ntp: FAILURE:: ntp is not synchronized. One or more module in class 'proc' FAILED". The "disk" class succeeds with "OK". The terminal also shows the log location "/var/TKLC/log/syscheck/fail_log", the OS version "CentOS release 5.5 (Final)", and the kernel version "Kernel 2.6.18-194.32.1.el5prere15.0.0_72.11.0 on an x86_64". The prompt "hostname1307389642 login:" is followed by a green cursor.

```
ilopc9101511.ipde.nc.tekelec.com - PuTTY
hostname1307389642 login: syscheck
Password:
Last login: Mon Jun 6 15:49:26 from localhost
Running modules in class system...
                                OK

Running modules in class hardware...
                                OK

Running modules in class proc...
*      ntp: FAILURE:: MINOR::5000000000000200 -- Server NTP Daemon Not Synchron
onized
*      ntp: FAILURE:: ntp is not synchronized.
One or more module in class "proc" FAILED

Running modules in class disk...
                                OK

LOG LOCATION: /var/TKLC/log/syscheck/fail_log

CentOS release 5.5 (Final)
Kernel 2.6.18-194.32.1.el5prere15.0.0_72.11.0 on an x86_64

hostname1307389642 login: █
```

Figure 11: Example syscheck output with NTP error

The screenshot Figure 12 indicates a disk failure in one of the syscheck tests. If the server is using software disk mirroring (RAID1), the syscheck disk test will fail until the disks have synchronized. The amount of time required to synchronize the disks will vary with disk speed and capacity. Continue executing system check every 5 minutes (by logging in as syscheck to run syscheck again) until the health check executes successfully as shown above. If the disk failure persists for more than two (2) hours, or if system check returns any other error message besides a disk failure or the NTP error shown in Figure 11, do not continue, contact Manufacturing Support and report the error condition.

```
CentOS release 4.4 (Final)
Kernel 2.6.18-1.2849prere13.0.0_60.52.0 on an i686

tokyo login: syscheck
Password:
Last login: Mon Jul 17 11:28:48 on ttyS0
Running modules in class hardware...
                                OK

Running modules in class proc...
                                OK

Running modules in class disk...
One or more module in class "disk" FAILED

Running modules in class system...
                                OK

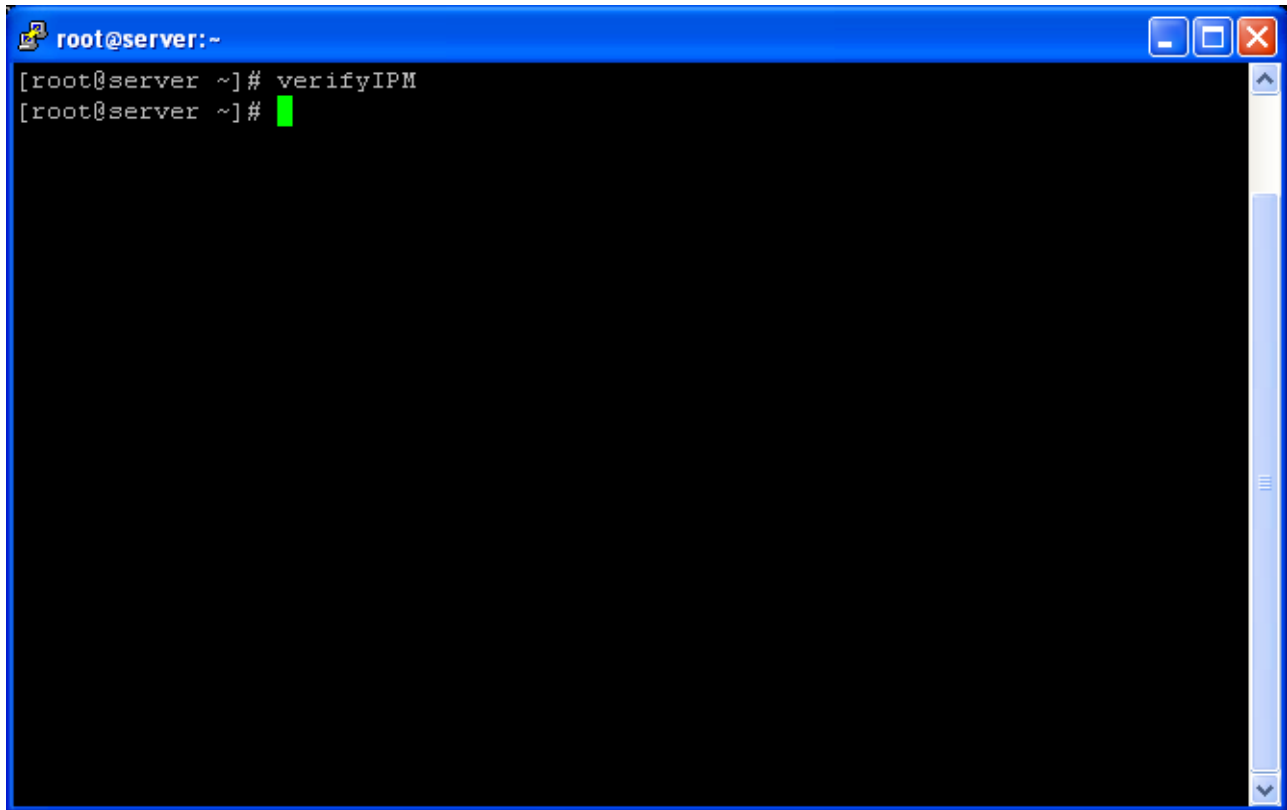
LOG LOCATION: /var/TKLC/log/syscheck/fail_log

CentOS release 4.4 (Final)
Kernel 2.6.18-1.2849prere13.0.0_60.52.0 on an i686

login: █ █
```

Figure 12: Example syscheck disk failure output

Verify that the IPM competed successfully by logging in as root and running verifyIPM. Contact Customer Service if any output is printed by the verifyIPM command.

A terminal window with a blue title bar and standard window controls. The prompt is root@server:~. The command verifyIPM has been entered and executed, resulting in a green cursor on the next line.

```
root@server:~  
[root@server ~]# verifyIPM  
[root@server ~]# █
```

Figure 13: Example verifyIPM output

Congratulations!
Application Server IPM Process is complete and Post-install checks have passed.
You have successfully completed this procedure.
Refer to sales order to load appropriate application.

Appendix A. Possible Errors During IPM Installation Processing

A.1 IPM Errors

1. During the IPM installation, if failures occur, or if the IPM process stops and requests user input, the installation process is suspended and manual intervention is required.
2. If media check was not been performed in section 3.4, step 2, then stop and refer to Appendix B, “Media Check” to run that now.
3. If media check fails, do not continue, and contact Customer Service to report the error condition.

A.2 Post Installation syscheck errors

If the syscheck command continues to fail in the post-installation step, execute the following steps to isolate the problem

1. Log in as root
2. Run: `syscheck -v -k meta`
3. If the output looks like the screenshot below, then execute all the steps in section 3.4 again, but at step 3, append the “scrub” option to the installation start command. Warning: Make sure you understand the behavior of the “scrub” option (as described in Section D.3) before using it. Refer to the text for step 3 to determine the proper installation start command for your hardware.

```
Kernel 2.6.18-1.2849prerel3.0.0_60.52.0 on an i686
tokyo login: root
Password:
Last login: Mon Jul 17 11:31:10 on ttyS0
[root ~]# syscheck -v -k meta
Running modules in class disk...
    meta: Checking md status on system.
    meta: md Status OK, with 11 active volumes.
    meta: Checking md configuration on system.
    meta: md12 is configured, but is not currently active.
    meta: ::MAJOR:: 300000000000000002 - Server Internal Disk Error
    meta: md configuration failed
    meta: Active md config doesn't match /etc/raidtab
Return string: "Configuration check of md subsystem failed"
One or more module in class "disk" FAILED

Running modules in class system...
                                OK

LOG LOCATION: /var/TKLC/log/syscheck/fail_log
[root ~] █
```

Figure 14: Example syscheck failure output

A.3 HP IPM Errors

If you receive an error similar to what is shown below in Figure 15 while IPMing an HP server, you must verify that the boot controller has some default configuration for the internal disks. This can occur if during boot-up the Option ROM menu is entered for the on-board controller and the disk configuration is deleted.

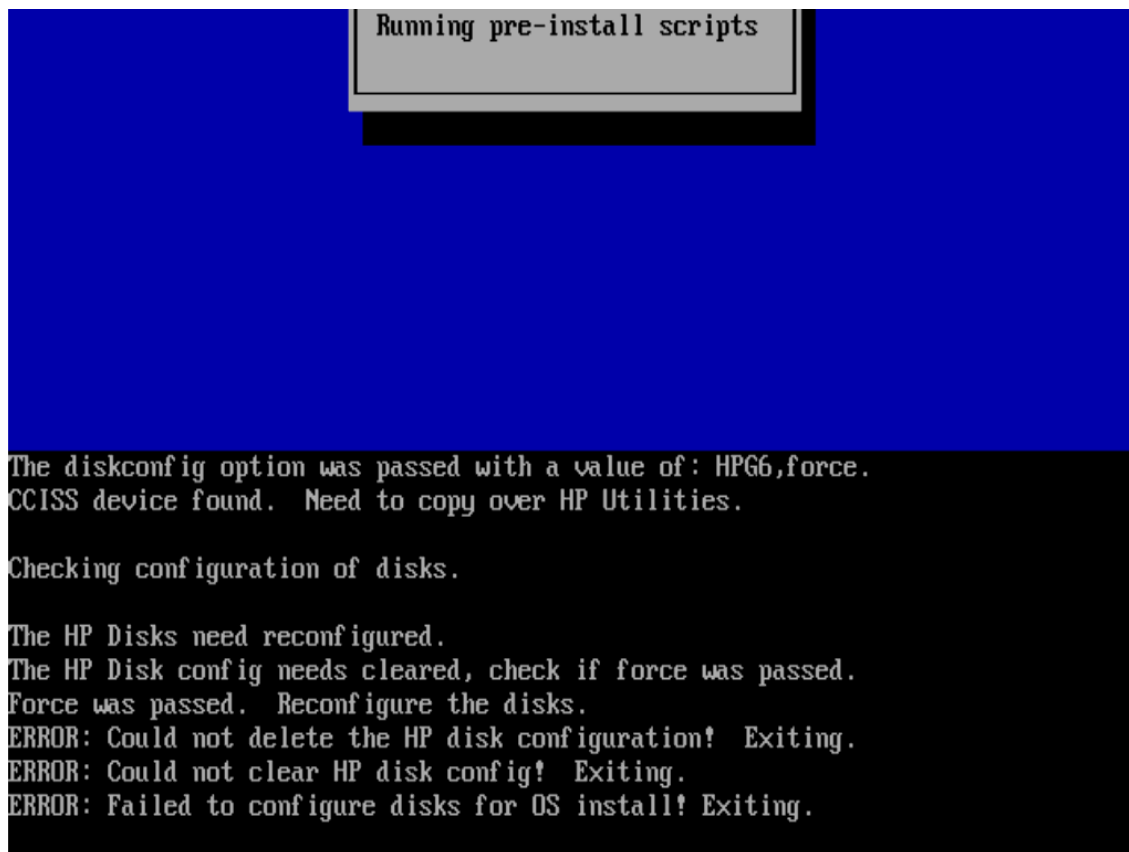


Figure 15: HP IPM Error

To verify this is the case, reboot the server. Verify that the Slot 0 controller has at least 1 Logical Drive as shown in Figure 16. If so, you must verify that at least one logical drive is assigned to the correct controller by executing the procedure in Appendix A.4.

```

Copyright 1982, 2008 Hewlett-Packard Development Company, L.P.

Proc 1: Quad-Core Intel(R) Xeon(TM) Processor (2.66 GHz/1333 MHz, 2x6MB L2)
Proc 2: Quad-Core Intel(R) Xeon(TM) Processor (2.66 GHz/1333 MHz, 2x6MB L2)
Power Regulator Mode: Dynamic Power Savings

Advanced Memory Protection Mode: Advanced ECC Support
Redundant ROM Detected - This system contains a valid backup system ROM.
1615-Power Supply Failure or Power Supply Unplugged in Bay 1
Power Supply Solution Not Fully Redundant

Integrated Lights-Out 2 Advanced
iLO 2 v1.50 Mar 12 2008 10.250.36.98

Slot 0 HP Smart Array P400i Controller (256MB, v4.12) 1 Logical Drive
Slot 2 HP Smart Array 6400 Controller (192MB, v2.80) 3 Logical Drives

Press <F8> to run the Option ROM Configuration for Arrays Utility
Press <ESC> to skip configuration and continue
<F9 = Setup>
    
```

Figure 16: Slot 0 with 1 Logical Drive

If the Slot 0 controller has 0 Logical Drives as in Figure 17, you must create a default Logical Drive. See Appendix F to create the logical drive.

```

SATA Option ROM ver 2.00.B12
Copyright 1982, 2008. Hewlett-Packard Development Company, L.P.
Port1: (CD-ROM) TEAC DV-W28S-RS

<F9 = Se

Broadcom NetXtreme II Ethernet Boot Agent v4.6.8
Copyright (C) 2000-2008 Broadcom Corporation
All rights reserved.
Press Ctrl-S to Configure Device (MAC Address - 00237DE003CE)

Integrated Lights-Out 2 Advanced
iLO 2 v1.81 Jan 15 2010 10.250.36.147

Slot 0 HP Smart Array P410i Controller (256MB, v2.50) 0 Logical Dr
1785-Slot 0 Drive Array Not Configured
Run Array Configuration Utility

Press <F8> to run the Option ROM Configuration for Arrays Utility
Press <ESC> to skip configuration and continue
    
```

Figure 17: Slot 0 with No Logical Drives

If you continue to receive an error similar to what is shown above in Figure 15, after configuring the default Logical Drive, you must verify that the drive is assigned to the correct controller. To do this:

- Execute the procedure in Appendix A.4
- If the available drives are correct, contact Manufacturing Support for assistance.

A.4 HP Drive Verification

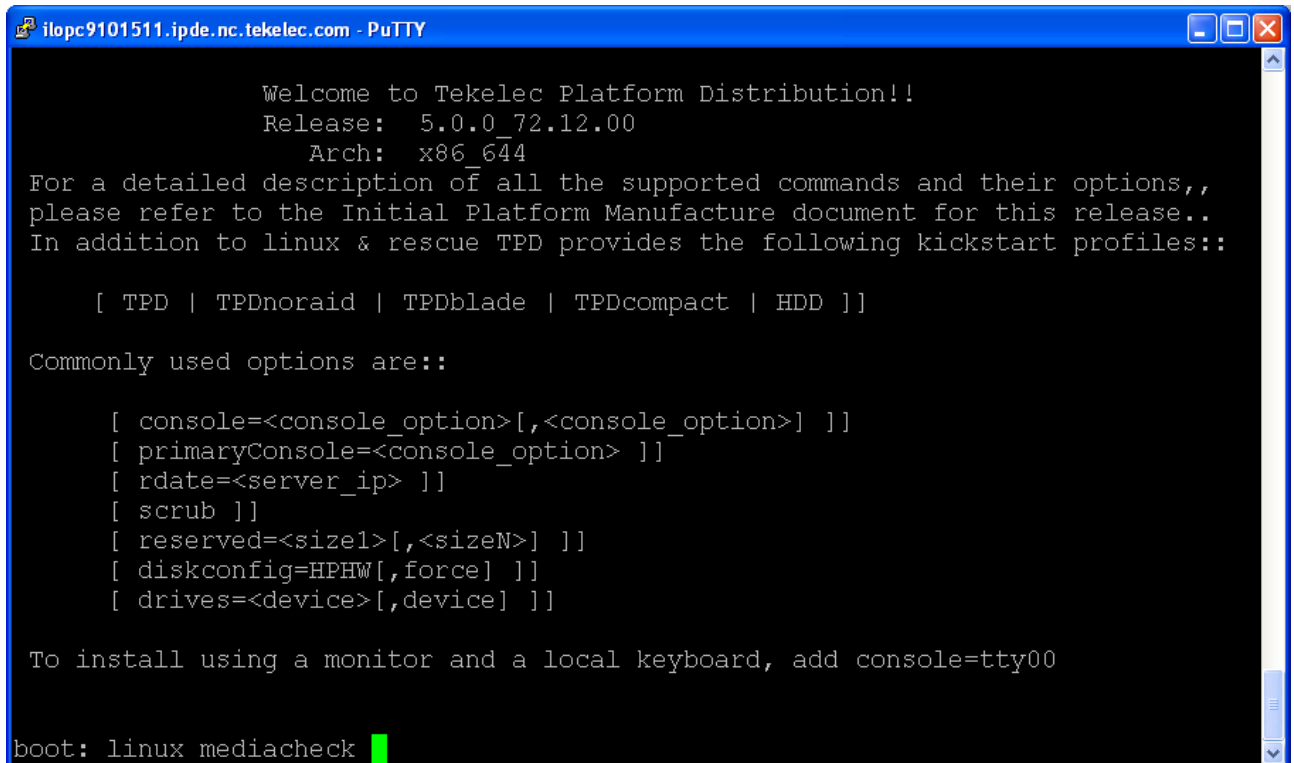
Follow this procedure to diagnose the possible condition of crossed internal SATA cables.

- Verify that there are physical drives are in Slot 1 and Slot 2.
- Reboot the server.
- If the “Press any key to view Option ROM messages” message is displayed, then press a key to view the Option ROM messages.
- Press F8 when prompted to run the Option ROM Configuration for Arrays Utility for Slot 0 as in Figure 17.
- If a logical drive exists select ‘View Logical Drive’. Otherwise select ‘Create Logical Drive’.
- Verify that the information listed in the ‘Physical Drives’ window begins with:
 - Port 1I, Box 1, Bay 1, ...
 - Port 1I, Box 1, Bay 2, ...
- If there are no drives listed in Port 1I and Bays 1 & 2, contact Manufacturing Support to report that. In this case the SATA cables may have been installed incorrectly and will need to be corrected. Do not attempt to perform this operation without Oracle’s approval and guidance.

Appendix B. Media Check

Media Check only works on CD/DVDs. USB media should be validated when it is created as the validation steps are dependent on how it was created.

1. Refer to section 3.3.1 to automatically boot from the DVD IPM media.
2. The screen output shown below indicates the initial boot from DVD is successful. Enter the command “linux mediacheck” and press <ENTER>.



```
ilopc9101511.ipde.nc.tekelec.com - PuTTY

Welcome to Tekelec Platform Distribution!!
Release: 5.0.0_72.12.00
Arch: x86_64
For a detailed description of all the supported commands and their options,,
please refer to the Initial Platform Manufacture document for this release..
In addition to linux & rescue TPD provides the following kickstart profiles::

    [ TPD | TPDnoraaid | TPDblade | TPDcompact | HDD ]

Commonly used options are::

    [ console=<console_option>[,<console_option>] ]
    [ primaryConsole=<console_option> ]
    [ rdate=<server_ip> ]
    [ scrub ]
    [ reserved=<size1>[,<sizeN>] ]
    [ diskconfig=HPHW[,force] ]
    [ drives=<device>[,device] ]

To install using a monitor and a local keyboard, add console=tty00

boot: linux mediacheck █
```

Figure 18: Example media check command

3. When the following screen appears, tab until "OK" is highlighted and then press <ENTER>.



Figure 19: Example media test dialog

- Next, press tab until "Test" is highlighted, and press <ENTER> to begin testing the currently installed media.

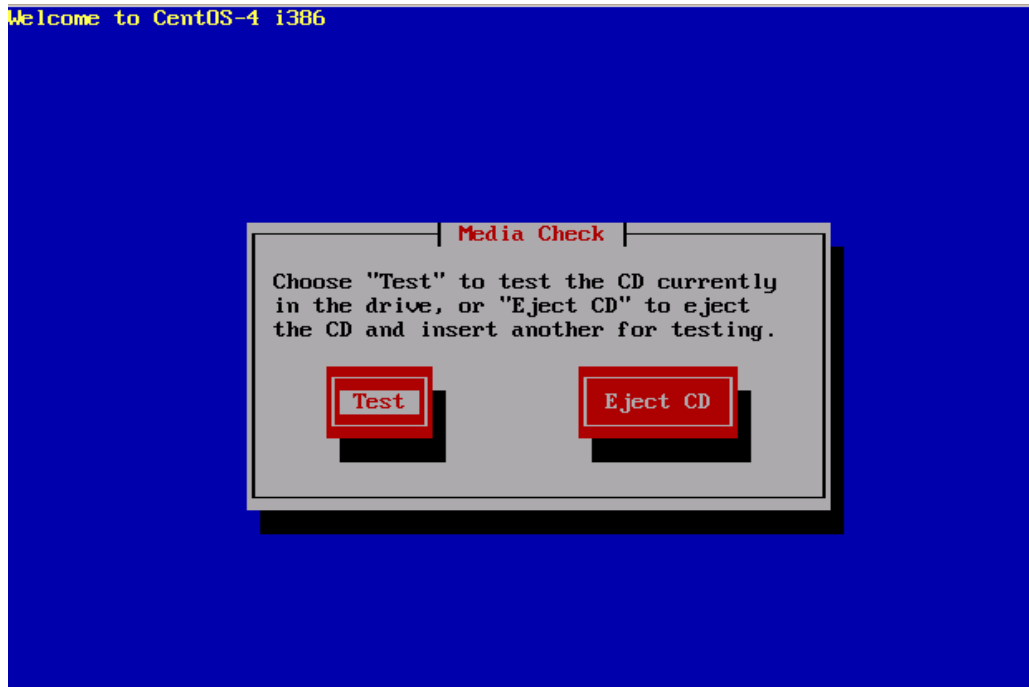


Figure 20: Example dialog with Test highlighted

- The media check will begin, with a status bar indicating the progress, as shown in the screen shot below:

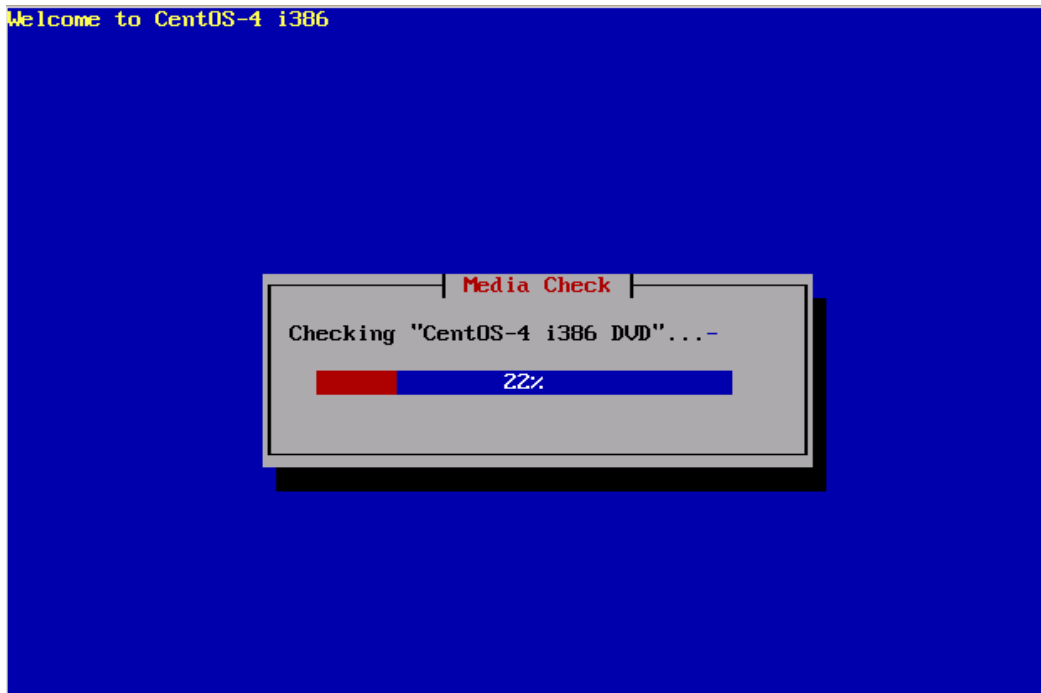


Figure 21: Example media check progress screen

6. If the media check is successful, the following screen will be displayed. Press <ENTER> to continue.



Figure 22: Example media check result

7. To test an additional media, remove original media, insert new media, tab until "Test" is highlighted and press <ENTER>. If no additional media is available, and the media check passed, remove the current media, insert the original media (first disk or USB pen), tab until "Continue" is highlighted and press <ENTER> to continue the installation again.

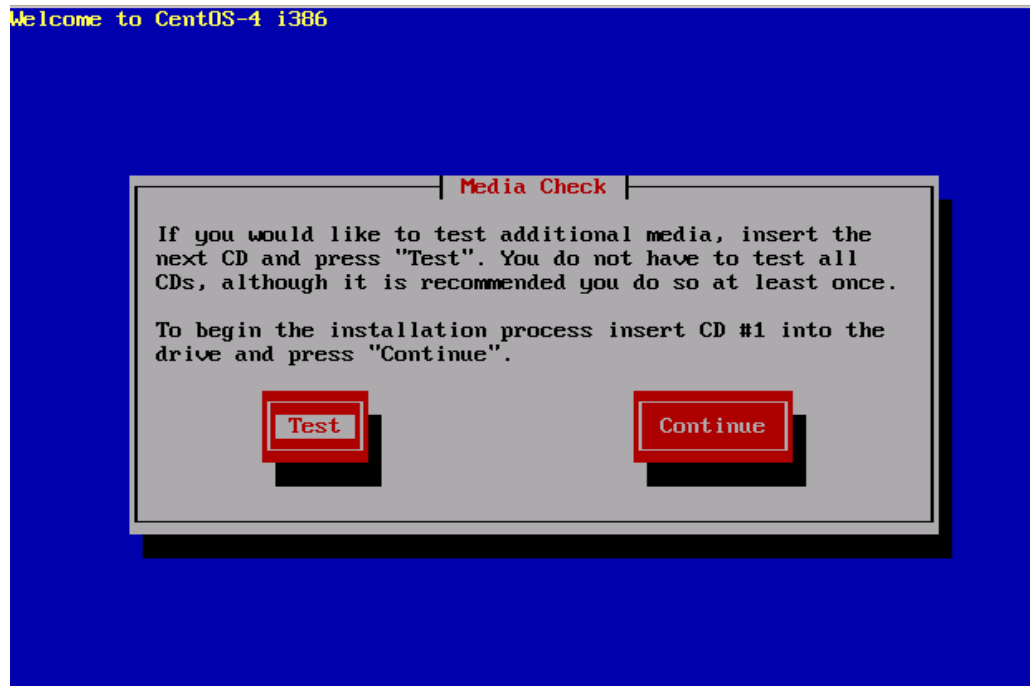


Figure 23: Example media check continuation dialog

Appendix C. Alternative Methods of Setting CMOS clock

There are multiple ways to set the Server's CMOS clock. The following methods are offered as alternatives to the method described in section 3.1. Please note that the CMOS clock must be accurate before the IPM is initiated.

C.1 Setting CMOS clock when running TPD.

If the server has TPD installed and you know the root password, you can use the following procedure to set the system clock.

1. Boot the server up.
2. Log in as root.
3. Verify the current date, using the date command:

```
# date  
Fri Jul 13 13:14:15 EDT 2007
```

4. If the date, time and time zone are correct, continue to section 3.3, OS IPM Install.
5. If the time zone or date is not correct, use the platcfg utility to enter the correct time zone and date.
6. Halt the server using the platcfg utility.

C.2 Setting CMOS clock from an NTP server while running TPD.

If the server has TPD installed and you know the root password, you can use the following procedure to set the system clock if the network is configured and an NTP server is available to the server running TPD:

1. Boot up the server
2. Log in as root
3. Verify the current date, using the date command:

```
# date
Fri Jul 13 13:14:15 EDT 2007
```

4. If the date, time and time zone is correct, continue to section 3.3, OS IPM Install.
5. Disable ntp:

```
# service ntpd stop
Shutting down ntpd: [ OK ]
```

6. Use ntpdate to change the local time:

```
# ntpdate <NTP server IP address>
13 Jul 13:15:01 ntpdate[27747]: step time server 198.89.40.60 offset 46.01234 sec
```

7. Shut down the kernel and reboot the server:

```
# shutdown -r now
```

8. Check the date and time by logging in as root and verifying the current date, using the date command:

```
# date
Fri Jul 13 13:18:03 EDT 2007
```

Appendix D. IPM command options

There are multiple options that can be specified on the boot line that affect how the system is manufactured. Multiple options can be specified on a single command.

D.1 reserved

The **reserved** option provides the capability to create one or more extra partitions that are not made part of the vgroot LVM volume group.

The sizes of the partition(s) are indicated after “**reserved=**” and are separated by commas without any whitespace if there are more than one. The sizes use a suffix to indicate whether the value is in units of megabytes (**‘M’**) or gigabytes (**‘G’**). In this context, a megabyte is 1024^2 and a gigabyte is 1024^3 .

In the case of a software RAID-1 configuration, such as **TPD** (but not **TPDnoraid**), a single value will actually cause the creation of a partition on 2 drives and a metadvice (md) that incorporates the two partitions.

Examples:

1. **TPD reserved=2G** – On a T1200, this will create a reserved partitions on sda and sdb of 2 GB, and a RAID-1 metadvice using those reserved partitions.
2. **TPDnoraid reserved=512M** – On a HP server, this will create a reserved partition on sda of 0.5 GB.
3. **TPDnoraid reserved=4G,128M** – On a HP server, this will create two reserved partitions on cciss/c0d0 of 4 GB and of 128 MB.

The partition(s) or metadvice(s) can be used by storageMgr to create a DRBD device or LVM physical volume. However, to do so, one will need to know the partition number or metadvice number.

Numbering of partitions is performed by anaconda and is controlled by anaconda. Therefore, to get the partition number, a developer would need to examine the partition table after an IPM to determine the number. Also, this number may change due to changes in anaconda in future releases of TPD.

D.2 drives

The **drives** option provides the capability to limit the installation of TPD to certain drives by specifying the device names separately by commas after “**drives=**”.

Examples:

1. **TPD drives=sda,sdb** – May be useful on a system with more than 2 drives where the additional drives are not intended to be used for the root (TPD) install. **TPDnoraid drives=cciss/c1d0** – May be useful on HP G5 rack mount servers where the logical drive for the internal RAID is not the first device in the system.

Note: If the drives specified do not include the first device in the system, care must be made to set the BIOS to treat one of the drives specified as the first boot disk/controller **before** starting the IPM. For example #2 to work, the internal RAID controller should be configured as the boot controller.

The order in which the drives are specified in the **drives** parameter determines the boot drive order sent to anaconda for use. The order in which the drives are specified must correspond to the order in which the drives are specified in

the BIOS.

D.3 scrub

This option is typically used as part of the IPM process on machines that have had TPD loaded in the past. The usage of the “scrub” option is used to ensure that the disk and logical volume partitioning that occurs during the early phase of IPM operates correctly. Note that this option should not be used during hardware USB media based IPM since doing so will erase the TPD installation media.

It is extremely important to understand that the “scrub” option will remove all data from ALL attached disk devices to the machine being IPM’ed. Note that this includes disk drives that are not mentioned in the “drives” parameter as well as USB install media. Therefore, whenever the “scrub” option is used, any and all disk drives attached to the machine being IPM’ed, including those not mentioned in the “drives” parameter, will lose all of their data. Technically, this is accomplished by writing zeroes to the entire disk of each attached disk drive.

D.4 clear

This option is used to erase the Master Boot Record (MBR) of all the attached disk drives. Note that this option will operate against all attached disk drives of the machine being IPM’ed. Clearing the MBR also removes each disk drive’s partition table, effectively causing the loss of all data on the disk. Note that this option should not be used during hardware USB media based IPM since doing so will erase the TPD installation media.

It is extremely important to understand that the “clear” option will remove all MBR’s from all the attached devices to the machine being IPM’ed. Note that this includes disk drives that are not mentioned in the “drives” parameter as well as USB install media. Therefore, whenever the “clear” option is used, any and all disk drives attached to the machine being IPM’ed, including those not mentioned in the “drives” parameter, will lose all of their data. Technically, this is accomplished by writing zeroes to the 512 KBytes of each attached disk drive.

D.5 diskconfig

This option is intended to direct the IPM process to configure the disks in different ways. At this time diskconfig supports the following options:

- HPHW – specify that the server is an HP server that should be configured to use hardware RAID1 (mirroring). This option only applies to HP servers G6 and above. The expected configuration is that the first two physical drives on the array controller in slot 0 of the server will be configured as one logical disk. This is the default if no **diskconfig** or **drives** option is passed.
- HPSW – specify that the server is an HP server that should be configured to use software RAID1 (mirroring). This option only applies to HP servers G6 and above. This mode is intended for use during development and testing and is not supported on fielded systems.
- force – specify that if the current disk configuration does not match the desired configuration, that the desired configuration should be forcibly installed. Loss of data on any disk on the same RAID disk controller may result.

D.6 lab

Note: Intended for development use only

This is a debug mode which will provide an interactive shell on failure rather than exiting the IPM process. If this mode is selected and the kickstart file is coming from an http server, the kickstart file will attempt to download the

files normally included in the initrd from the http server where the kickstart file is located.

D.7 test

Note: Intended for development use only

This is a debug mode which will cause the IPM process to stop at multiple locations and prompt the user. This mode is useful to check status of scripts used during the IPM process.

D.8 tklcuserdata

This option has been deprecated. It has been replaced by IPMUUID.

D.9 IPMUUID

This value is provided by PM&C to uniquely identify each IPM. All SNMP informs sent will include the IPMUUID if it is provided.

D.10 tklcserverdata

This option has been deprecated. It has been replaced by IPMtrapHosts.

D.11 IPMtrapHosts

This is a colon separated list of IP addresses normally provided by PM&C. The SNMP informs sent during IPM will be sent to this/these address[es].

D.12 ForceFail

This value provides a way to force IPM failures for testing purposes. Three options are available:

- ipmfailed – send “ipmfailed” inform at end of IPM rather than normal “tpdinstalled” trap.
- installfailed – send “install failed” as part of the tpdstate inform on first reboot after IPM.
- ipmabort – Do not put the expected final entry in the kickstart log file. This will cause an “install failed” as part of the tpdstate inform on first reboot after IPM.

If the ForceFail argument is provided with any of the supported options, it will cause the verifyIPM command to fail.

D.13 rdate

This optional argument should be set to the IP address of a server on the local network segment that is running the “time” service. The “time” service is not the same as NTP. If this value is set, the clock on the server will be set using rdate to the provided IP address before the installation of packages begins. If this option is provided, no other setting of the server clock will be required. If the rdate argument is provided, the IP address will be configured as an NTP server when the IPM is completed unless the ntpghost option is provided, in which case the IP address provided with the ntpghost argument will be used.

D.14 ntpghost

This optional argument can be set to the IP address of an NTP server. If this value is provided, TPD will be configured to use this NTP server when the IPM is completed. This option does NOT set the clock of the server before the packages are installed, so it is important the server CMOS clock is set either manually (see 3.1 or Appendix C) or using the “rdate” option (see D.13).

D.15 primaryConsole

The argument provided to this option will be set as the primary console device for TPD. This means that all init and kernel messages will be sent to this device while the server is running and during startup and shutdown. Additionally, a login prompt will display itself on this console after the system startup. The argument must be a valid console device such as “tty0”, “ttyS1,115200”, or “ttyS0,9600n8r”.

D.16 diskpart

This optional argument is used to override the disk partition template used for TVOE installation. By default, the “TVOE” disk partition template will be used when TVOE is installed. The “TVOE” partition scheme assumes hardware RAID is used and the first disk should have TVOE installed on it. However, it is possible to install TVOE using the default TPD disk partition by passing “diskpart=TPD” on the TPD command line. This might be useful when installing TVOE on platforms that do not have hardware disk mirroring, such as T1200.

D.17 console

The default console is serial console but sometimes it is useful to be able to use another device like a VGA monitor. An example for using a VGA monitor would be to use **console=tty0**.

D.18 guestArchive

This optional argument is used to start the system in guest archive creation state. This state is used to IPM a guest system that can be used as a base to create a TVOE guest archive.

Appendix E. Setting boot controller on HP DL360 G5 and HP DL380 G5

The disk controllers on the HP DL360 G5 and HP DL380 G5 rack mount servers need to be configured to be the correct boot controller (as specified by the application's manufacturing design document). Note that the machine may already be configured correctly, or that the machine may not require re-configuring.

This configuration is only required if the machine has more than one disk controller that shows up at boot time.

Slot numbers in this example are arbitrary and should correspond to the slot numbers in your application's manufacturing design document. The machine can be verified against the application's manufacturing design document as described below. During the boot process, you will see a screen that looks like the following screen:

```
8 GB Installed

ProLiant System BIOS - P58 (01/24/2008)
Copyright 1982, 2008 Hewlett-Packard Development Company, L.P.

Proc 1: Quad-Core Intel(R) Xeon(TM) Processor (2.66 GHz/1333 MHz, 2x6MB L2)
Proc 2: Quad-Core Intel(R) Xeon(TM) Processor (2.66 GHz/1333 MHz, 2x6MB L2)
Power Regulator Mode: Dynamic Power Savings

Advanced Memory Protection Mode: Advanced ECC Support
Redundant ROM Detected - This system contains a valid backup system ROM.
1615-Power Supply Failure or Power Supply Unplugged in Bay 1
Power Supply Solution Not Fully Redundant

Integrated Lights-Out 2 Advanced
iLO 2 v1.50 Mar 12 2008 10.250.36.98

Slot 0 HP Smart Array P400i Controller      Initializing...

<F9 = Setup>
```

Figure 24: Initial HP DL360 G5 disk boot screen

Note the line on the bottom of the screen identifying the "P400i Controller". This is one of the disk controllers in the server. There may be other disk controllers in the server. For example, the following screen depicts a server with two disk controllers:

```
Copyright 1982, 2008 Hewlett-Packard Development Company, L.P.

Proc 1: Quad-Core Intel(R) Xeon(TM) Processor (2.66 GHz/1333 MHz, 2x6MB L2)
Proc 2: Quad-Core Intel(R) Xeon(TM) Processor (2.66 GHz/1333 MHz, 2x6MB L2)
Power Regulator Mode: Dynamic Power Savings

Advanced Memory Protection Mode: Advanced ECC Support
Redundant ROM Detected - This system contains a valid backup system ROM.
1615-Power Supply Failure or Power Supply Unplugged in Bay 1
Power Supply Solution Not Fully Redundant

Integrated Lights-Out 2 Advanced
iLO 2 v1.50 Mar 12 2008 10.250.36.98

Slot 0  HP Smart Array P400i Controller      (256MB, v4.12)   1 Logical Drive
Slot 2  HP Smart Array 6400 Controller      (192MB, v2.80)   3 Logical Drives

Press <F8> to run the Option ROM Configuration for Arrays Utility
Press <ESC> to skip configuration and continue

                                     <F9 = Setup>
```

Figure 25: HP DL360 G5 disk boot screen illustrating disk controller configuration selection

Note that the boot sequence is asking you to press “F8” if you wish to configure the second controller now. Determine which disk controller your application’s manufacturing design document requires to be the boot controller, then press “F8” to view the configuration for that disk controller.

When you press “F8” to get to the specific disk controller’s configuration, you will see one of two menus. This first menu lacks an entry to “Select as Boot Controller”, suggesting that the specific disk controller is already configured to be the boot controller:

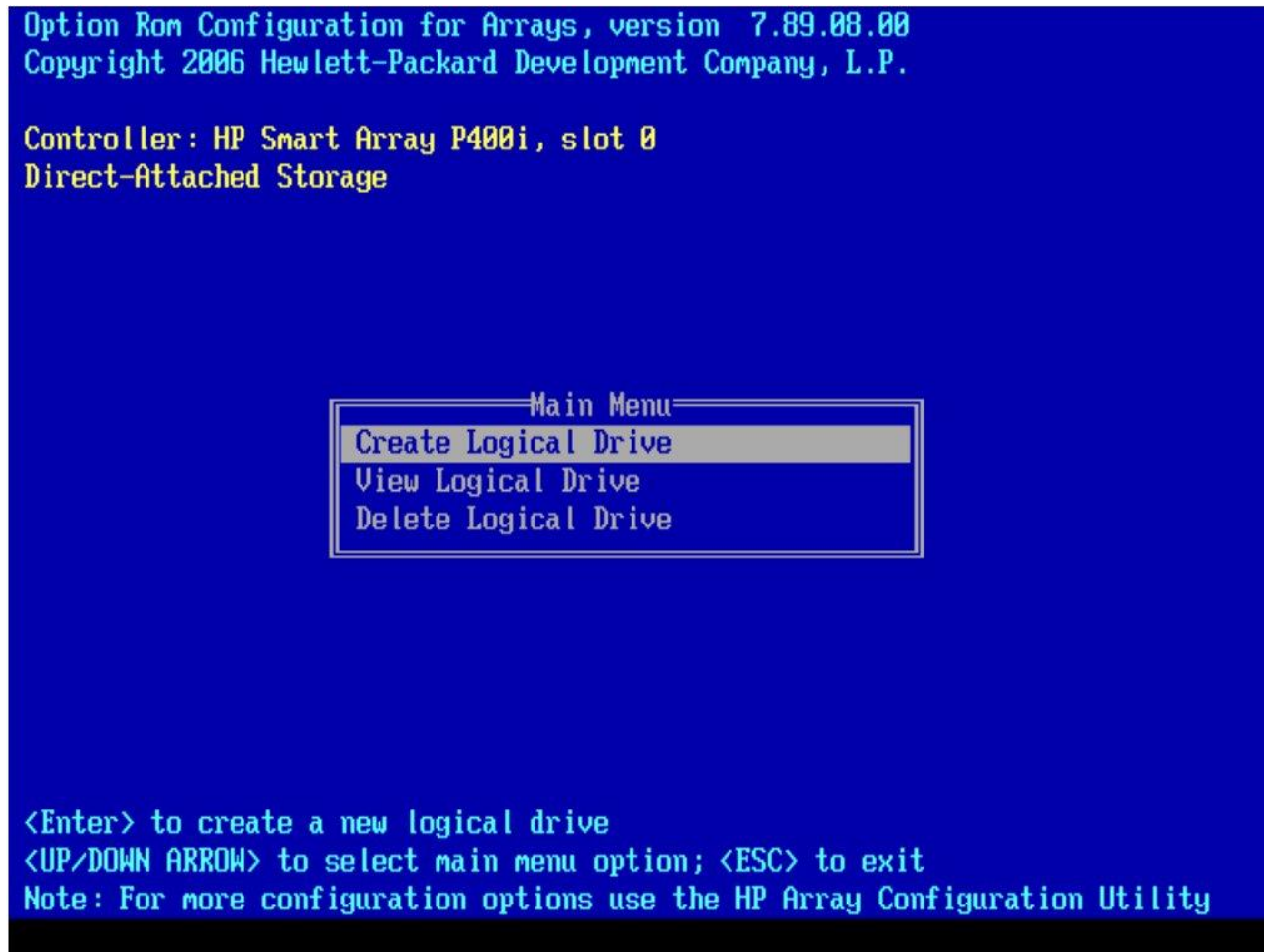


Figure 26: HP DL360 G5 Disk Controller configuration menu for boot disk controller

If this agrees with your application’s manufacturing design document, then your machine is already configured correctly. You can press “ESC” here to continue the booting process. Otherwise, you will see a menu that contains an entry to “Select as Boot Controller”, suggesting that the specific disk controller is not configured to be the boot controller:

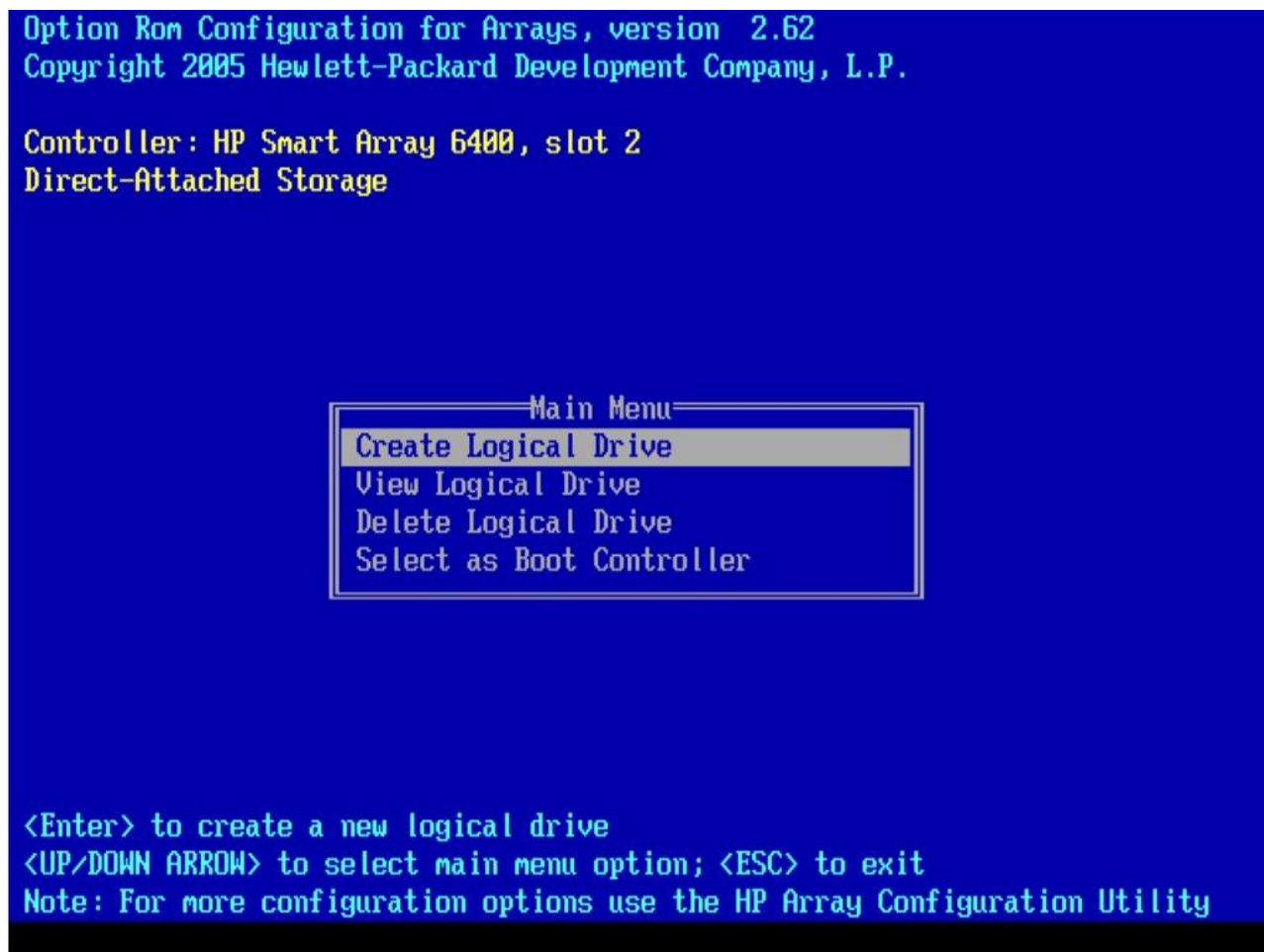


Figure 27: HP DL360 G5 Disk Controller menu for non-boot disk controller

If your application’s manufacturing design document requires that this disk controller be the boot controller, then press the down arrow until the entry “Select as Boot Controller” is highlighted, then press <ENTER>.

At this point, you will be presented with the following screen:

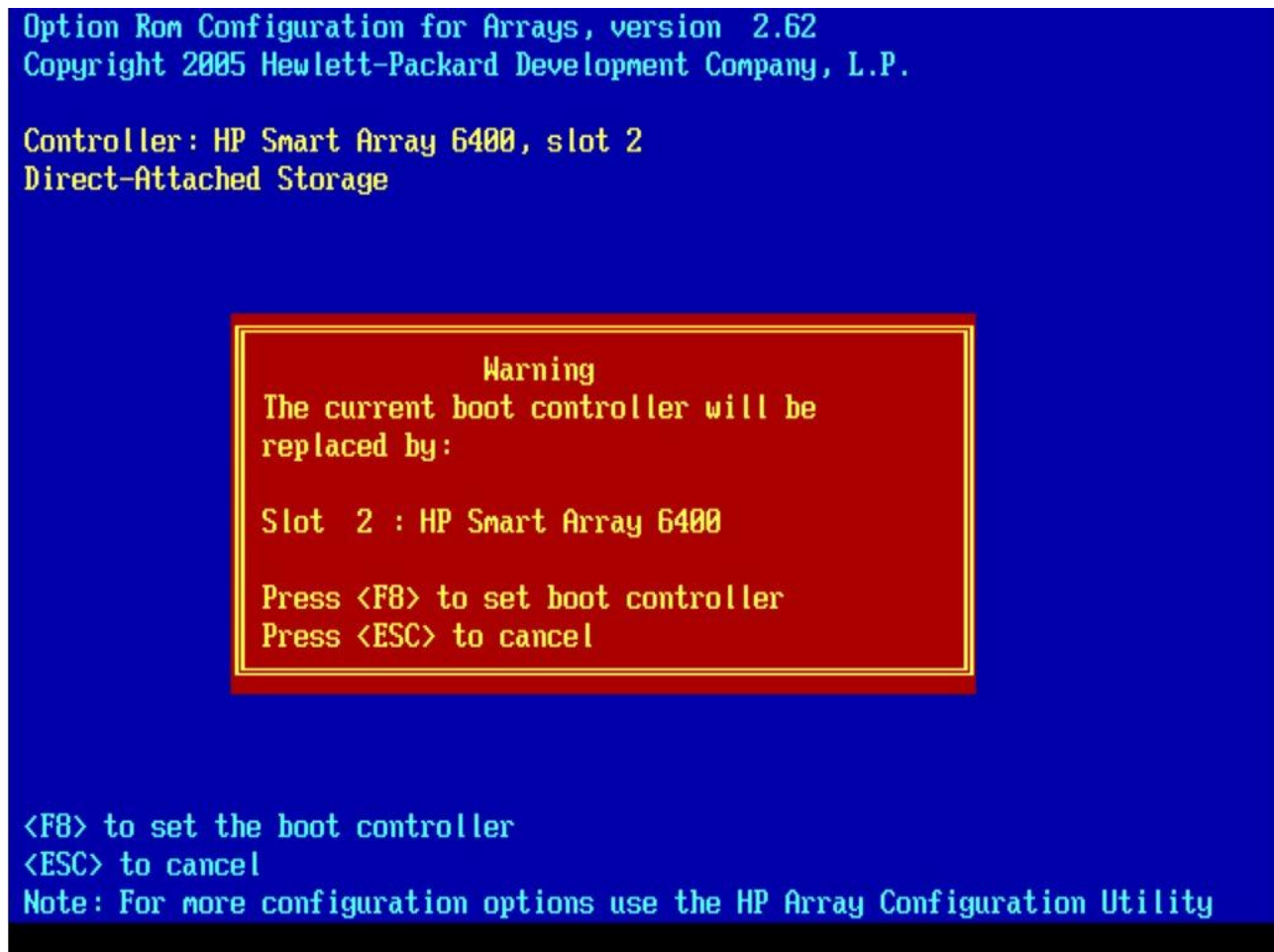


Figure 28: Confirmation of disk controller to be boot controller

At this time, press the “F8” key in order to set the selected disk controller to be the boot controller.

After pressing “F8”, you will be presented with the following screen:

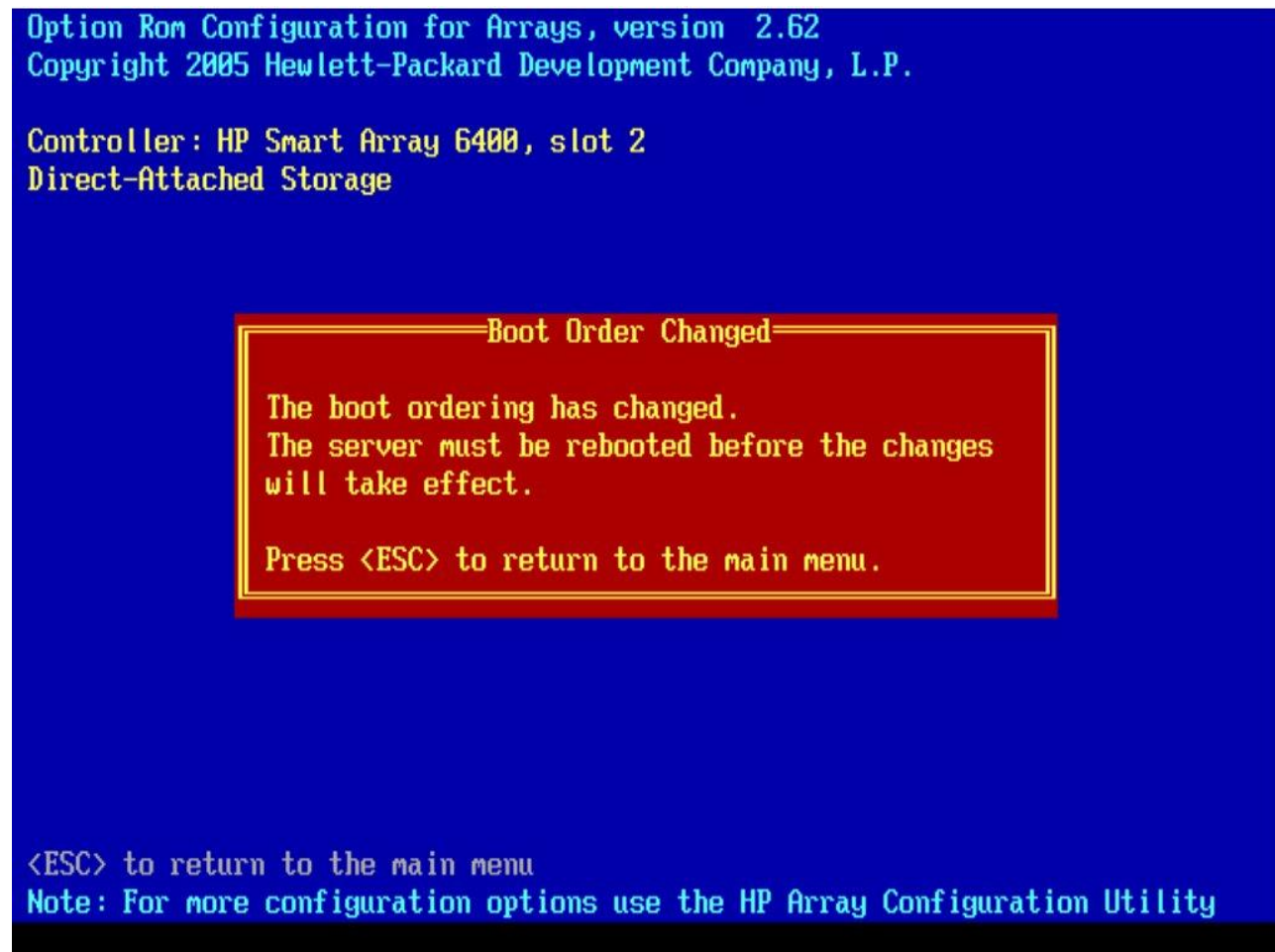


Figure 29: Confirmation of disk controller configuration change

This screen verifies that the selected disk controller has been configured to be the boot controller. You should press “ESC” at this time to return to the main menu. Immediately after getting back to the main menu, you must physically reboot the machine, usually by pressing “Ctrl-Alt-Del”.

This completes the configuration of a disk controller as the boot controller.

Appendix F. Verifying and Configuring default logical drive on HP servers

Starting with the G6 series of HP servers TPD will configure the OS disks if the diskconfig option is used. This still requires that a logical drive is configured for anaconda to be able to access the CCISS devices. As noted in reference [1]:

If the boot drive has not been formatted and the boot controller is connected to six or fewer physical drives, ORCA runs as part of the auto-configuration process when the new server is first powered up. If the boot drive has been formatted or if there are more than six drives connected to the controller, you are prompted to run ORCA manually.

The DL360/DL380 G6 and newer rack mount servers with 8 300GB disks are the only configurations that do not create a default logical drive at boot up if there isn't one already configured. In TPD releases prior to TPD 6.0 this would cause a failure during the disk configuration portion of the IPM. This section will describe how to check if there is a logical drive configured, and if not, how to create one.

F.1 Verify default logical drive

While the system is booting up, watch for the Option ROM Configuration messages to be displayed. If the Slot 0 controller has at least 1 Logical Drive as in Figure 30, you can continue with the installation. If the Slot 0 controller has 0 Logical Drives as in Figure 31, you must create a default Logical Drive as described in Appendix F.2, Configuring default logical drive.

```
Copyright 1982, 2008 Hewlett-Packard Development Company, L.P.

Proc 1: Quad-Core Intel(R) Xeon(TM) Processor (2.66 GHz/1333 MHz, 2x6MB L2)
Proc 2: Quad-Core Intel(R) Xeon(TM) Processor (2.66 GHz/1333 MHz, 2x6MB L2)
Power Regulator Mode: Dynamic Power Savings

Advanced Memory Protection Mode: Advanced ECC Support
Redundant ROM Detected - This system contains a valid backup system ROM.
1615-Power Supply Failure or Power Supply Unplugged in Bay 1
Power Supply Solution Not Fully Redundant

Integrated Lights-Out 2 Advanced
iLO 2 v1.50 Mar 12 2008 10.250.36.98

Slot 0  HP Smart Array P400i Controller      (256MB, v4.12)   1 Logical Drive
Slot 2  HP Smart Array 6400 Controller      (192MB, v2.80)   3 Logical Drives

Press <F8> to run the Option ROM Configuration for Arrays Utility
Press <ESC> to skip configuration and continue

                                <F9 = Setup>
```

Figure 30: Slot 0 with 1 Logical Drive

```
SATA Option ROM ver 2.00.B12
Copyright 1982, 2008. Hewlett-Packard Development Company, L.P.
  Port1: (CD-ROM) TEAC    DU-W28S-RS

                                                                    <F9 = Se
Broadcom NetXtreme II Ethernet Boot Agent v4.6.8
Copyright (C) 2000-2008 Broadcom Corporation
All rights reserved.
Press Ctrl-S to Configure Device (MAC Address - 00237DE003CE)

Integrated Lights-Out 2 Advanced
iLO 2 v1.81 Jan 15 2010 10.250.36.147

Slot 0  HP Smart Array P410i Controller    (256MB, v2.50)    0 Logical Dr
1785-Slot 0 Drive Array Not Configured
      Run Array Configuration Utility

Press <F8> to run the Option ROM Configuration for Arrays Utility
Press <ESC> to skip configuration and continue
```

Figure 31: Slot 0 with No Logical Drives

F.2 Configuring default logical drive

For all disk configurations except as noted in Appendix F there should be an option to press F7 for default configuration. On servers that offer this press F7 for the default configuration and try to re-IPM the server. If it fails, do not continue, and contact Manufacturing Support to report the error condition.

If you do not have F7 as an option, when the Option ROM for Slot 0 controller asks you to press F8 to run the Option ROM Configuration for Array Utility, press F8.

Once in the menu select “Create Logical Drive”.

In the menu to create a logical drive, just press enter to create a default Logical Drive, and then press F8 to save the configuration when asked. When it is finished saving the configuration, press Enter when asked.

When back to the Main Menu press escape to continue the boot process. When the boot process continues you should see that the Option ROM has created 1 Logical Drive as in Figure 32.

```
SATA Option ROM ver 2.00.B12
Copyright 1982, 2008. Hewlett-Packard Development Company, L.P.
  Port1: (CD-ROM) TEAC    DU-W28S-RS

                                                                    <F9 = Se
Broadcom NetXtreme II Ethernet Boot Agent v4.6.8
Copyright (C) 2000-2008 Broadcom Corporation
All rights reserved.
Press Ctrl-S to Configure Device (MAC Address - 00237DE003CE)

Integrated Lights-Out 2 Advanced
iLO 2 v1.81 Jan 15 2010 10.250.36.147

Slot 0  HP Smart Array P410i Controller      (256MB, v2.50)   0 Logical Dr
1785-Slot 0 Drive Array Not Configured
      Run Array Configuration Utility

**** Updated Logical Drive Count: 1
```

Figure 32: Successful Creation of Logical Drive

Once the server boots to IPM media, try to IPM the server and if it fails, do not continue, and contact Manufacturing Support to report the error condition.

Appendix G. IPM'ing T1200 using the Intel Remote Management Module (RMM)

It is also possible to IPM a T1200 using remote media. This procedure is typically used when the IPM media is not co-located with the T1200.

One of the features of the RMM is the “USB 2.0 media redirection - boot over remote media” feature. This feature permits a user, utilizing a Web Browser, to perform Drive Redirection of the CD-ROM device and TPD ISO image. Drive redirection allows you to use a virtual drive on the remote computer. Instead of using an image file, you work with a drive from your local computer on the remote system. The drive is shared over a TCP network connection. Devices such as floppy drives, hard drives, CD-ROM drives, and other removable devices, like USB drives, can be redirected. In this procedure, we will be redirecting the CD-ROM drive. Note that the redirected drive is required to be in the proper sequence of the boot order list in the BIOS of the T1200.

In order to use this feature, ensure that a Web Browser with a Java runtime plugin is available on the same network as the RMM device within the T1200. The RMM device network can be identified by locating the RJ45 cable connected to the RMM port in the back of the T1200. Obtain the IP address for the RMM from your site administrator. On the Web browser, type the RMM's URL address into the address bar of the Web Browser using the format “https://<RMM-IP-Address>”. Upon successful connection to the RMM, you will see a screen such as the following:

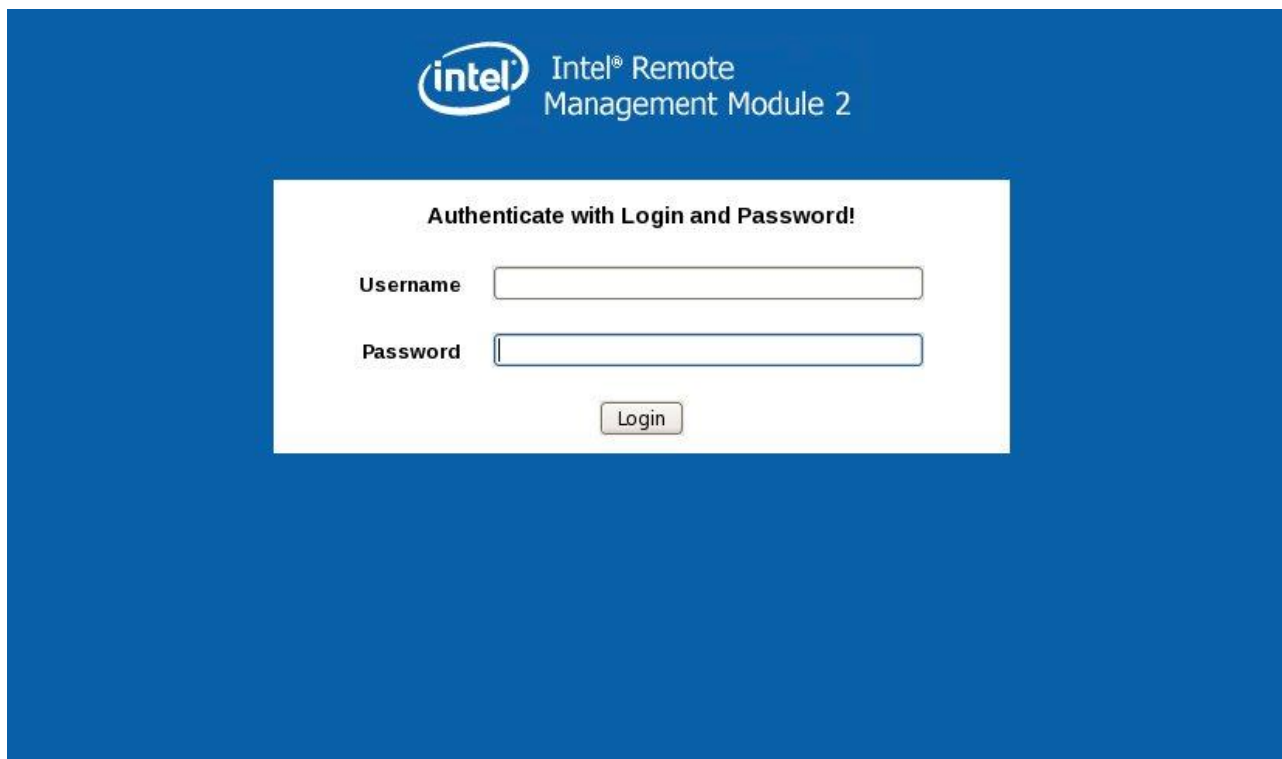


Figure 33: RMM Login Browser Page

Enter the assigned RMM username and password into the respective fields.

Upon successfully logging into the RMM, you will see a screen similar to the following:

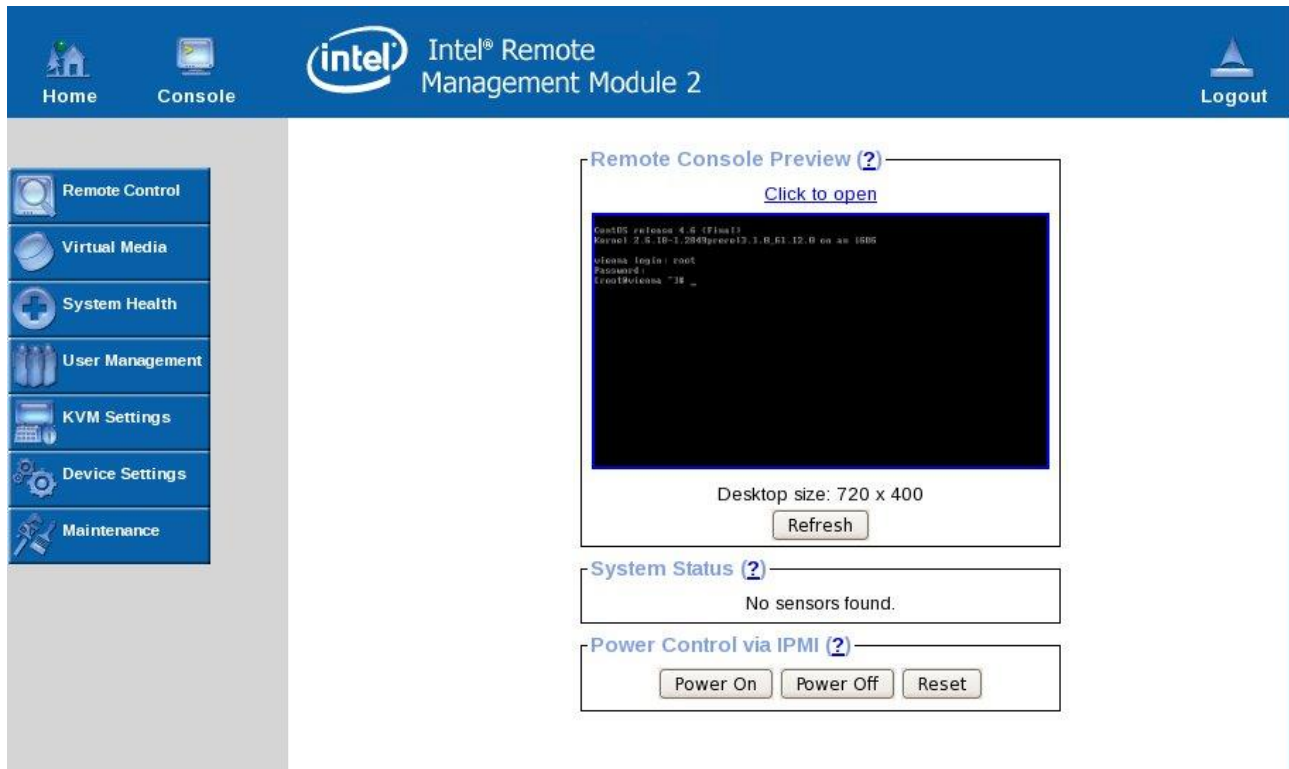


Figure 34: Successful login to the T1200 RMM

At this point press the “Console” button in the top banner presented on the browser page. Upon doing so, you should see a separate window appear that contains a text-mode console such as the following:

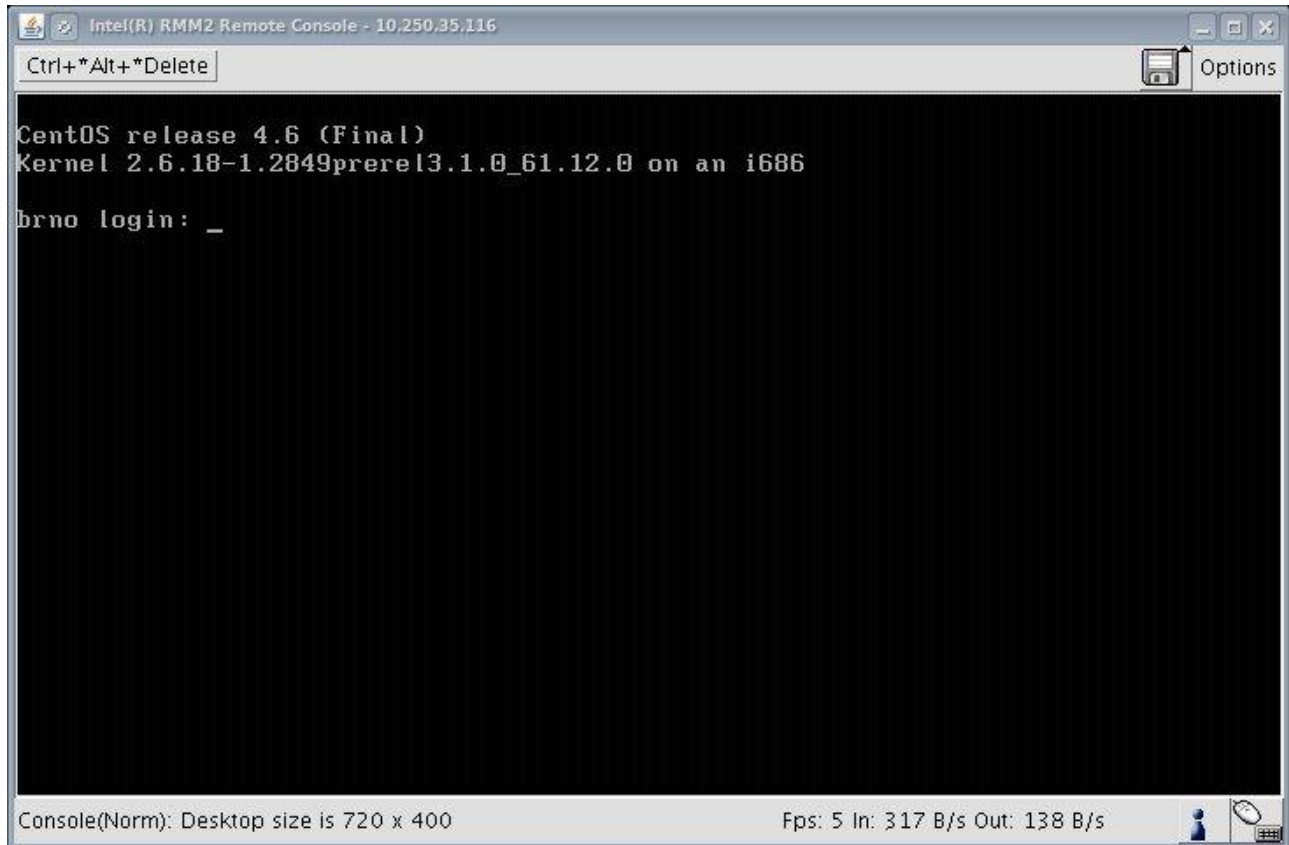


Figure 35: Remote console window

In this window, press the floppy disk icon in the top right of the window. This will expand the console window to look like the following:

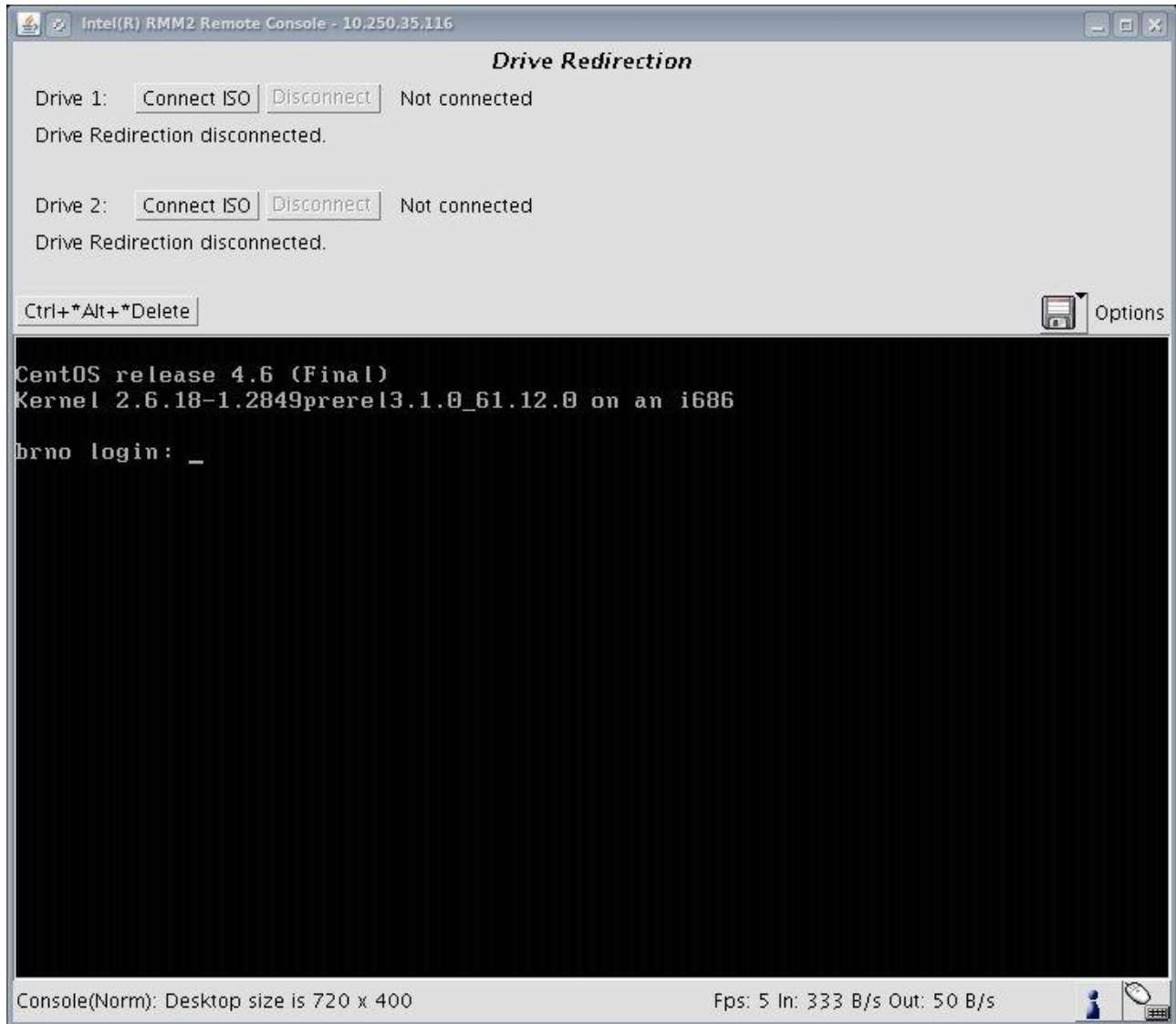


Figure 36: Expanded remote console window

In this window press the top-most “Connect ISO” button for Drive 1. Doing so will present another new window used for selecting the ISO file or the actual CD-ROM media.

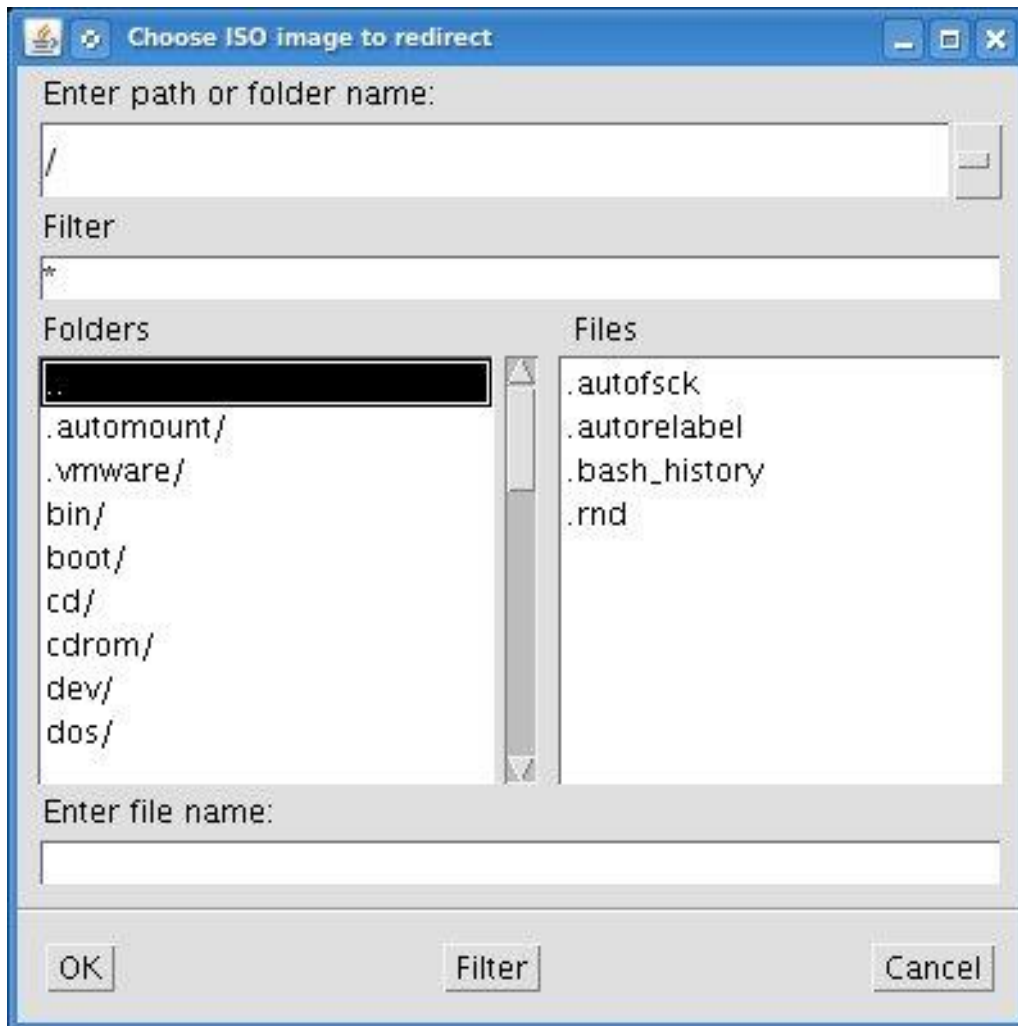


Figure 37: ISO media selection window

Use this window to select the ISO image (local to the browser, remote to the T1200) that is to be used to IPM the T1200, then press “OK”.

The previous screen should get updated with the selected ISO image that will be used to IPM the T1200.

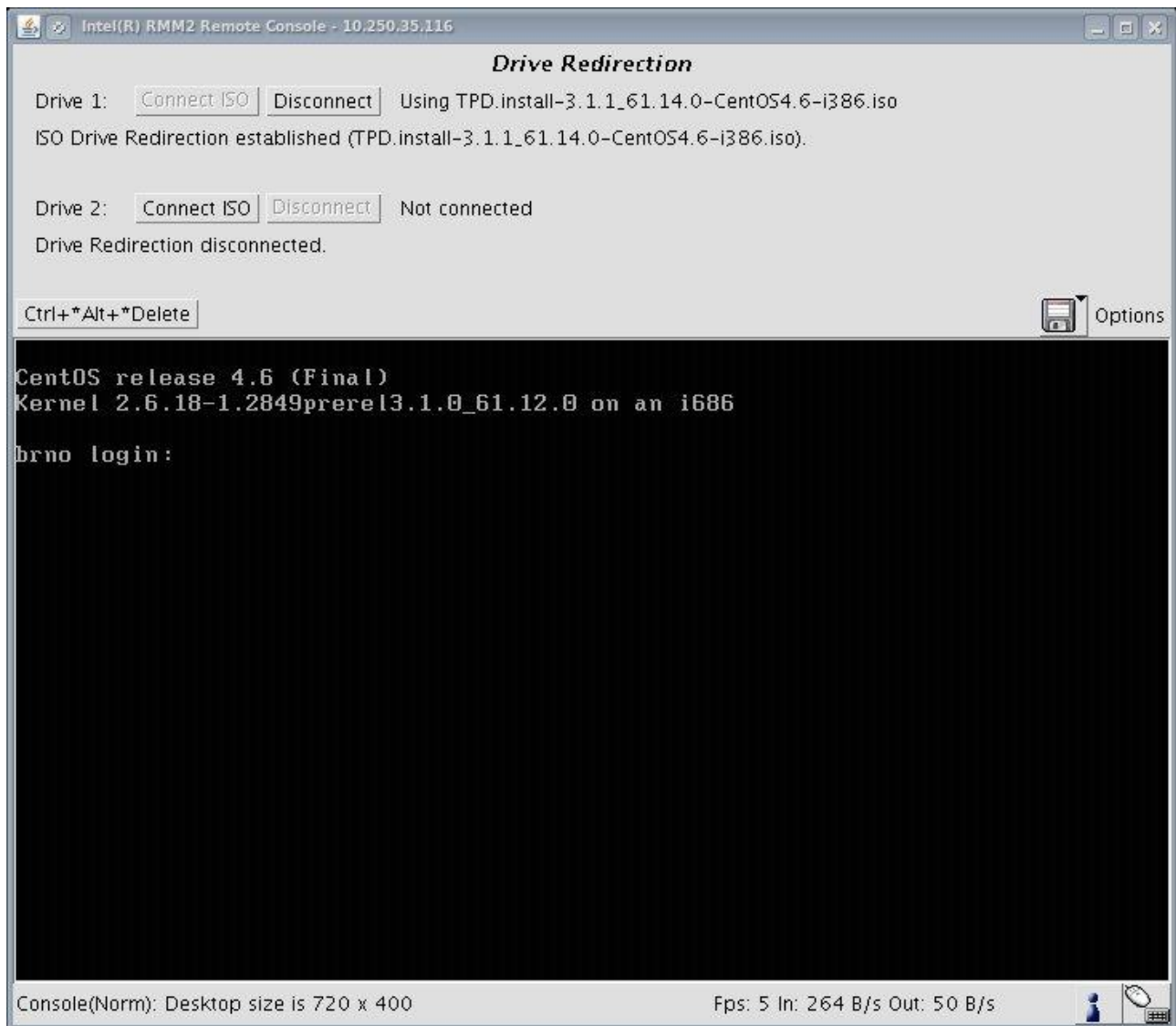


Figure 38: Updated Drive Redirection window

At this point, press the “Ctrl+*Alt+*Delete” button. Confirm your selection by pressing “OK” in the following popup window. This should begin the IPM process for this T1200 using the remote media.

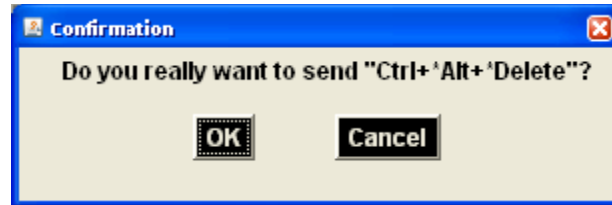


Figure 39: Confirmation popup window

After the IPM process is completed (but before the IPM reboot), please remember to disconnect the remote media by pressing the “Disconnect” button on the top of this remote console. Then, logout of the RMM by pressing the “Logout” button on the right side of the top banner in the Browser window.

Appendix H. BIOS Configuration

Run the appropriate subsection below based on your hardware platform. If your server type is not listed, then no changes from the default configuration are needed.

H.1 HP Server BIOS Configuration

H.1.1 Configuring iLO serial port on G6 and Gen8 DL360 and DL380 rack mount servers.

The serial ports on HP DL360 and DL380 G6 and Gen8 rack mount servers need to be configured so the serial port used by the BIOS and TPD are connected to the “VSP” on the iLO. This will allow the remote administration of the servers without the need for external terminal servers. If this configuration has not been completed correctly and the server rebooted, the syscheck “syscheck -v hardware serial” test will fail.

1. Connect to the server in question using a VGA monitor and USB keyboard.
2. Reboot/reset the server.
3. Press the F9 key when <F9=Setup> appears. Note that this could appear in the lower right hand or lower left hand corner of the screen.
4. Select “Server Availability”
5. Change “Automatic Power-On” to “Enabled”
6. Change Power-On Delay” to “No Delay”
7. Press <ESC> once
8. Select “System Options”
9. Select “Serial Port Options”
10. Change “Embedded Serial Port” to “COM2”
11. Change “Virtual Serial Port” to “COM1”
12. Press <ESC> two times
13. Select “Standard Boot Order”.
14. Select “Hard Drive C:”
15. In the popup, set the IPL Device Boot Order to 1
16. Press <ESC> two times
17. Press F10

H.1.2 Configuring HP Gen9 Servers

The HP Gen9 systems can have UEFI boot enabled. Since TPD is configured to use the Legacy BIOS option, both blade and rackmount Gen9s should have their BIOS settings checked before IPM. Rack mount servers should also have the iLO serial port configured at this time. Directions for both settings are below.

1. If this is a rack mount server, connect via a VGA monitor and USB keyboard. If a blade server is being configured, use the iLO Integrated Remote Console.
2. Reboot/reset the server.
3. Press the F9 key to access the System Utilities menu when <F9 System Utilities> appears in the lower left hand corner of the screen.
4. Select the System Configuration menu.
5. Select the “BIOS/Platform Configuration (RBSU)” menu.
6. Select the Boot Options menu.
7. If the Boot Mode is not "Legacy BIOS mode", press <Enter> to open the BIOS mode menu. Otherwise, skip to Step 11. **Note:** A warning message will be displayed. It is safe to ignore and can be bypassed by pressing the <Enter> key.
8. Select "Legacy BIOS Mode".
9. Select the “Legacy BIOS Boot Order” menu.
10. Set “Hard Drive C:” to the first boot option by selecting it and using the “+” key to move it to the top of the list.
11. Press <Esc> twice to back out to the “BIOS/Platform Configuration (RBSU)” menu. If a blade server is being configured, skip to Step 20, otherwise continue to Step 12.
12. Select the “System Options” menu.
13. Select the “Serial Port Options” menu.
14. Change “Embedded Serial Port” to “COM2”.
15. Change “Virtual Serial Port” to “COM1”.
16. Press <Esc> twice to back out to the “BIOS/Platform Configuration (RBSU)” menu.
17. Select the “Server Availability” menu.
18. Set “Automatic Power-On” to “Restore Last Power State”.
19. Set “Power-On Delay” to “No Delay” then press <Esc> once to back out to the “BIOS/Platform Configuration (RBSU)” menu.
20. Select the “Power Management” menu.
21. Set the “HP Power Profile” to “Maximum Performance”. Press <Esc> once to back out to the “BIOS/Platform Configuration (RBSU)” menu.
22. Press <F10> to save the updated settings, then <y> to confirm the settings change.
23. Press <Esc> twice to back out to the “System Utilities” menu.
24. Select “Reboot the System” and press <Enter> to confirm.

H.2 Oracle Rack Mount Server BIOS configuration.

For all TPD supported Oracle Rack Mount Servers the Energy Performance should be set to “Performance”, and on Oracle Rack Mount Servers that support UEFI Configuration Synchronization, you must set UEFI Configuration Synchronization so that “Synchronization Late” is Disabled. The X3-2 servers do not support this, but the other TPD supported Oracle Rack Mount Servers do. If this step is not performed the server may reboot a second time after POST on some reboots. This can be especially bothersome when trying to do a one-time boot to USB or CD/DVD-ROM.

The following steps describe configuring the BIOS Power Management and UEFI setting appropriately.

1. Connect to the server in question using a VGA monitor and USB keyboard.
2. Reboot/reset the server.
3. Press the F2 key when <Press F2 to run Setup> appears.
4. Go to the Advanced Menu. If this is an X5-2, skip to Step 6.
5. Select Processors
6. Select CPU Power Management Configuration.
7. If this is a X5-2, set ENERGY_PERF_BIAS_CFG mode to Perf, press Enter and skip to Step 9. Otherwise, if Energy Performance is not set to [Performance] select Energy Performance and press Enter
8. In the resulting menu select the Performance option and press Enter.
9. Press the Escape key once on the X5-2 or two times on all other Oracle systems to return to the Advanced Menu. Unless this is a X4-2, skip to step 15.
10. Select UEFI Configuration Synchronization and press Enter
11. If Synchronization Late is not [Disabled] press enter to modify the option.
12. In the resulting menu select the Disabled option and press Enter
13. Press the Escape key to return to the Advanced Menu.
14. Go to the Boot Menu.
15. Under Legacy Boot Option, verify the RAID Adapter is listed first. If not, highlight it and use + key to move it to the top of the list.
16. Select the Exit or Save & Exit Menu and press Enter on Save Changes on Reset.
17. Answer 'Yes' to the resulting prompt for confirmation.

H.3 T1200

H.3.1 T1200 BIOS Configuration

After updating the **T1200** BIOS firmware Table 6 details some of the BIOS configuration values that must be checked and possibly changed from their default values. This is not intended to be a complete list of all BIOS values, but only those that have the highest probability of affecting system operation. The BIOS configuration screen is entered by pressing <F2> once the Intel Server Board page appears (this is the first screen that appears after power on, but it takes up to 30 seconds before this screen appears on the console). These values should be checked after each BIOS update.

Table 6: T1200 BIOS Configurations

BIOS Screen	BIOS Parameter	Default Value	Correct Value
Advanced/Proc Conf	Intel ® Virtualization Technology	Disabled	Enabled
Advanced/ATA	Onboard PATA Controller	Enabled	
Advanced/Mass Stor	SAS Controller	Enabled	
Advanced/Mass Stor	Configure SAS as SW RAID	Disabled	
Advanced/Serial Port Configuration	Serial A Enable	Enabled	Enabled
	Address	3F8	2F8

	IRQ	4	3
	Serial B Enable	Enabled	Enabled
	Address	2F8	3F8
	IRQ	3	4
Advanced / System Acoustic and Performance Configuration	Throttling Mode	Open Loop	Closed Loop
Server Mgmt	Resume AC Power Loss	Stay Off	Last State
Server Mgmt	FRB-2 Enable	Enabled	
Server Management / Console Redirection	Console Redirection	Serial Port A	Serial Port B
	Flow Control	None	None
	Baud Rate	115200	115200
	Terminal Type	VT100	VT100
	Legacy OS Redirection	Disabled	Enabled
Boot Options	Boot Option #1	IDE	
Boot Options	Boot Option #2	GE Slot	LUN0
Boot Options	Boot Option #3	LUN0	GE Slot
Boot Options	Boot Option #4	UEFI Shell	
Boot Options / CDROM Order	CDROM #1	IDE	IDE
	CDROM #2	Intel(R)RMM2 Vdrive 1	Intel(R)RMM2 Vdrive 1
	CDROM #3	Intel(R)RMM2 Vdrive 2	Intel(R)RMM2 Vdrive 2
	CDROM #4	Intel(R)RMM2 Vdrive 3	Intel(R)RMM2 Vdrive 3
	CDROM #5	Intel(R)RMM2 Vdrive 4	Intel(R)RMM2 Vdrive 4
Boot Options	USB Boot Priority	Enabled	Disabled

H.3.2 RMM Configuration

After updating the T1200 RMM firmware, Table 7 details the RMM configuration values that must be changed from their default values. This is accomplished via the “Device Settings” menu available through the RMM web interface. These values should be checked after each RMM update.

Table 7: T1200 RMM Configurations

Device Settings Sub-menu	Parameter	Default Value	Correct Value
Network	Enable SSH access	Disabled	Enabled
IPMI	Enable Channel 3 Forwarding	Disabled	Enabled
IPMI	Enable MD5 Authentication	All disabled	Enable for Admin
IPMI	Enable Password Authentication	All disabled	Enable for Admin
Security	Force HTTPS for Web Access	Disabled	Enabled
Security	KVM Encryption	Disabled	Try

In addition, while in development mode, it is recommended to have the IPMI debug log option enabled. This can be done by first accessing the <http://IPaddress//debug.asp>, and then clicking on “Show IPMI Forwarding Debug Messages”. This will allow more detailed capture of information from the RMM if the RMM is hung, or an “IPMI bus error” is seen while attempting to control the T1200. **Note:** This message has been seen in early development, and we are working with Intel for a resolution, so if you do see a problem that you think is related to the RMM and/or IPMI, please revisit the <http://IPaddress//debug.asp> page and include any messages from that in your problem report to the TPD group.

Appendix I. ILO/ILOM Configuration Procedure

This Section Configures the HP Integrated Lights Out (iLO) or Oracle Integrated Lights Out Management (ILOM). iLO/ILOM is an independent subsystem inside an HP or Oracle Rack Mount Server which is used for out of band remote access. You will be configuring the IP address for the iLO/ILOM and adding the Tekelec user and password. The server will need to be accessed via a keyboard and monitor in order to complete this procedure.

Note: See I.1.2 for HP Gen9 BIOS configuration instructions.

I.1.1 HP G6 and Gen8 ILO Configuration Procedure

1. Reboot the server. If the “Press any key to view Option ROM messages” message is displayed, then press a key to view the Option ROM messages.
2. Press F8 when prompted to enter the iLO configuration menu.
3. Disable DHCP in the Network Menu. Use the arrow keys to navigate through the menu and select the ‘Network’ menu and then go to ‘DNS/DHCP enable’ – press Enter.

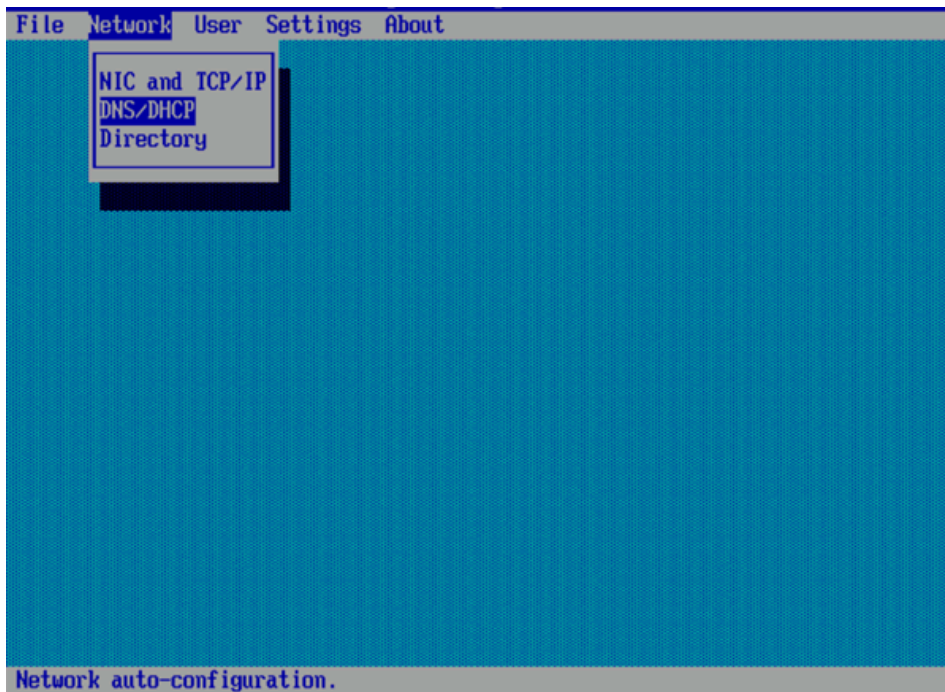


Figure 40: DNS/DHCP Menu

4. Use the space bar to disable DHCP (the space bar toggles the DHCP option 'ON' and 'OFF'). Save the settings by pressing the [F10] key. Expected result: DHCP is disabled and settings are saved.

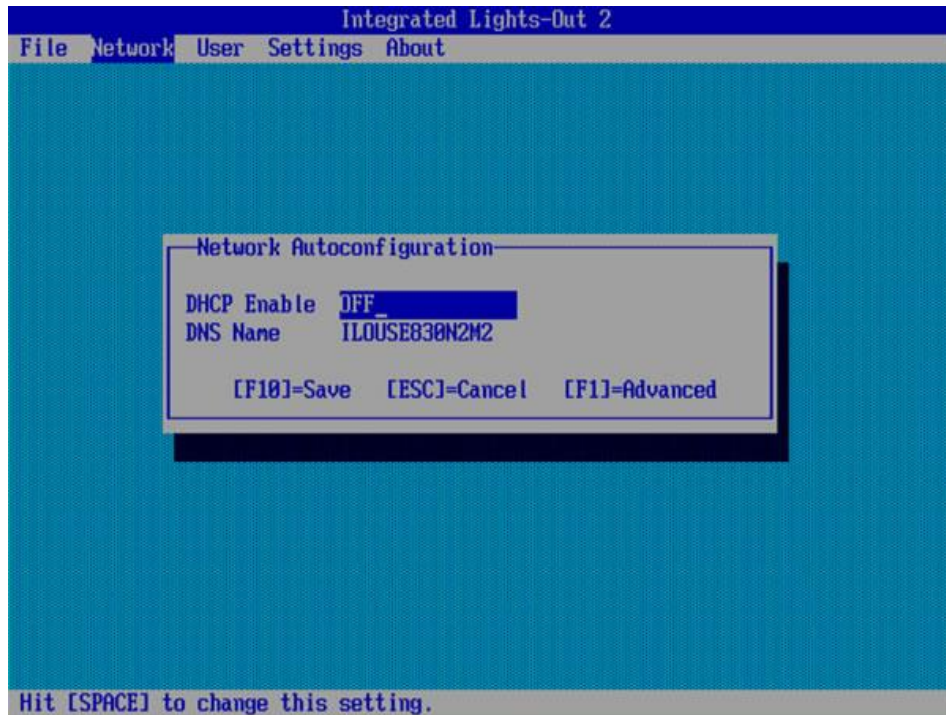


Figure 41: Disable DHCP

5. Configure the IP Address, Subnet Mask and Default Gateway. Use the arrow keys to navigate through the menu and select the 'Network' menu and then go to 'NIC and TCP/IP'

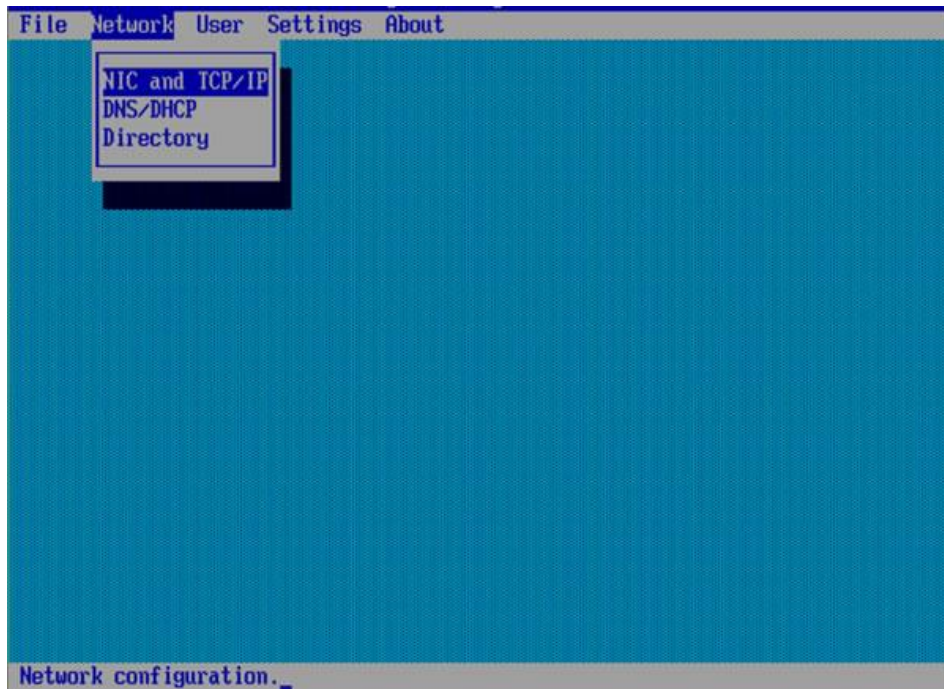


Figure 42: Networking Menu

6. Fill in the IP Address information for your server; IP Address, Subnet Mask and Default Gateway.
Note: Screenshot is for reference only and may not match correct values.

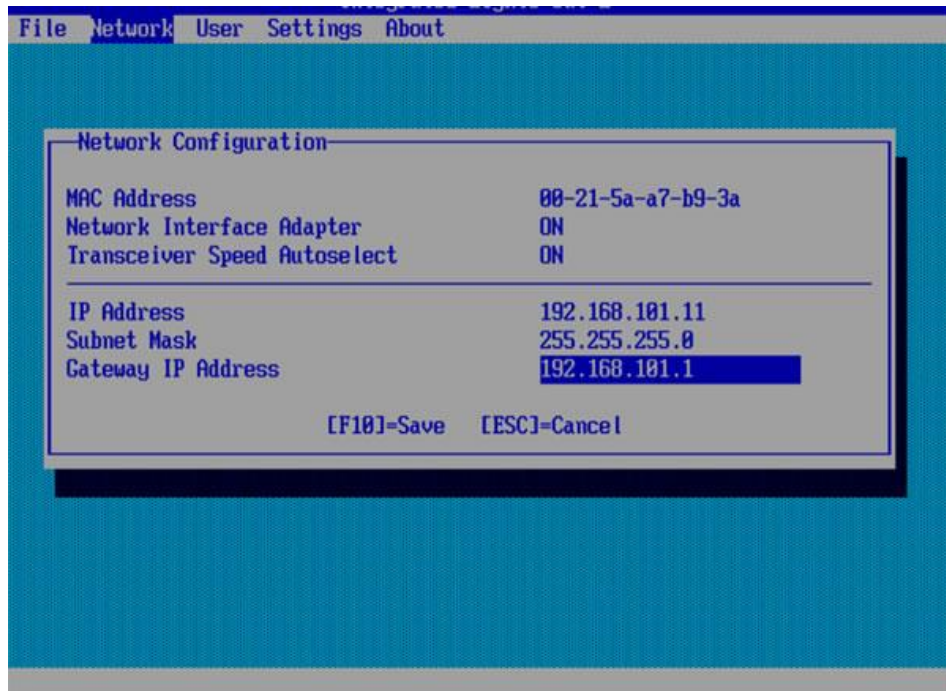


Figure 43: Network Settings

7. Save the settings by pressing the [F10] key
 Expected result: Network settings (IP address, default gateway and subnet mask) are configured and saved.
8. Add the user 'root' and password in the user menu. Use the arrow keys to navigate through the menu and select the 'User' menu, then 'Add User'

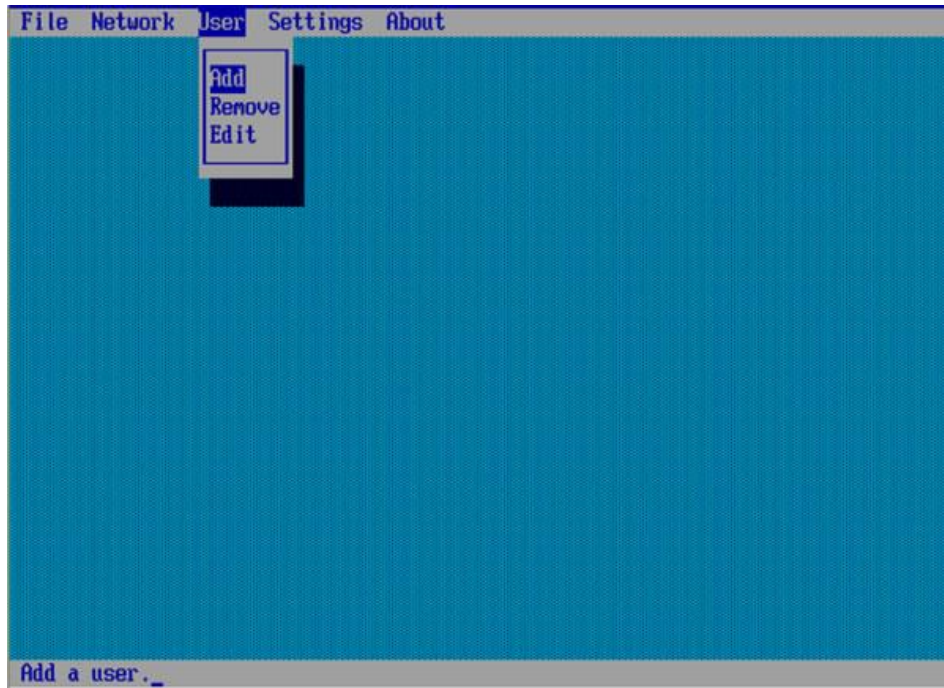


Figure 44: Add User Menu

9. Add the root user 'admin' and password
 - Add
 - User name: admin
 - Login name: admin
 - Password: password

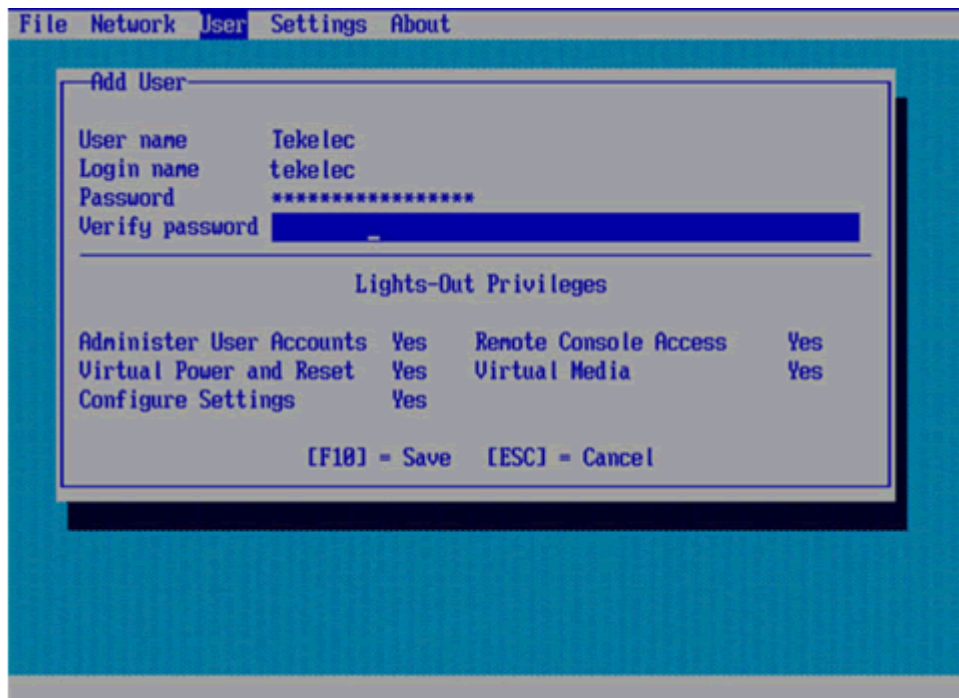


Figure 45: Add user

10. Save the settings by pressing the [F10] key. Expected result: User and password is added and is saved.

- 11. Exit the iLO configuration menu and save changes Use the arrow keys to navigate through the menu and select the 'File' menu, then 'Exit and Save'

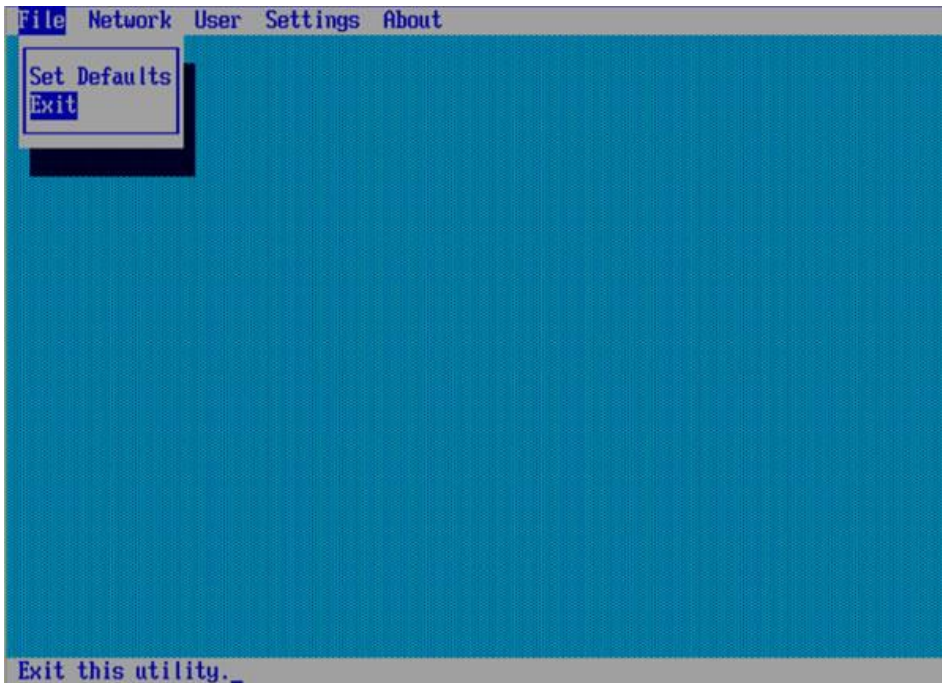


Figure 46: Exit iLO Setup

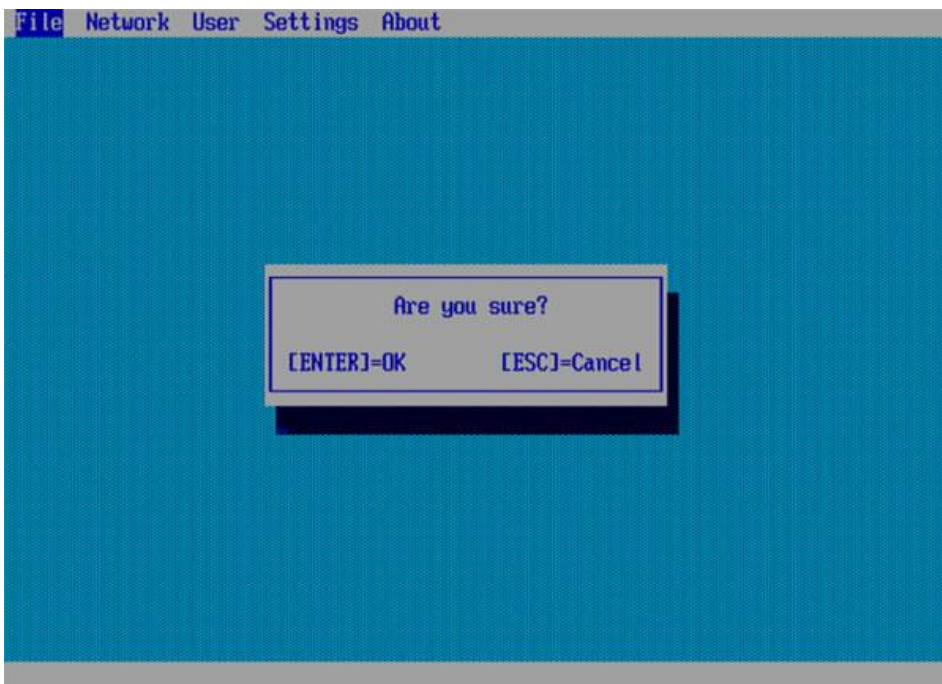


Figure 47: Confirmation Dialog Box

12. Answer Yes to prompt: Are you sure?

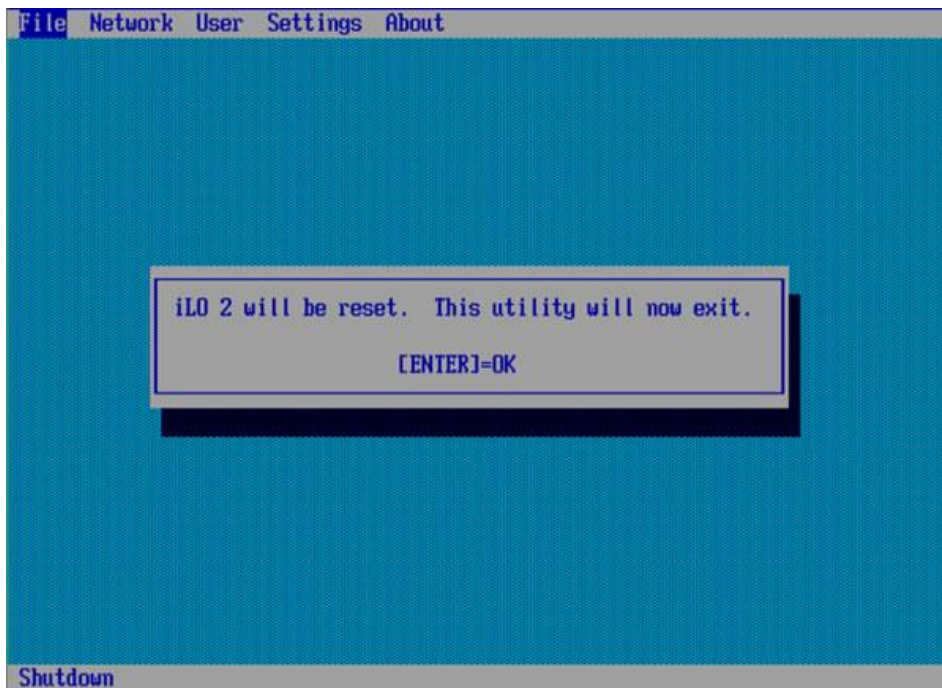


Figure 48: iLO will be reset

I.1.2 HP Gen9 iLO BIOS Settings

1. Reboot/reset the server.
2. Press the F9 key to access the System Utilities menu when <F9 System Utilities> appears in the lower left hand corner of the screen.
3. Select the System Configuration menu.
4. Select the “iLO 4 Configuration Utility” menu.
5. Select the “Network Options” menu.
6. Set “DHCP Enable” to OFF.
7. Configure the IP Address, Subnet Mask and Default Gateway to the desired values.
8. Press <Esc> to back out to the “iLO 4 Configuration Utility” menu.
9. Select the “User Management” menu.
10. Select “Add User”. Add the root user ‘admin’ with the following information:
 - User name: admin
 - Login name: admin
 - Password: password
11. Press <F10> to save the updated settings, then <y> to confirm the settings change.
12. Press <Esc> four times to back out to the “System Utilities” menu.
13. Select “Reboot the System” and press <Enter> to confirm.

I.1.3 Oracle Rack Mount Server ILOM Configuration Procedure

By default the ILOM is configured to get its IP address Dynamically through DHCP. This procedure lists how to statically set the IP address of the ILOM using a keyboard and monitor. If you would like to configure the IP address using the local serial management connection see Reference [2].

1. Reboot the server.
2. Press F2 when prompted to enter the BIOS configuration menu.

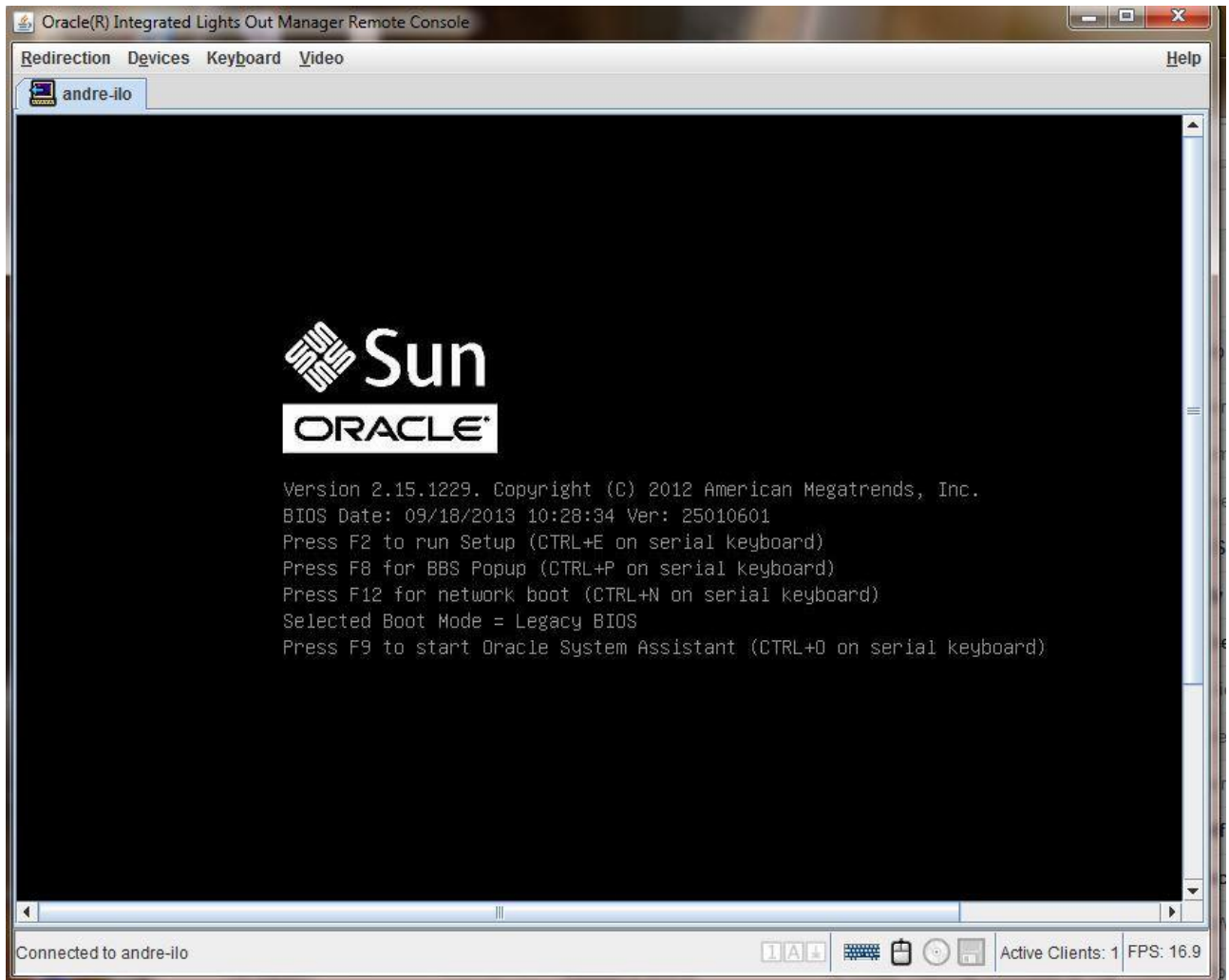


Figure 49: Enter the BIOS Menu

3. This should take you to the Main Menu.



Figure 50: Main BIOS Menu

4. Use the arrow keys to navigate through the menu and select the Advanced tab.



Figure 51: Advanced BIOS Settings

5. Use the arrow keys to navigate through the menu and select the 'BMC Network' menu to open the BMC Network menu.

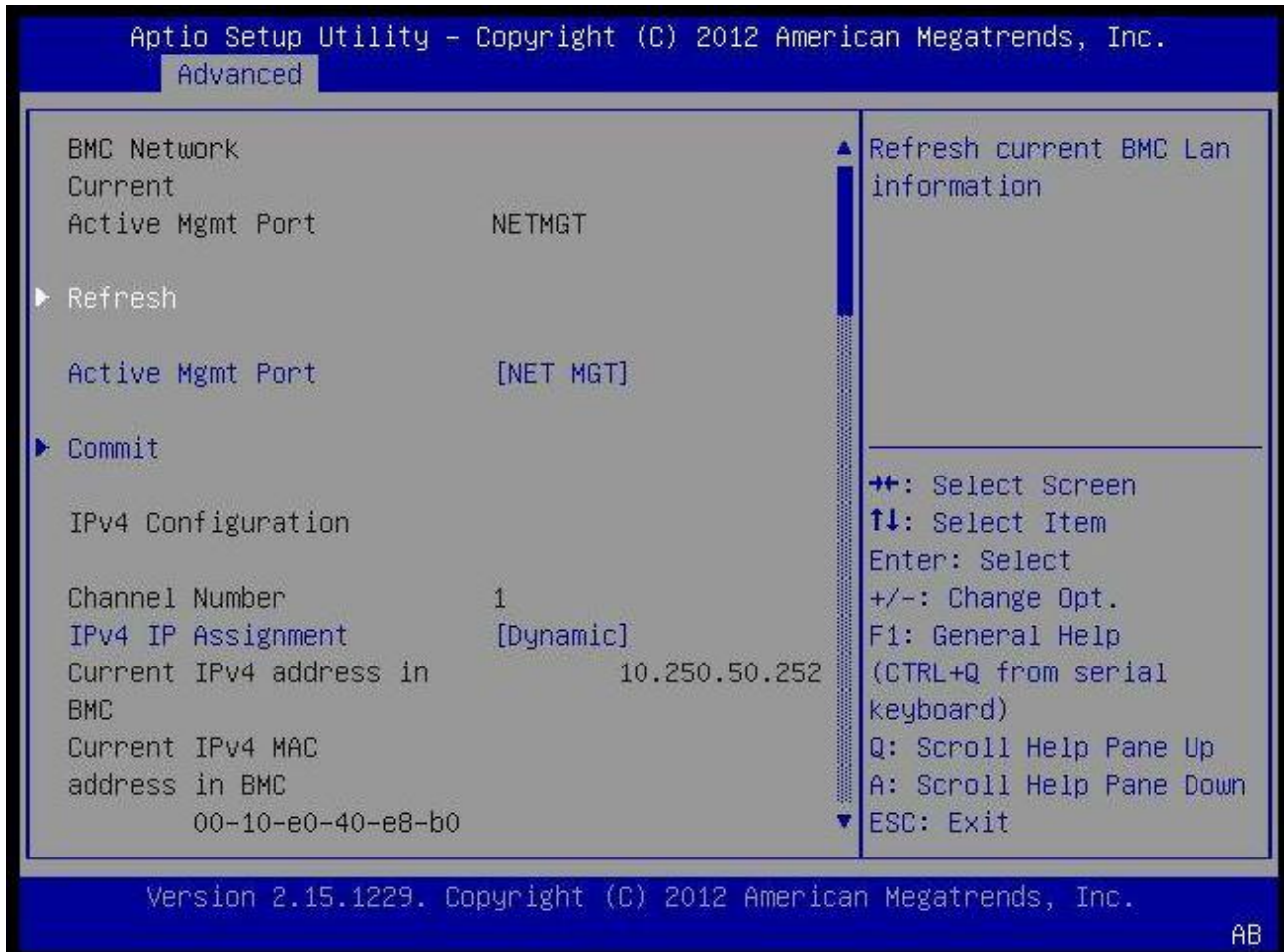


Figure 52: BMC Network Menu

- Use the arrow keys to navigate through the menu to highlight “IPv4 IP Assignment” and hit enter.

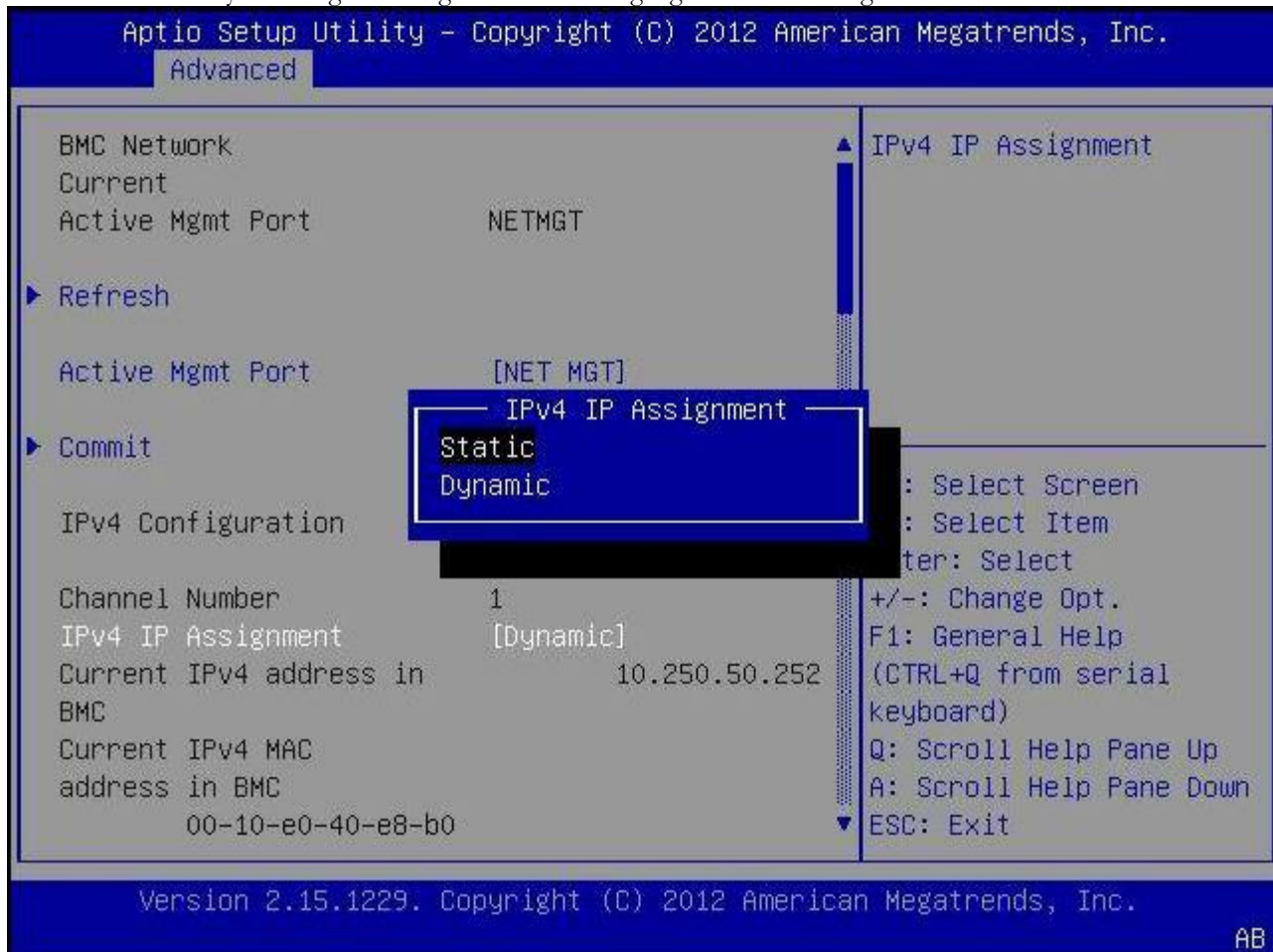


Figure 53: Set IPv4 Address Type to Static

- Use the arrow keys to highlight “Static” then hit enter.

8. Use the arrow keys to navigate down to highlight "IPv4 address" and hit enter to enter the IPv4 address.

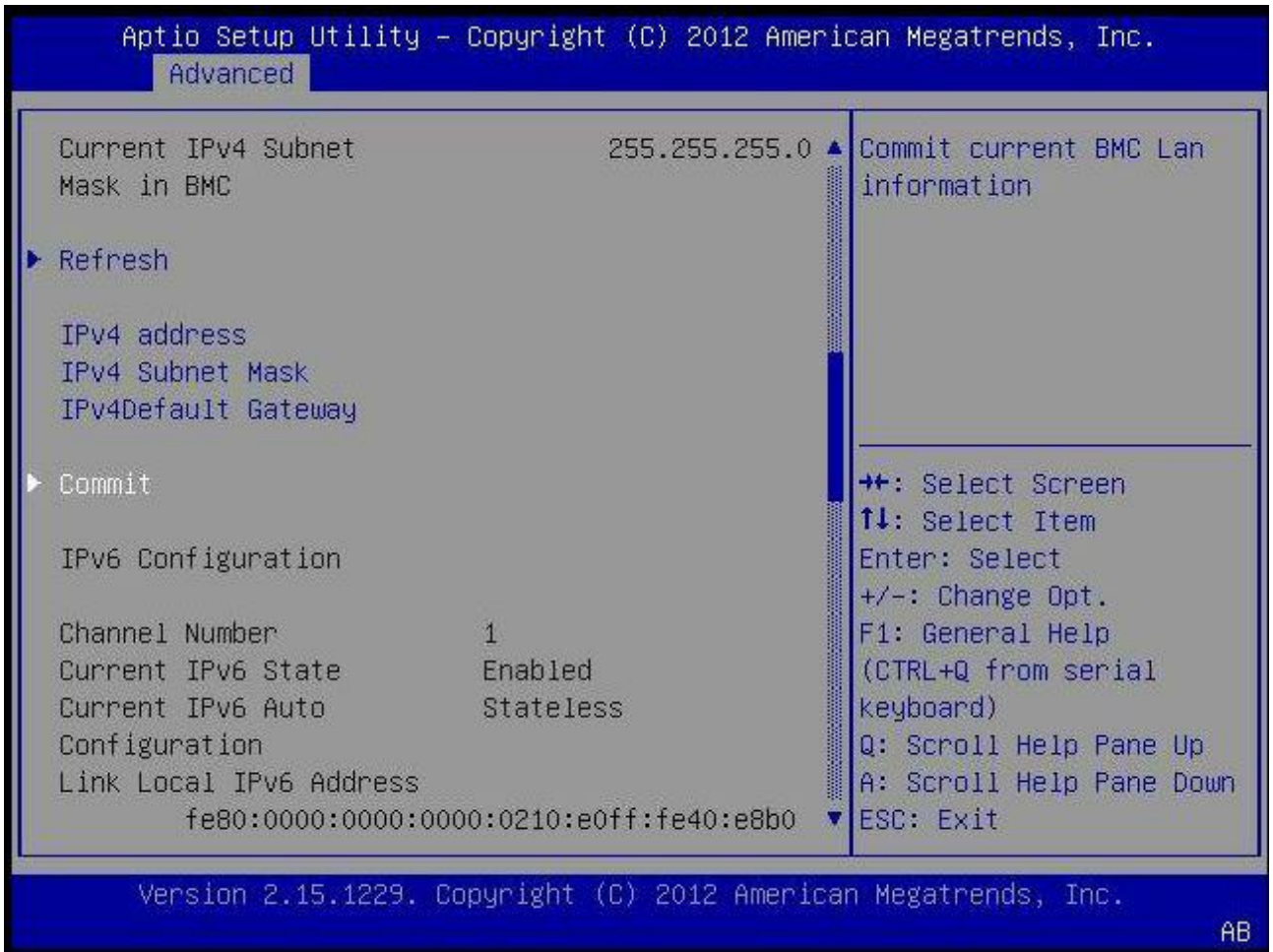


Figure 54: Select IPv4 address

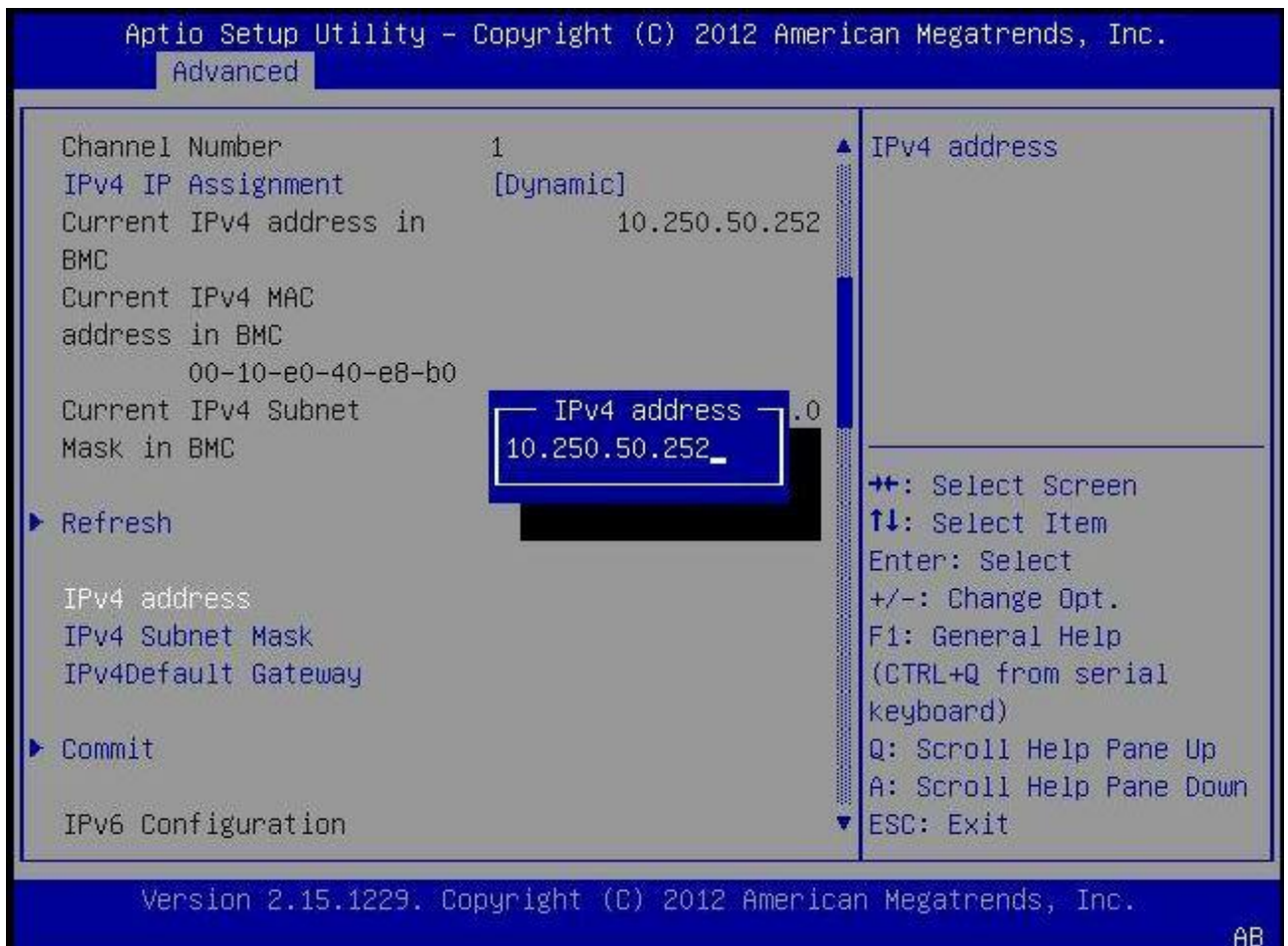


Figure 55: Enter the static IP address

9. Enter the IP address and hit enter.
10. Do the same for “IPv4 Subnet Mask” and “IPV4 Default Gateway”.
11. Use the arrow keys to navigate down to highlight the “Commit” BELOW the IPv4 fields you just configured. If you select a different “Commit” the information you just entered will not be saved. Once you hit enter to Commit, wait a brief moment for the information you entered to be saved. There will not be any visual feedback that Commit was done.
12. Exit the “BMC Network” menu by hitting the escape key.
13. Use the arrow keys to navigate through the menu and select the “Save & Exit” tab.

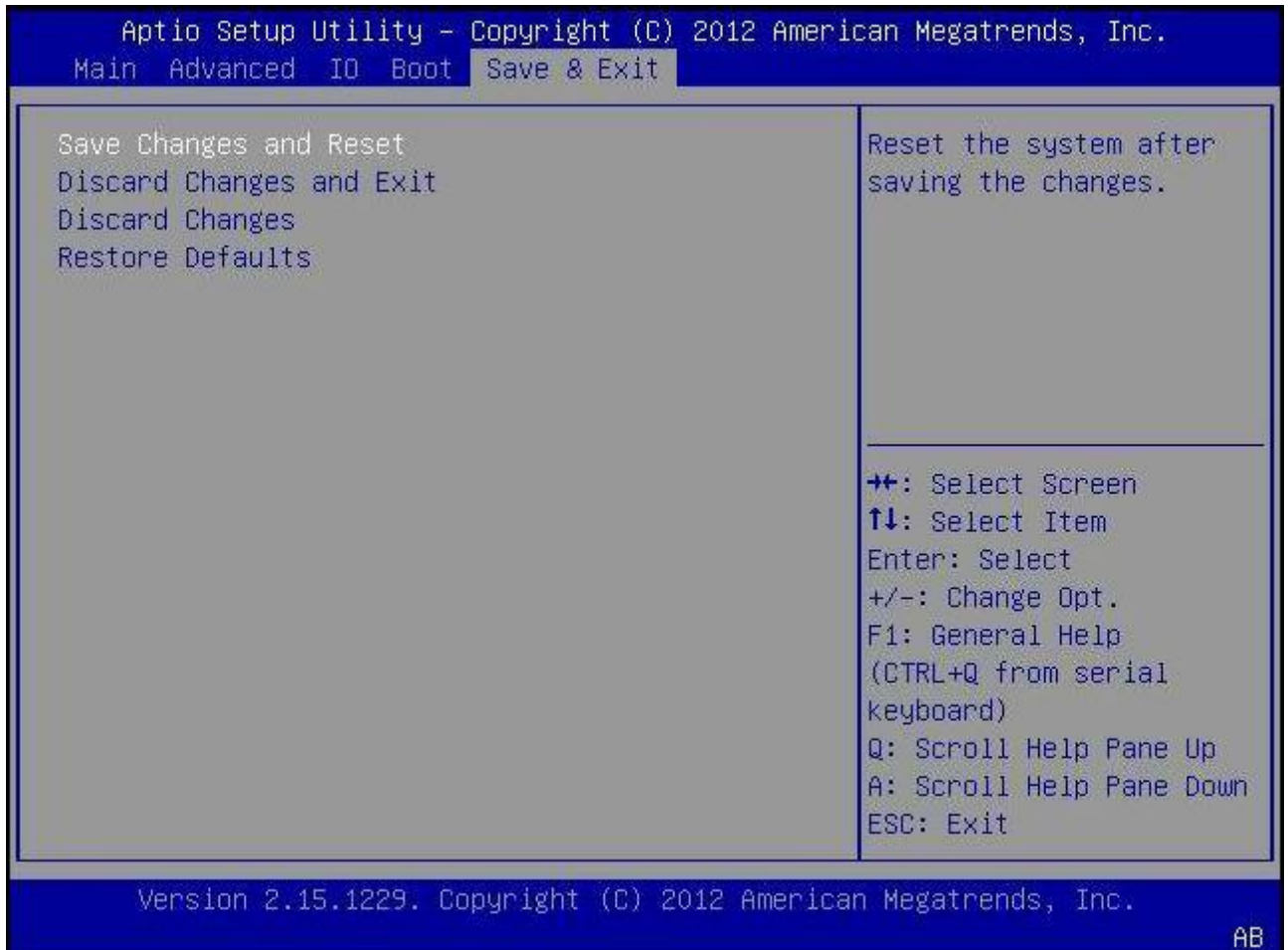


Figure 56: Save Networking Changes

14. Use the arrow keys to navigate down to highlight the “Save Changes and Reset” option. When asked select “yes” to confirm “Save configuration and reset?”
15. Server should reboot.
16. To configure additional user accounts in the ILOM see Reference [2].

Appendix J. Locate Product Documentation on the Oracle Technology Network Site

Oracle customer documentation is available on the web at the Oracle Technology Network (OTN) site, <http://docs.oracle.com>. You do not have to register to access these documents. Viewing the files requires Adobe Acrobat Reader, which can be downloaded [at www.adobe.com](http://www.adobe.com).

1. Log into the Oracle Customer Support site at <http://docs.oracle.com>.
2. Under **Applications**, click the link for **Communications**.
The **Oracle Communications Documentation** window opens with Tekelec shown near the top.
3. Click **Oracle Communications Documentation for Tekelec Products**.
4. Navigate to your Product and then the Release Number, and click the **View** link (the **Download** link will retrieve the entire document set).
5. To download a file to your location, right-click the PDF link and select **Save Target As**.