ATS Power Systems Accelerator Clinic

Lab 1
Power Systems BladeCenter Basics

Navigating the Advanced Management Module Menus and Installing the POWER7 Blade Servers

November 2010


Advanced
Technical
Skills

Table of Contents

Blade Hardware Configuration

The blades used for this lab (Power7 blades) will have a team number assigned to them in the charts below. Each blade has four IPs assigned allowing them to be installed as a stand-a-lone server or as an LPARed server. If you have chosen to work on the Basic Lab then your blade will be installed as a stand-a-lone server with the exception of IBM I which has to be installed on an LPAR in IVM. Since IBM i installs may take the full 90 minute lab period we ask you to start the installation first then go back to the Navigating the Advanced Management Module Menus section of the lab (Section 1).

If you have chosen the Advanced Lab you will be creating LPARs and will have the choice of loading either AIX or Linux on your LPAR. All of the blades have VIO already installed on them. Your team number will be assigned prior to starting the lab.

Power_BladeCenter H Chassis 1

AMM – 172.25.254.40 (Login: PSTRAIN2/PSTRAIN2)

Bay #	Server Name	Private IP Address / Purpose	LPAR Name / Hostname	LPAR IP Address / SMP	Team Number
1	**BCH1_JS12_1**	**172.25.254.21 NIM SERVER**	N/A	N/A	
2/3	BCH1_JS43_2	172.25.254.22 - IVM	BCH1_2_LP1 BCH1_2_LP2 BCH1_2_LP3 BCH1_2_LP4	172.25.254.50 - AIX 172.25.254.51 - RedHat 172.25.254.52 - SUSE 172.25.254.53 - IBM i	
4	BCH1_PS701_4	172.25.254.23 - IVM	BCH1_4_LP1 BCH1_4_LP2 BCH1_4_LP3 BCH1_4_LP4	172.25.254.54 - AIX 172.25.254.55 - RedHat 172.25.254.56 - SUSE 172.25.254.57 - IBM i	**1**
5	BCH1_PS700_5	172.25.254.24 - IVM	BCH1_5_LP1 BCH1_5_LP2 BCH1_5_LP3 BCH1_5_LP4	172.25.254.58 - AIX 172.25.254.59 - RedHat 172.25.254.60 - SUSE 172.25.254.61 - IBM I	**2**
6	BCH1_PS701_6	172.25.254.25 - IVM	BCH1_6_LP1 BCH1_6_LP2 BCH1_6_LP3 BCH1_6_LP4	172.25.254.62 - AIX 172.25.254.63 - RedHat 172.25.254.64 - SUSE 172.25.254.65 - IBM i	**3**
7	BCH1_PS701_7	172.25.254.26 - IVM	BCH1_7_LP1 BCH1_7_LP2 BCH1_7_LP3 BCH1_7_LP4	172.25.254.66 - AIX 172.25.254.67 - RedHat 172.23.254.68 - SUSE 172.25.254.69 - IBM i	**4**
8	BCH1_PS701_8	172.25.254.27 - IVM	BCH1_8_LP1 BCH1_8_LP2 BCH1_8_LP3 BCH1_8_LP4	172.25.254.70 - AIX 172.25.254.71 - RedHat 172.25.254.72 - SUSE 172.25.254.73 - IBM i	**5**
9/10	BCH1_PS702_9	172.25.254.28 - IVM	BCH1_9_LP1 BCH1_9_LP2 BCH1_9_LP3 BCH1_9_LP4	172.25.254.74 - AIX 172.25.254.75 - RedHat 172.25.254.76 - SUSE 172.25.254.77 - IBM i	**6**
11	BCH1_JS22_11	172.25.254.29 - IVM	BCH1_11_LP1 BCH1_11_LP2 BCH1_11_LP3 BCH1_11_LP4	172.25.254.78 - AIX 172.25.254.79 - RedHat 172.25.254.80 - SUSE 172.25.254.81 - IBM i	
12	BCH1_JS22_12	172.25.254.30 - IVM	BCH1_12_LP1	172.25.254.82 - AIX	

Bay #	Server Name	Private IP Address / Purpose	LPAR Name / Hostname	LPAR IP Address / SMP	Team Number
			BCH1_12_LP2 BCH1_12_LP3 BCH1_12_LP4	172.25.254.83 - RedHat 172.25.254.84 - SUSE 172.25.254.85 - IBM i	
13	BCH1_JS22_13	172.25.254.31 - IVM **DEMO**	BCH1_13_LP1 BCH1_13_LP2 BCH1_13_LP3 BCH1_13_LP4	172.25.254.86 - AIX 172.25.254.87 - RedHat 172.25.254.88 - SUSE 172.25.254.89 - IBM i	
14	BCH1_JS22_14	172.25.254.32 - IVM **DEMO**	BCH1_14_LP1 BCH1_14_LP2 BCH1_14_LP3 BCH1_14_LP4	172.25.254.90 - AIX 172.25.254.91 - RedHat 172.25.254.92 - SUSE 172.25.254.93 - IBM i	

Power BladeCenter H Chassis 2

AMM - 172.25.254.101 (Login: PSTRAIN2/PSTRAIN2)

Bay #	Server Name	Private IP Address / Purpose	LPAR Name	LPAR IP Address / Purpose	Team Number
1	BCH2_PS700_1	172.25.254.33 - IVM	BCH2_1_LP1 BCH2_1_LP2 BCH2_1_LP3 BCH2_1_LP4	172.25.254.94 - AIX 172.25.254.95 - RedHat 172.25.254.96 - SUSE 172.25.254.97 - IBM i	**7**
2	BCH2_PS700_2	172.25.254.34 - IVM	BCH2_2_LP1 BCH2_2_LP2 BCH2_2_LP3 BCH2_2_LP4	172.25.254.98 - AIX 172.25.254.99 - RedHat 172.25.254.100 - SUSE 172.25.254.120 - IBM i	**8**
3	BCH2_PS700_3	172.25.254.35 - IVM	BCH2_3_LP1 BCH2_3_LP2 BCH2_3_LP3 BCH2_3_LP4	172.25.254.121 - AIX 172.25.254.122 - RedHat 172.25.254.123 - SUSE 172.25.254.124 - IBM i	**9**
4	BCH2_PS700_4	172.25.254.36 - IVM	BCH2_4_LP1 BCH2_4_LP2 BCH2_4_LP3 BCH2_4_LP4	172.25.254.125 - AIX 172.25.254.126 - RedHat 172.25.254.127 - SUSE 172.25.254.128 - IBM i	**10**
5	BCH2_PS701_5	172.25.254.37 - IVM	BCH2_5_LP1 BCH2_5_LP2 BCH2_5_LP3 BCH2_5_LP4	172.25.254.129 - AIX 172.25.254.130 - RedHat 172.25.254.131 - SUSE 172.25.254.132 - IBM i	**11**
6	BCH2_PS701_6	172.25.254.38 - IVM	BCH2_6_LP1 BCH2_6_LP2 BCH2_6_LP3 BCH2_6_LP4	172.25.254.133 - AIX 172.25.254.134 - RedHat 172.25.254.135 - SUSE 172.25.254.136 - IBM i	**12**

Additional Network Information

Description	Private IP Address
Gateway	172.25.254.6
Subnet Mask	255.255.255.0
DNS Servers	172.16.0.1 & 172.16.0.2
Domain	training.sc.ibm.com

*Lab 1 - **Navigating the Advanced Management Module Menus and installing the Power7 Blade Servers***

Introduction

In this lab, you learn how to navigate through the Advanced Management Module Menus, how to configure a new BladeCenter Chassis and how to install an operating system on the blade. You also have the option of choosing which operating system you want to install on the blade (VIOS, AIX or Linux). For more information on the Advanced Management Module refer to the User's Guide at http://www-947.ibm.com/systems/support/supportsite.wss/docdisplay?lndocid=MIGR-5073887&brandind=5000020.

Note: IBM i installs are covered in the Advanced Lab since a Logical Partition must be created as part of the install and Logical Partitions are covered in the Advanced Lab.

Objectives

At the completion of this lab exercise, you will be able to do the following:

- Connect to Advanced Management Module and navigate its menus
- Assign the Media Tray to the Blade
- Setting the Boot Sequence
- Serial Over LAN Console
- Configuring a new BladeCenter Chassis
- Install VIO, AIX or LINUX on the blade

Prerequisites

- IBM Intranet connection and standard web browser with Java to properly access the equipment over the network
- A BladeCenter Chassis and one Blade
- IP address, userid and password of the Management Module (refer to the Blade Network Configuration on page 3)
- IP address of the Blade (refer to the Blade Network Configuration on page 3)
- Telnet Client – DOS or PuTTY (http://www.putty.org/)

Time Required for Lab

The time required to complete this lab exercise is 90 minutes.

I. Overview of the Advanced Management Module Menu System

When you login to the Advanced Management Module, a menu appears in the left-hand frame of your browser. From this menu you can manage all the components of the BladeCenter (i.e., blade, switch modules, switches, etc.). The Advanced Management Module will pop-up windows so make sure pop-up blocker is disabled. In this section we explore the options available on the Advanced Management Module as well as learn how to configure a new BladeCenter Chassis.

A. Login to the Advanced Management Module GUI

To login to the Advanced Management Module, use the IP Addresses provided and follow these steps:

____1. Start a web browser and enter the "**IP address**" of the Advanced Management Module web server in the address bar and press "**Enter**". The logon screen will display.

____2. Enter the userid (**PSTRAIN2**) and password (**PSTRAIN2**) and select "**OK**". A welcome window displays where you can set the duration that your connection can be idle before being automatically disconnected. Select "**Continue**".

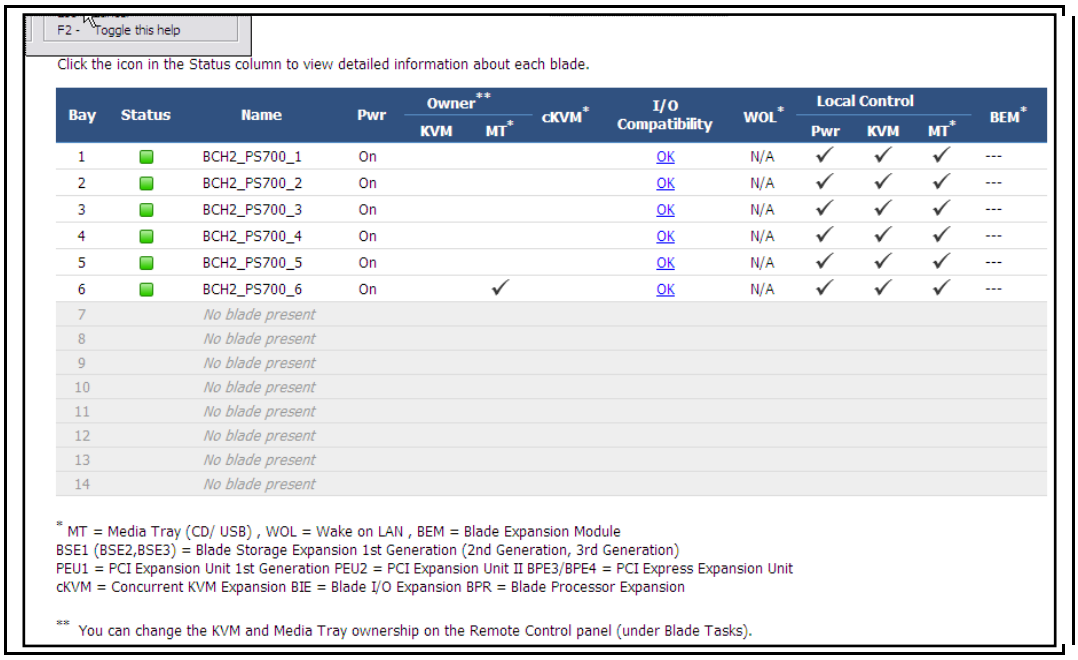
B. AMM Menu Options

The AMM menu is divided into five main sections for easy navigation. These sections are: System Status, Blade Tasks, I/O Module Tasks, MM Control and Service Tools. From this menu you can select the BladeCenter components you want to view or change. The question mark  seen throughout the menu can be selected to get a description of the task.

1. Monitors

The Monitors section allows you to view the status, settings and other information about components in the chassis. Whereas all of the features in this section are important, only some can be reviewed in the allotted time. It is important that you familiarize yourself with all of the features in the Monitors Section if time permits.

____1. From the **System Status Summary,** select the "**Blades**" link on the System Status Summary screen. This will advance the screen to the Blade Servers section. This section displays a table which shows the status of all the blades in the chassis. The table has 14 rows for the 14 blades. The empty slots are marked as such.

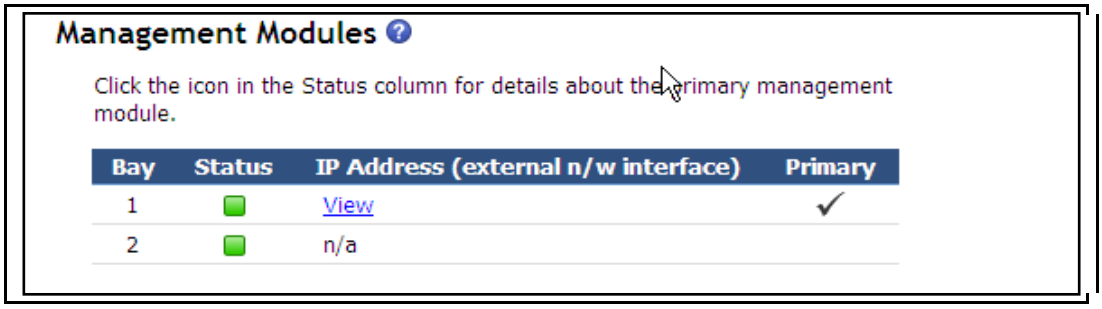


Note: The BCS and the BCHT Chassis' are the only two chassis' that do not hold 14 blades. The BCS can have 6 blades and the BCHT can only have 12 blades.

____2. Click the **green status** indicator light for the blade you were assigned. This screen shows the Blade status, environmental and compatibility information for the blade.

____3. Press the back arrow twice to return to the system status screen. Select the "**I/O Modules**" link. This will advance to the I/O Modules section. This section displays a table which shows the status of all the switch modules in the chassis. The table has 4 rows for the 4 switch module bays. The empty bays are marked as such.

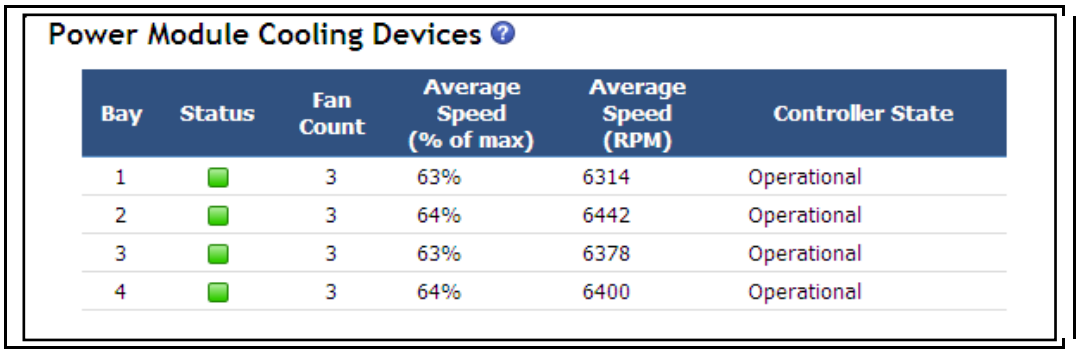
____4. Scroll down to the **Management Module** section. This section displays a table which shows the status of the Management Modules in the chassis. The table has 2 rows for the 2 Management Module bays. The empty bays are marked as such.



____5. Scroll down to the **Power Modules** section. This section displays a table which shows the status of all the power modules in the chassis. The table has 4 rows for the 4 power module bays. The empty bays are marked as such.

____6. Scroll down to the **Power Module Cooling Devices** section. This section displays a table which shows the status of the power module cooling devices in the chassis.

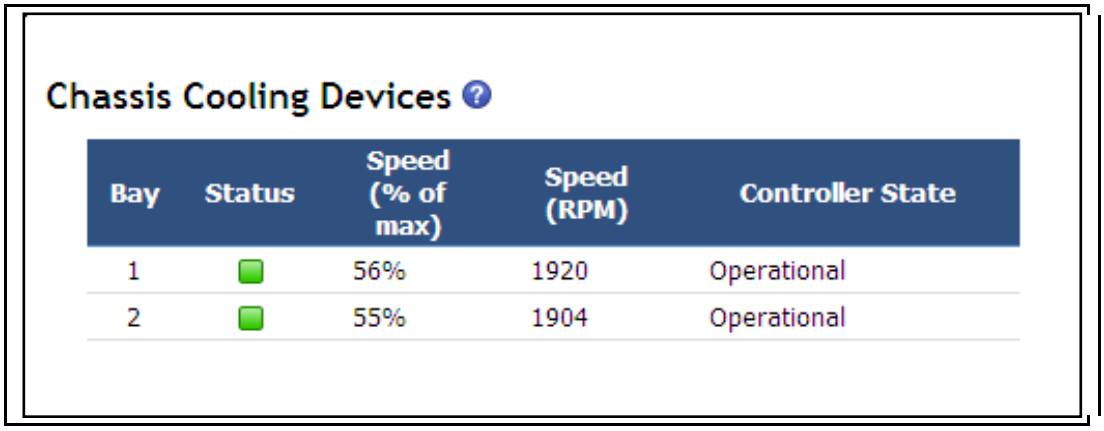
Each power module cooling device is attached to a power module. The table has 4 rows for the 4 power module cooling bays. The empty bays are marked as such.



Power Module Cooling Devices

Bay	Status	Fan Count	Average Speed (% of max)	Average Speed (RPM)	Controller State
1		3	63%	6314	Operational
2		3	64%	6442	Operational
3		3	63%	6378	Operational
4		3	64%	6400	Operational

____7. Scroll down to the **Chassis Cooling Devices** section. This section displays a table which shows the status of the chassis cooling devices in the chassis. The table has 2 rows for the 2 blower bays. The empty bays are marked as such.



Chassis Cooling Devices

Bay	Status	Speed (% of max)	Speed (RPM)	Controller State
1		56%	1920	Operational
2		55%	1904	Operational

____8. Scroll down to the **Media Tray** section. This section displays the ambient temperature reading for the media tray along with the warning and warning reset thresholds. If the temperature reaches the warning threshold, a warning event is generated. If the temperature was above the warning threshold and then drops below the warning reset threshold, any active temperature events are cleared.

____9. Go back to the **Advanced Management Module** main menu and select each of the other five sections and review the tasks associated with those sections. Select the question mark to get a description of the task. Some of the **Blade Tasks** options will be covered in this lab.

Hardware VPD

From this task you can see an inventory of all the hardware components installed in the chassis.

____1. To view the hardware inventory under Monitor Task select "**Hardware VPD**". Scroll down the list to see all the components installed. To view more detailed information about one of the components, select one of the links.

____2. To view the Port information for your blade (i.e., World Wide Name), select the link for your blade then select the **Ports** tab. Depending on the type of adapters you have installed on your blade, you will see more than one WWN.

Firmware VPD

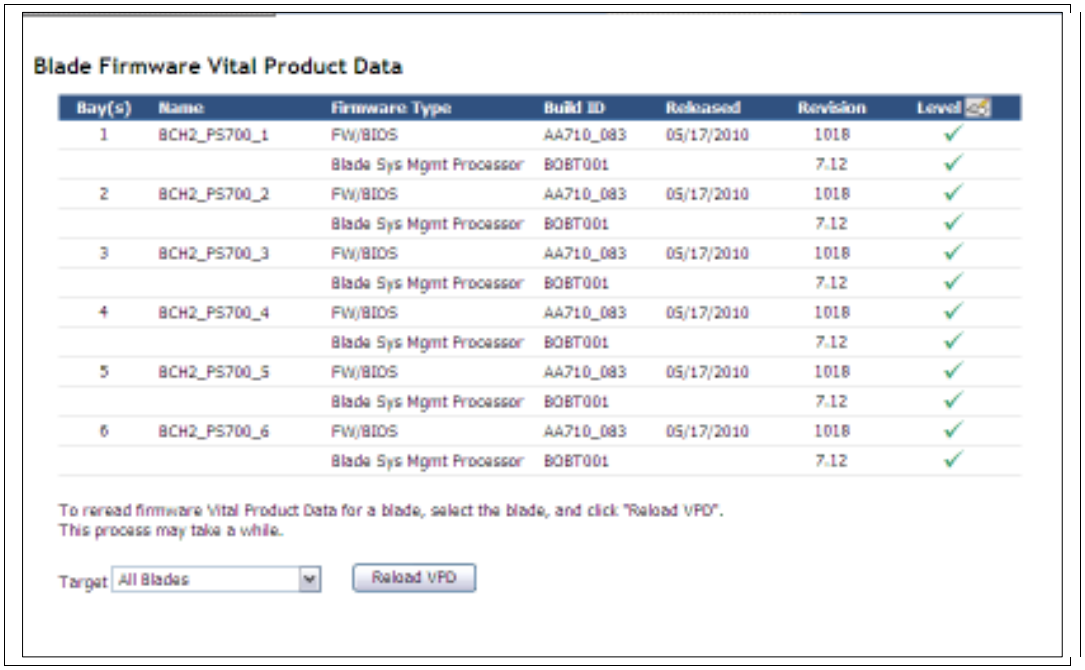
It is very important to ensure the latest level of firmware is installed on your BladeCenter components (i.e., Blades, Advanced Management Module and I/O Modules).

____1. To view the firmware levels, select "**Firmware VPD**" under **System Status**. Verify the latest level of firmware is installed on the blades by looking at the Build ID.

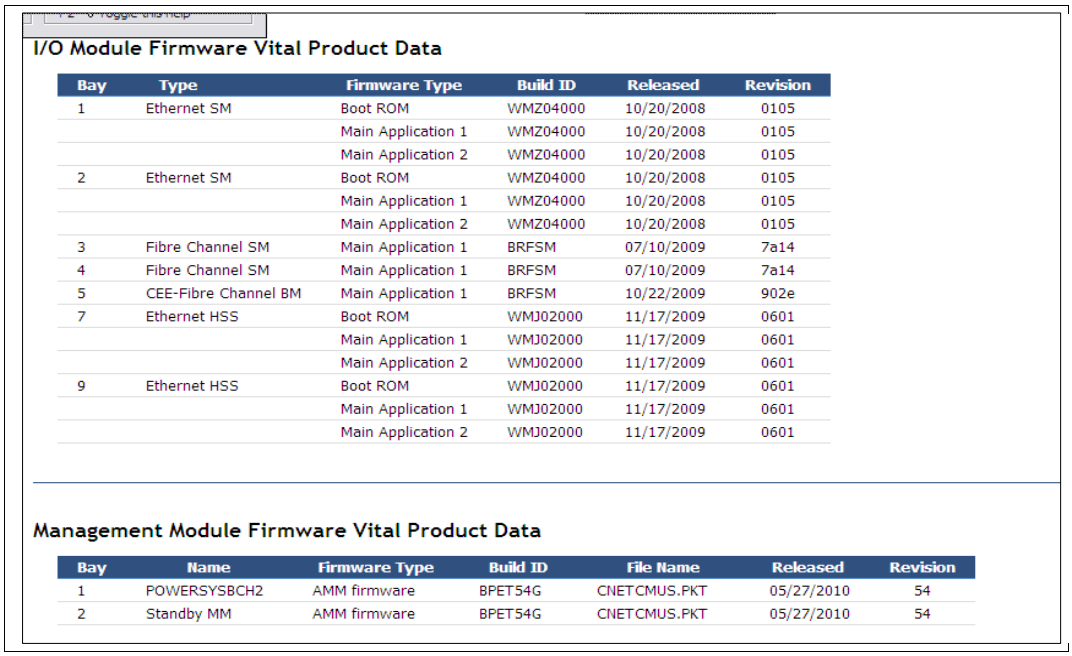
Questions:

1. What firmware level is installed on your assigned blade? _____

2. What firmware level is installed on the AMM? _____



____2. Next, scroll down to the I/O Module Firmware and the Management Module Firmware sections and verify the level of firmware installed.



I/O Module Firmware Vital Product Data

Bay	Type	Firmware Type	Build ID	Released	Revision
1	Ethernet SM	Boot ROM	WMZ04000	10/20/2008	0105
		Main Application 1	WMZ04000	10/20/2008	0105
		Main Application 2	WMZ04000	10/20/2008	0105
2	Ethernet SM	Boot ROM	WMZ04000	10/20/2008	0105
		Main Application 1	WMZ04000	10/20/2008	0105
		Main Application 2	WMZ04000	10/20/2008	0105
3	Fibre Channel SM	Main Application 1	BRFSM	07/10/2009	7a14
4	Fibre Channel SM	Main Application 1	BRFSM	07/10/2009	7a14
5	CEE-Fibre Channel BM	Main Application 1	BRFSM	10/22/2009	902e
7	Ethernet HSS	Boot ROM	WMJ02000	11/17/2009	0601
		Main Application 1	WMJ02000	11/17/2009	0601
		Main Application 2	WMJ02000	11/17/2009	0601
9	Ethernet HSS	Boot ROM	WMJ02000	11/17/2009	0601
		Main Application 1	WMJ02000	11/17/2009	0601
		Main Application 2	WMJ02000	11/17/2009	0601

Management Module Firmware Vital Product Data

Bay	Name	Firmware Type	Build ID	File Name	Released	Revision
1	POWERSYSBCH2	AMM firmware	BPET54G	CNETCMUS.PKT	05/27/2010	54
2	Standby MM	AMM firmware	BPET54G	CNETCMUS.PKT	05/27/2010	54

2. Blade Tasks

The Blade Tasks section allows you to view and change the settings or configurations of the blade servers in the chassis. Whereas all of the features in this section are important, only some can be reviewed in the allotted time. It is important that you familiarize yourself with all of the features in the Blade Task Section if time permits.

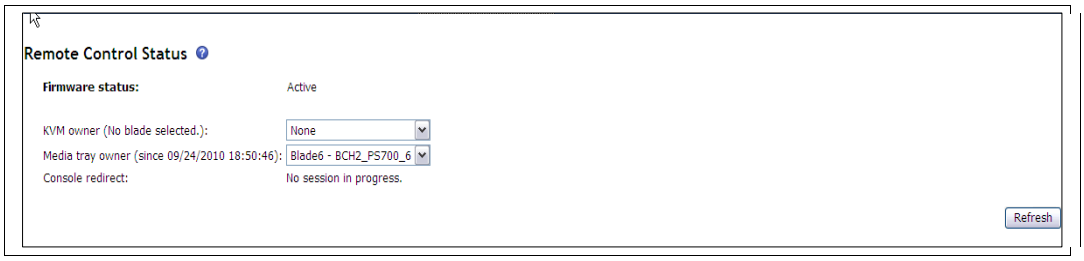
Note: Firmware on the Power Processor-based Blades can not be updated from the AMM.

Assigning the Media Tray

____1. The Media Tray can be assigned by pressing the CD button on the top/front of the blade or it can be assigned from the Advanced Management Module. To remotely assign the Media Tray from the Advanced Management Module under **Blade Tasks,** select "**Remote Control**". Select "**Start Remote Control**" (if you receive any security warning, select yes).

Note: If you have disabled pop-ups or have a pop-up blocker on your web browser, be sure and disable it to allow the Advanced Management Module to pop-up the Remote Control Window.

____2. Select the blade you want to assign the media tray to from the Media tray owner drop down menu then select "**Refresh**". The blade you selected should be listed.

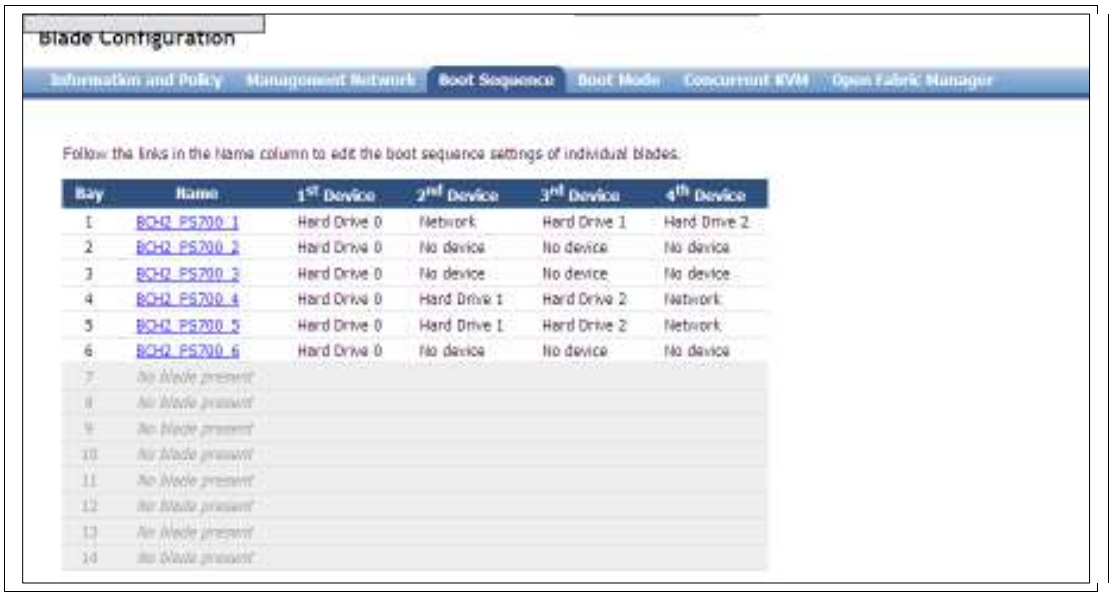


Setting the Boot Sequence

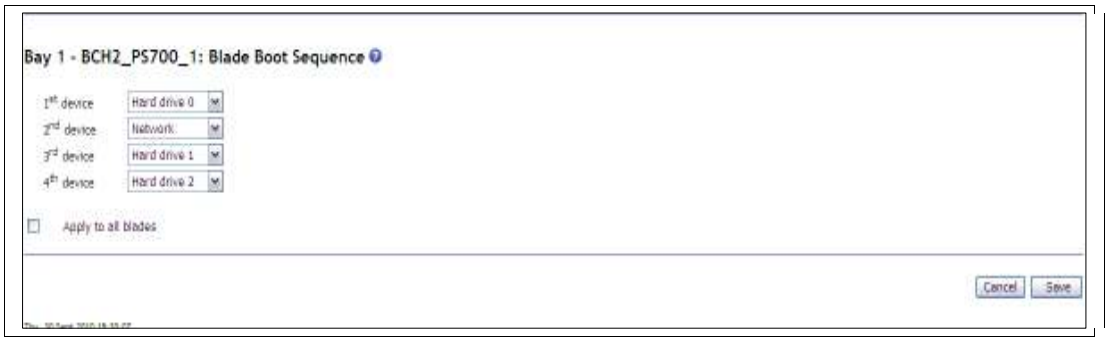
The Boot sequence can be set from the Advanced Management Module as well as from the SMS Menu.

____1. To set the boot sequence on the blade from the Advanced Management Module: under **Blade Tasks**, select "**Configuration**", select the "**Boot Sequence**" **then select your blade (by name)**. To boot from CD-ROM, the sequence should be set as follows:

1st Device = CD-ROM
2nd Device = Hard Drive 0
3rd Device = No device
4th Device = No device



____2. Set the boot sequence back to "**Hard Disk 0**" for the 1st Device and press "**Save**".



Firmware Update

The firmware on the Power Processor-based Blades is not updated from the **Blade Tasks** section of the AMM Menu and is only updated on the blade as follows:

- If the blade has an Operating System installed then the firmware can be updated from smitty diag or by using the update_flash command.
- If the blade does not have an Operating System installed then the firmware has to be updated using Diagnostic CDs.

For more information on updating the firmware, refer to the Addendum section of the lab.

Note: Firmware updates are not a part of this lab!

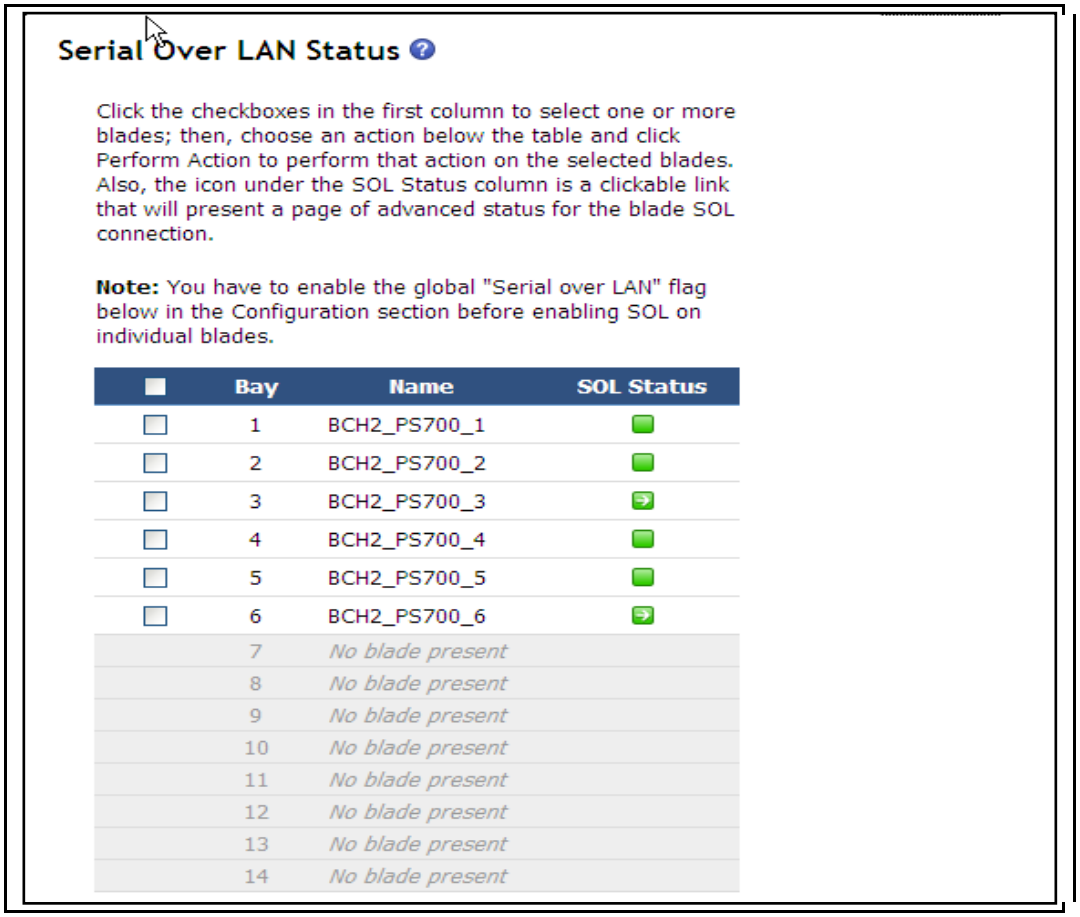
Serial Over LAN Console

Serial Over LAN is the console option supported for the POWER7 processor-based blades. For Serial Over LAN support, an Ethernet Switch Module or the Intelligent Copper Pass-thru Module should be in Bays 1 and 2 of the Chassis. **Note:** The Intelligent Copper Pass-Thru Module is the only pass-thru module that supports Serial Over LAN.

NOTE: SERIAL OVER LAN HAS ALREADY BEEN CONFIGURED ON YOUR BLADE, SO PLEASE DO NOT MAKE ANY CANGES TO THE CONFIGURATION. THIS INORMATION IS PROVIDED FOR YOUR REFERENCE ONLY!

____1. Serial Over LAN is automatically configured and enabled on the AMM. The default configuration provides the best performance in most cases and should not be changed. To view the default configuration under **Blade Tasks**, select "**Serial Over LAN**". Select the "**Serial Over LAN Configuration**" link to display the configuration.

____2. Before you can open a Serial Over LAN session on the blade, the blade must be powered on and the status must be enabled. To view the status of Serial Over LAN on your Blade from the **Advanced Management Module**, under **Blade Tasks**, select "**Serial Over LAN**".

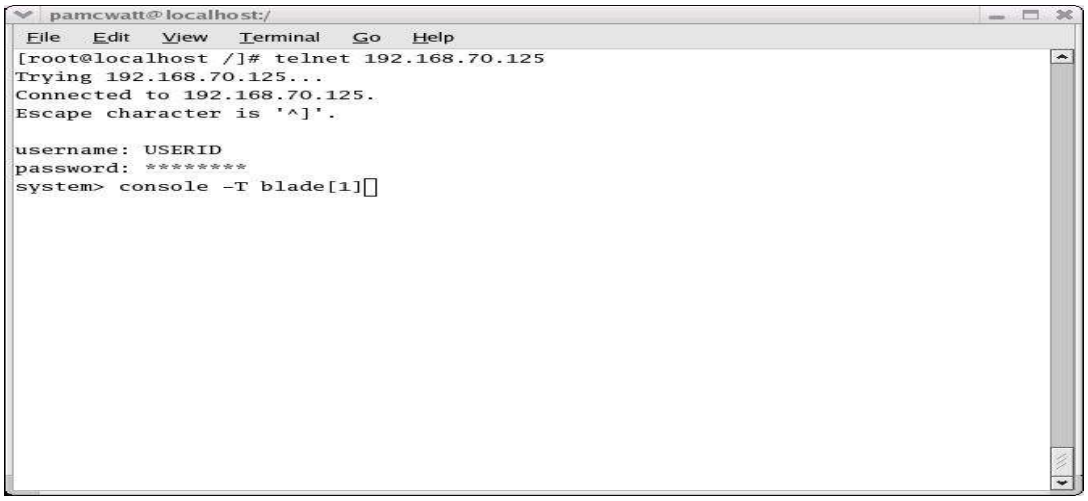


Note: The green symbol under SOL Status indicates SOL is ready. If SOL were not ready the box would be gray. If SOL is active on a blade, an arrow is displayed on

top of the green box. You can also click on the green box and the SOL Summary Status is displayed for that blade.

____3. Telnet (using windows Telnet client or PuTTY [Windows SSH Client Program]) to the Advanced Management Module and type the following to open a SOL session: "**console –o –T blade[#]**" (where # is the Bay number of the blade) and press "**Enter**".

Note: To exit the SOL session, "hit **Esc key** shift + 9" (a left parenthesis). If you're using PuTTY, this sequence may not work if your keyboard is not defined.



You have now established a remote connection to the blade. The SOL session buffers up to 8KB of data, so when the session is started, any buffered data will scroll past. For more information on Serial Over LAN, refer to the *Serial over LAN Setup Guide* at http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/docdisplay?lndocid=MIGR-54666&brandind=5000020.

Questions:

1. What is the VLAN ID for SOL support?_____

2. Which Pass-Thru Module supports SOL and what Switch Module bays should they be installed in? _____

3. Is Keyboard Video Mouse (KVM) supported as a console option on the Power7 blade servers? _____

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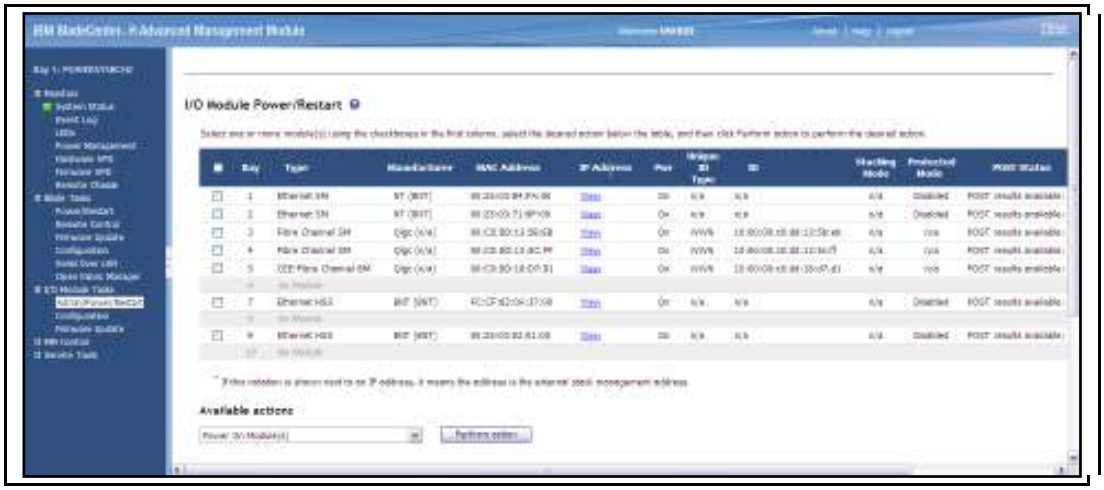
3. I/O Module Tasks

The tasks in this section allow you to work directly with the I/O Modules in the chassis. When configuring the I/O Modules it is important to enable the ports on all of the modules otherwise you will not have connectivity. Whereas all of the features in this section are important, only some can be reviewed in the allotted time. It is important that you familiarize yourself with all of the features in the I/O Module Task Section if time permits.

Power/Restart

NOTE: DO NOT RESTART THE I/O MODULES. THE INFORMATION IN THIS SECTION IS FOR YOUR REVIEW ONLY!

____1. To view and select the power options for the I/O Modules installed in the Chassis, go to **I/O Module Tasks** then select "**Power Restart**". The I/O Modules installed in the chassis are displayed as well as the power status of each of these modules.



____2. Take a look at the options available from the drop down box next to **Perform actions**. Each of these actions can be performed on the I/O Modules by selecting the I/O Bay as well as the action you want to perform.

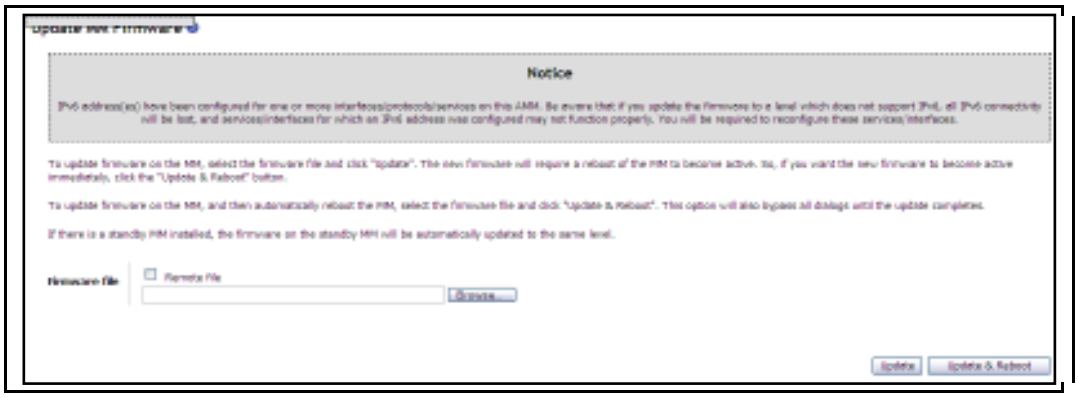
4. MM Control

The MM Control section allows you to view and change the settings or configuration on the management module that you are logged in to through the management-module Web interface session. Whereas all of the features in this section are important, only some can be reviewed in the allotted time. It is important that you familiarize yourself with all of the features in the MM Control Section if time permits. The AMM firmware can be downloaded from http://www-947.ibm.com/support/entry/portal/docdisplay?brand=5000020&lndocid=SERV-AMM .

Firmware Update

NOTE: DO NOT ATTEMPT TO UPDATE THE FIRMWARE ON THE AMM. THE INFORMATION IN THIS SECTION IS FOR YOUR REVIEW ONLY!

____1. The screen below is simply for your reference. If you were to update the firmware on the AMM, go to MM Control and select "**Firmware Update**. Select the "**Browse**" button to find the firmware file you downloaded for the AMM. Select "**Update**" if you are not able to reboot the AMM or select "**Update & Reboot**" to complete the firmware update.



Question: When the firmware is updated on the AMM does it have to be rebooted to make the firmware effective? _____

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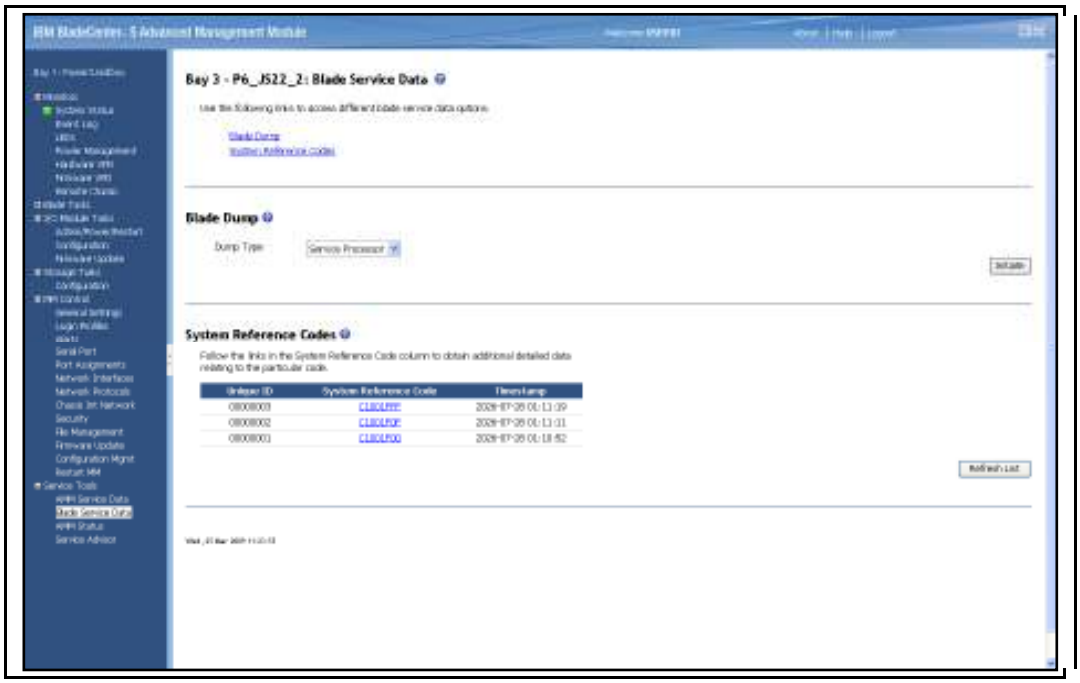
5. Service Tools

The tasks in this section will help you troubleshoot problems with BladeCenter components as well as allow you to configure Service Agent on the Chassis. If you are working with support, they may request information that can be obtained from this section. Whereas all of the features in this section are important, only some can be reviewed in the allotted time. It is important that you familiarize yourself with all of the features in the Service Tools Section if time permits.

Blade Service Data

____1. To view the service data for a specific blade, select "**Blade Service Data**" then select the blade you want to view. From this menu you can initiate a Blade Dump by selecting the pull-down menu and selecting the type of dump you want to initiate.

____2. The most recent System Reference Codes (SRC) codes are also displayed for the blade you just selected. To show the details of a SRC select on the SRC link.



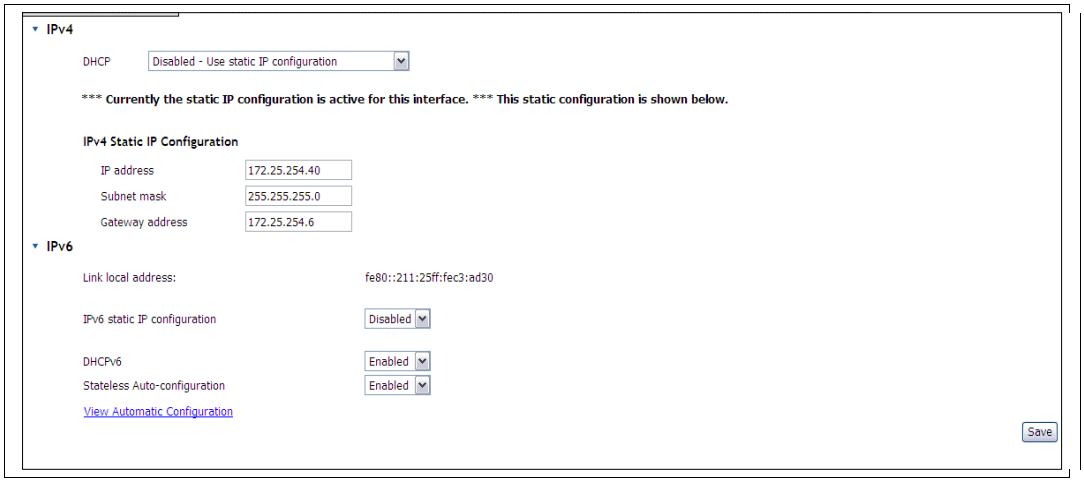
C. How to Configure a New BladeCenter Chassis

The default IP address of the external port of the Advanced Management Module is **192.168.70.125,** the default subnet address is **255.255.255.0**, and the default hostname is **MM*xxxxxxxxxxx*** where ***xxxxxxxxxxx*** is the burned-in MAC address. If this were a new installation your laptop must be on the same subnet as the Advanced Management Module before you can connect to the Advanced Management Module.

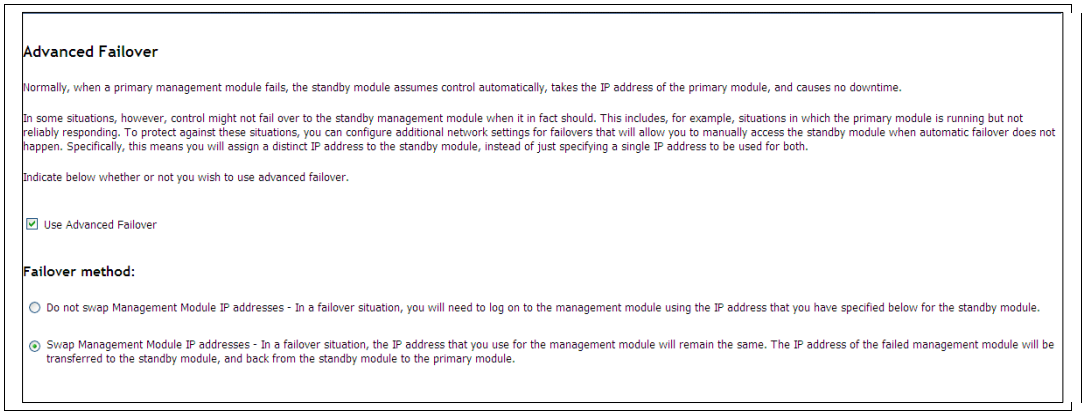
The BladeCenter hardware used in this lab has already been configured, so PLEASE DO NOT PERFORM THESE STEPS. These steps are simply provided for your reference!

The first time you configure a new BladeCenter Chassis, follow these steps:

____1. The first step is to assign an IP address to the Primary Management Module. From the AMM under MM Control, select "**Network Interfaces**" and enter the IP Address, Subnet Mask and Gateway or enable DHCP under IPv4 or IPv6 and select "**Save**".



____2. The Advanced failover option can be used if you have two AMMs in the chassis. If you want to ensure the AMMs failover properly, select the "**Use Advanced Failover**" box. The "**Swap management Module IP Address**" option is automatically selected.



____3. Scroll down to the "**Standby Management Module**" section and enter the IP Address, Subnet Mask and Gateway Address of the second AMM then select "**Save**".

____4. The next step is to configure the IP Address on the I/O Modules. From the I/O Module Task section, select "**Configuration**". Select the appropriate slot number and enter the IP Address, Subnet Mask and Gateway Address for that module.

____5. Next select the "**Advanced Options**". The **External management over all ports** should be set to disabled so only the management module ports can be used to change the configuration on the I/O Module. The **Preserve new IP address configuration on all resets** should be "**Enabled**" and press "**Save**". These steps must be repeated for each of the I/O Modules in the chassis.

____6. The next step is to enable the ports on the I/O Modules. Under I/**O Module Tasks** select "**Admin/Power/Restart**". Scroll down to the **I/O Module Advanced Setup** section and select "**Enabled**" for **Fast POST**and **External ports** for each of the I/O Modules in the Chassis.

____7. Next you need to make sure SOL is enabled! Under **Blade Task**, select "**Serial Over LAN**". Scroll down to "**Serial Over LAN Configuration**" section and

make sure SOL is **Enabled**. Then look at the **Serial Over LAN Status** and make sure all of your blades are available.

The chassis is now configured on the network.

II. VIO Installation

In this section of the lab you will install an IVM mksysb image on your blade using a NIM Server. Note: Refer to the Advanced Lab for more information on installing IBM i on the blade.

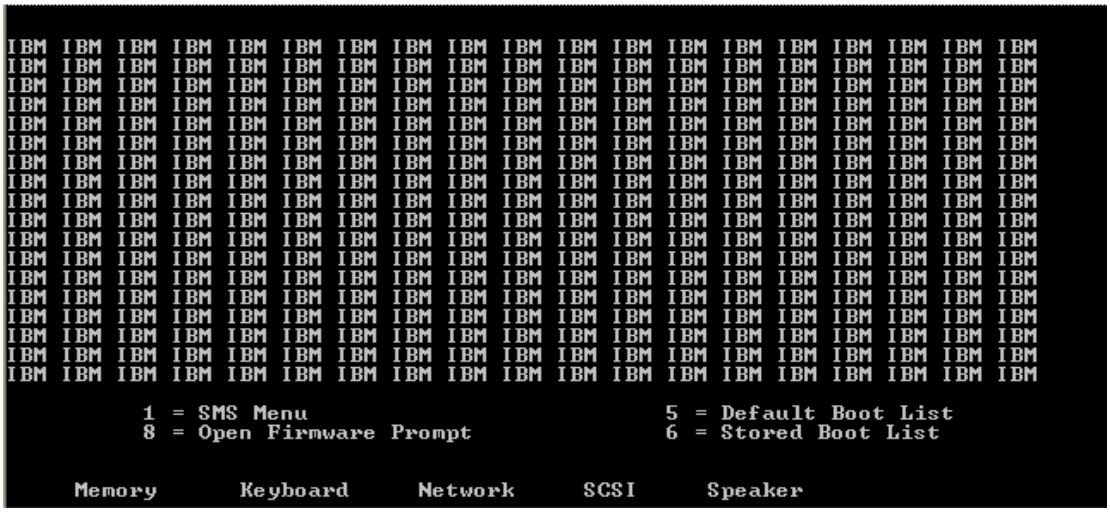
A. Starting the VIO Install Process

Complete the following steps to install IVM on your blade:

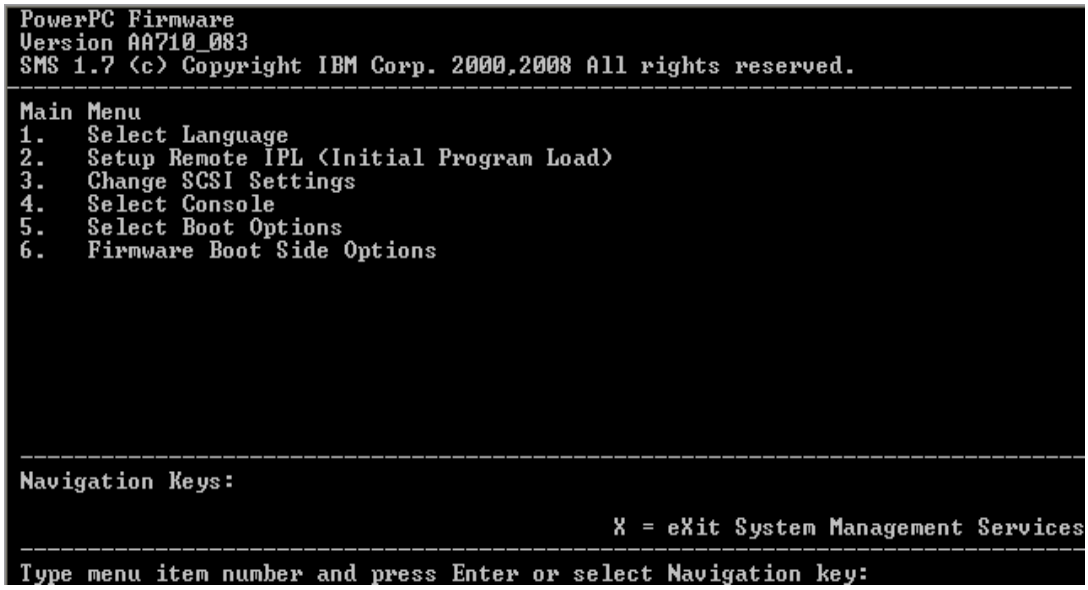
____1. Telnet to the Management Module (using windows Telnet client or PuTTY) and login.

____2. To boot the blade and open a SOL session type "**boot –c –T system:blade[#]**" (where # is the Bay number of the blade) and press "**Enter**". The blade will take a few minutes to reboot!

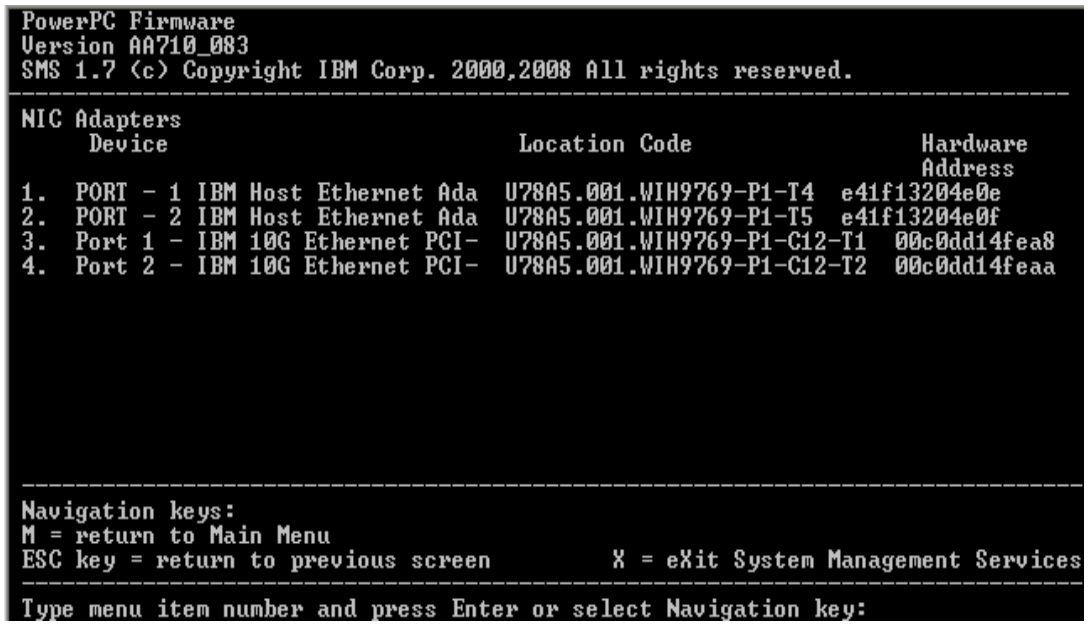
____3. Several lines will scroll past. Type "**1**" when you see the word "**Keyboard**" and before the word "**Speaker**" to go to the SMS Menu.



____4. From the Main Menu, select 2 for "**Setup Remote IPL <Initial Program Load>**" and press "**Enter**".



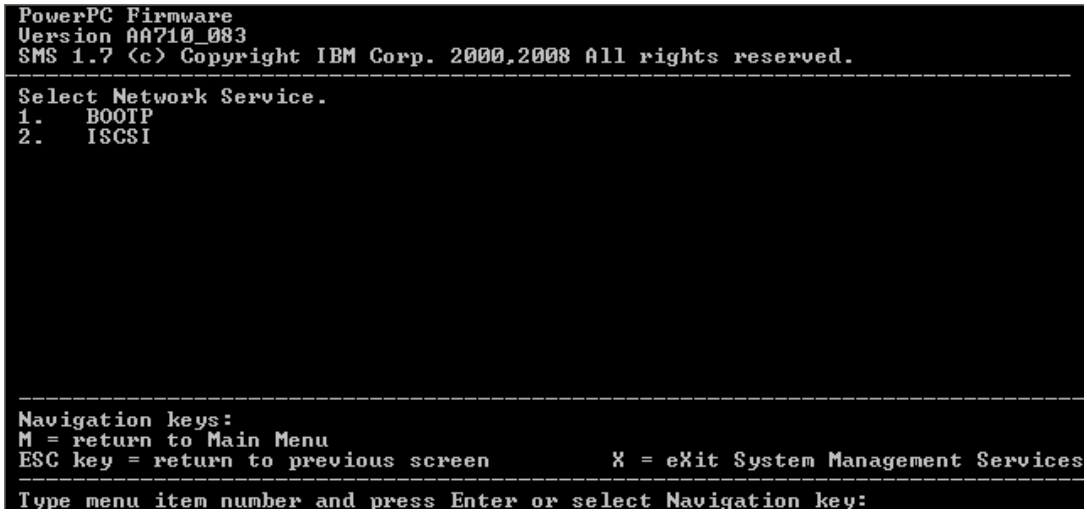
____5. From the NIC Adapters Device menu, select 1 for "**Port – 1 IBM Host Ethernet Ada**" and press "**Enter**".



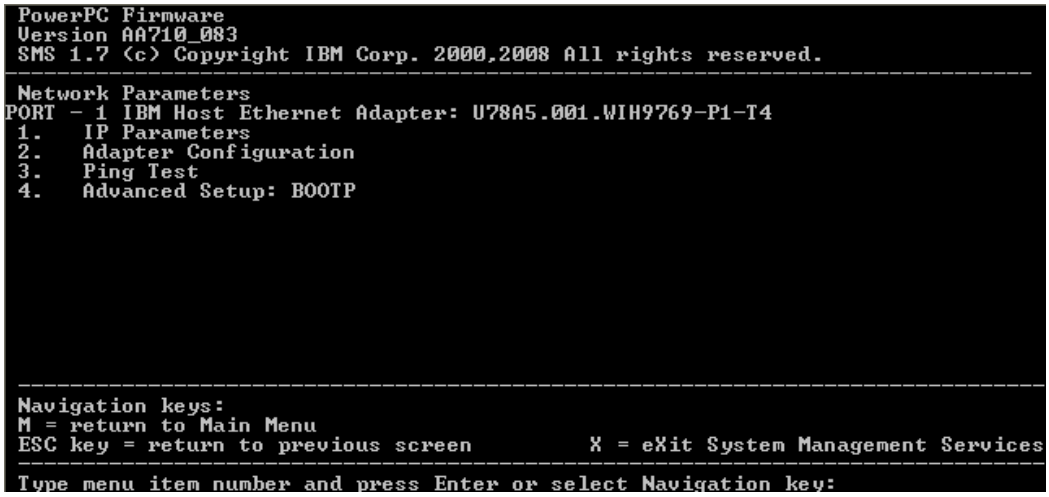
Note: If Port 2 is used, an Ethernet Switch Module or an Intelligent Copper Pass-thru Module must be in Bay 2 of the chassis.

____6. From the Internet Protocol Version menu, select 1 for "**IPv4 – Address Format 123.231.111.222**" and press "**Enter**".

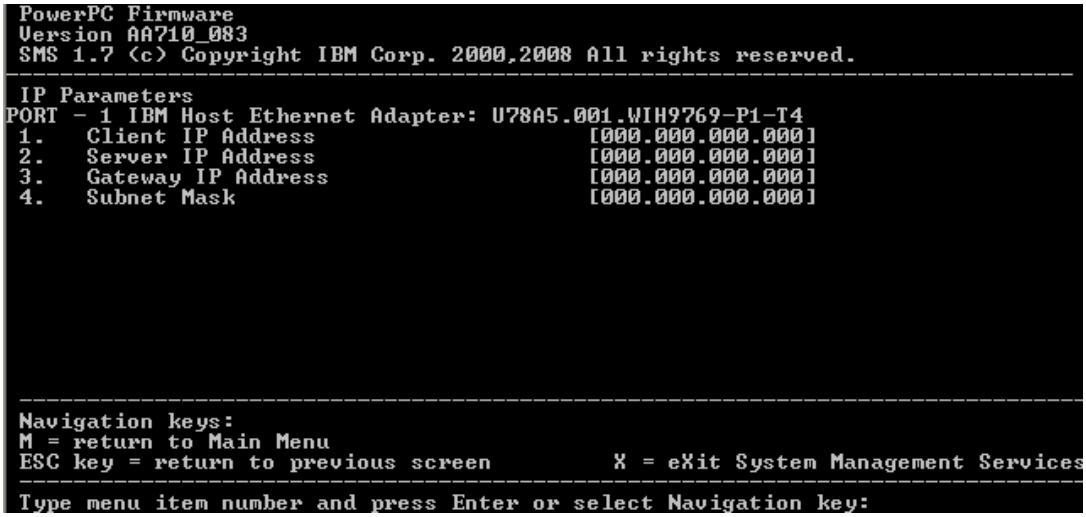
____7. From the Network Service menu, select 1 for "**BOOTP**" and press "**Enter**".



____8. From the Network Parameters menu, select 1 for "**IP Parameters**" and press "**Enter**".



____9. At the IP Parameters menu, select the appropriate number to configure the "**Client IP, Server IP, Gateway IP, and subnet mask**".



____10. Press the "**ESC**" key to return to the Network Parameters menu and select 3 for "**Ping Test**" and press "**Enter**". Now select 1 to "**Execute Ping Test**" and press "**Enter**".

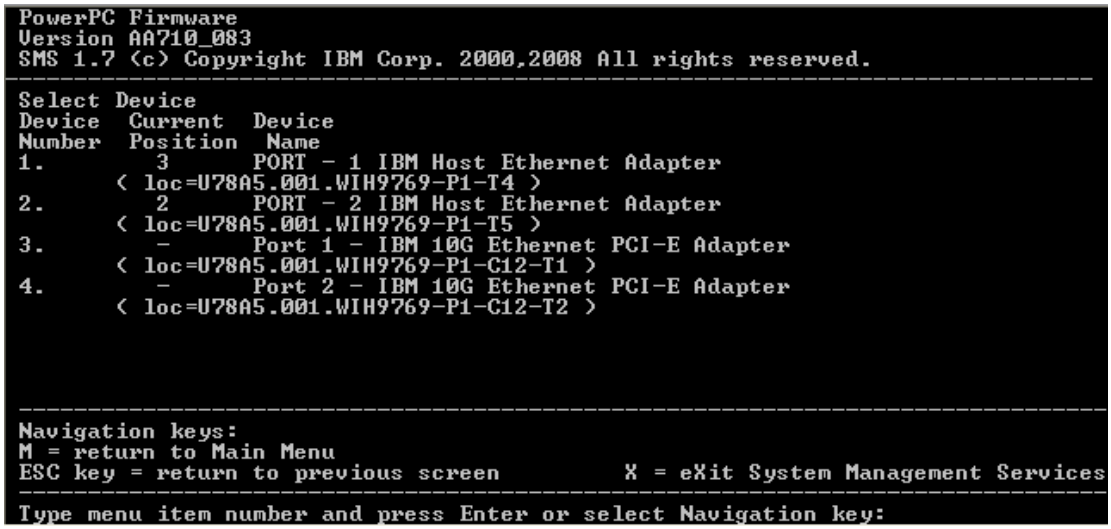
____11. Select any key to exit from this menu. Type "**M**" to return to the Main Menu. From the Main menu, select 5 "**Select Boot Options**" and press "**Enter**".

____12. From the Multiboot menu, select 1 for "**Select Install/Boot Device**" and press "**Enter**".

____13. From the Select Device Type menu, select 6 for "**Network**" and press "**Enter**".

____14. From the Select Network Services menu, select 1 for "**BOOTP**" and press "**Enter**".

____15. From the Select Device menu, select 1 for "**Ethernet <loc=U78A5.001.WIH9769-P1-T4>**" and press "**Enter**".

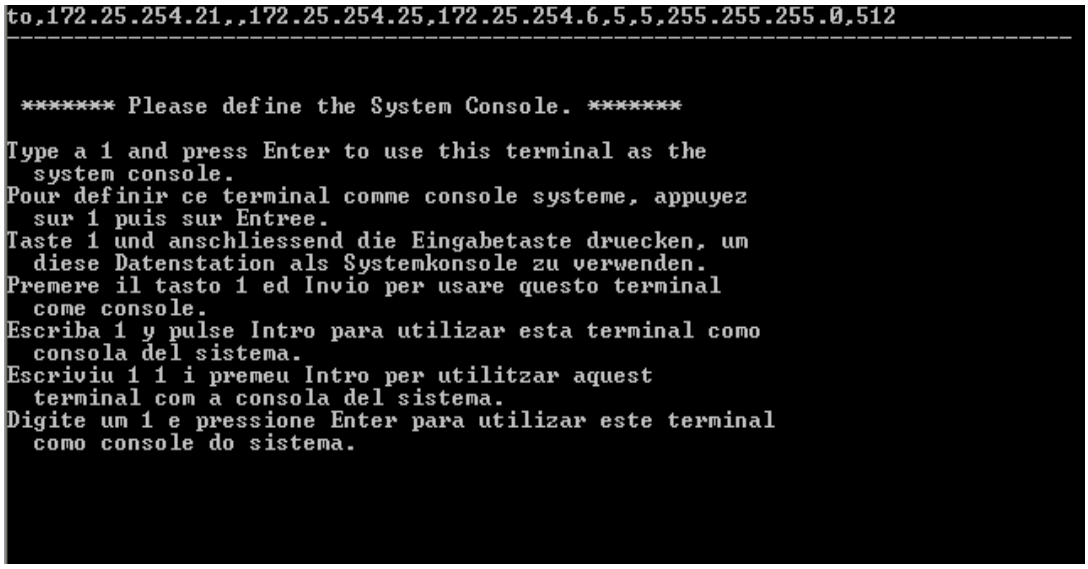


Note: If the second port on the adapter is used (option 2), an Ethernet Switch Module must be in Bay 2 of this chassis.

____16. From the Select Task menu, select 2 for "**Normal Mode Boot**" and press "**Enter**".

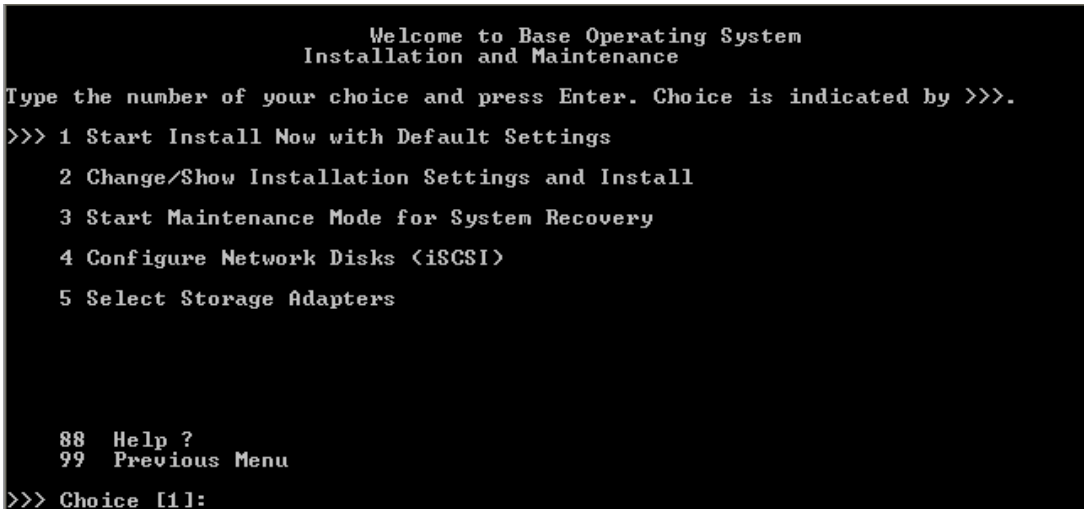
____17. At the next menu select 1 for "**Yes**" to exit the SMS menu and install your blade. A series of LEDs and other information will be displayed then the installation process will begin.

____18. Type "**2**" to define the system console and press "**Enter**".

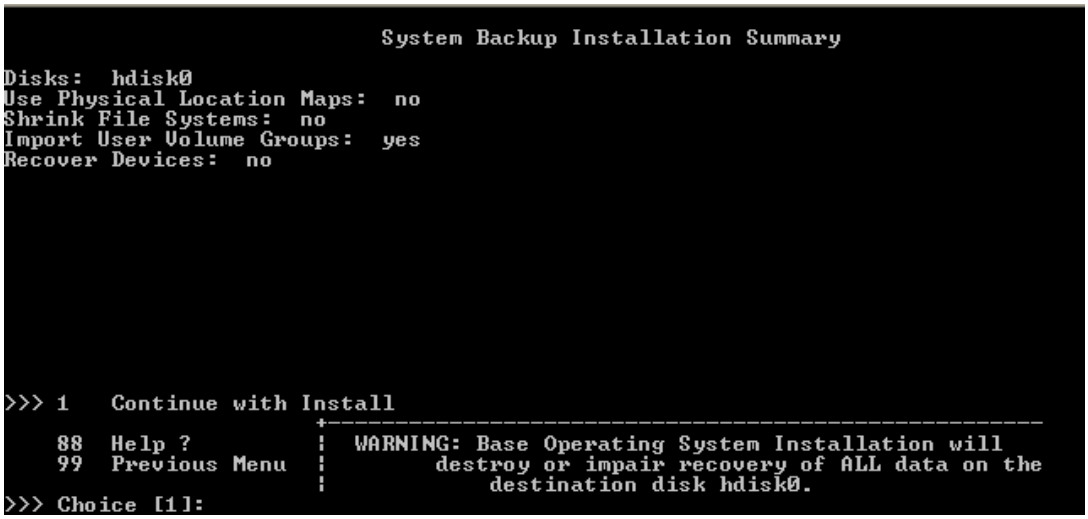


____19. Type "**1**" and press "**Enter**" to have English during the Install.

____20. Typically **hdisk0** is the default disk used for the installation of AIX. If you want to change the installation settings select 2 for "**Change/Show Installation Settings and Install**", and press "**Enter**". Otherwise, to start the installation with the default settings type "**1**" and press "**Enter**".



____21. Verify the correct hdisk is selected for your install and type "**1**" to continue.



The IVM installation process begins. When the installation is complete, the system will reboot and a login prompt will be displayed.

____22. Login to IVM's CLI (using windows Telnet client or PuTTY [Windows SSH Client Program]) as user "**padmin**". The first time you login to IVM you will be prompted to change the password which should be set to "**padmin**".

____23. Next you will be prompted to accept the VIO license. Press "**Enter**" to get to a prompt then type "**license –accept**".

____24. You can exit the CLI and login to the IVM GUI from a web-browser.

The IVM installation is complete.

III. AIX Installation

In this section of the lab we walk you through installing AIX on a blade using a NIM Server. For more information on installing and maintaining AIX6, refer to http://publib.boulder.ibm.com/infocenter/systems/scope/aix/index.jsp?topic=/com.ibm.aix.install/doc/insgdrf/insgdrf-kickoff.htm.

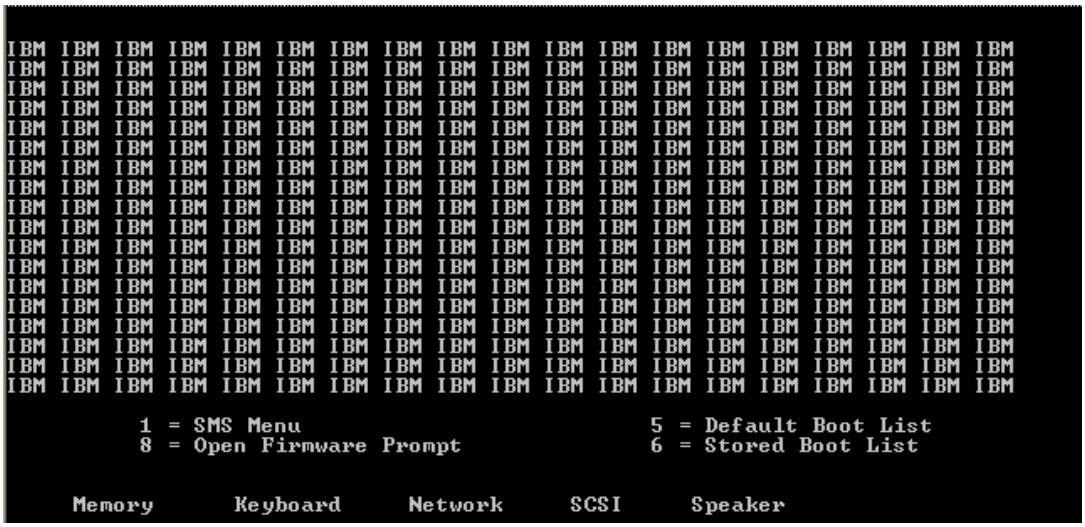
Starting the AIX6 Install Process

Complete the following steps to install AIX on the blade:

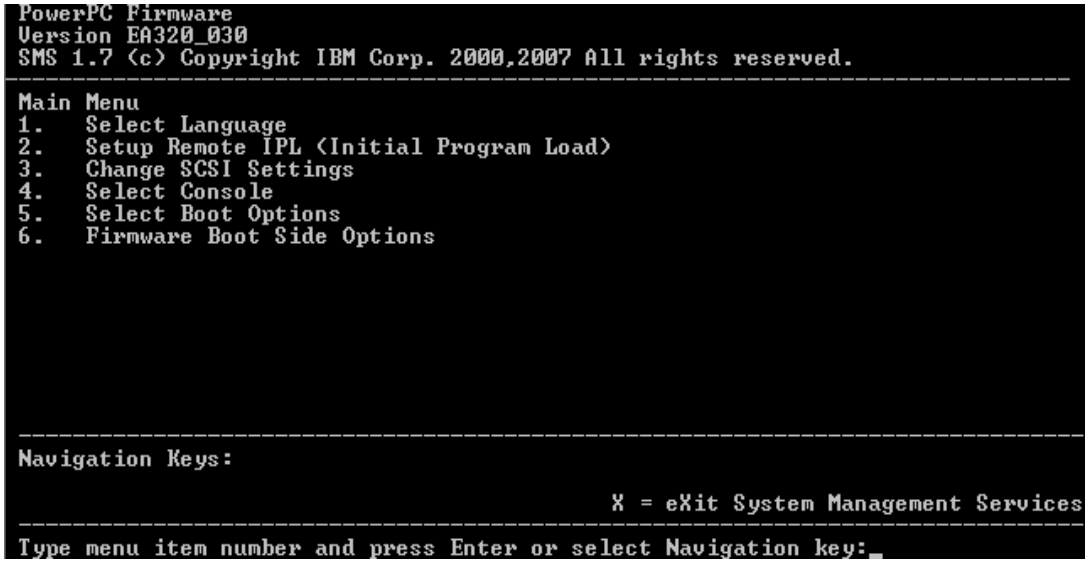
____1. Telnet (using windows Telnet client or PUTTY [Windows SSH Client Program]) to the Advanced Management Module. Enter the userid and password provided before the lab.

____2. To reboot the blade and open a SOL session, type "**boot –c –T system:blade[#]**" (where # is the Bay number of the blade) and press "**Enter**".

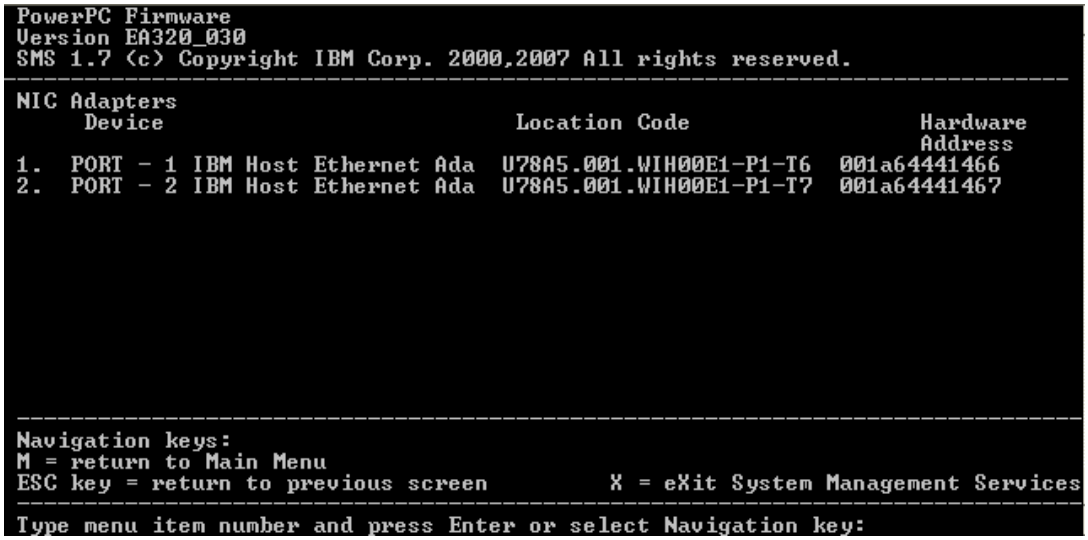
____3. Press "**1**" on the keyboard when you see the word "**Keyboard**" and before the word "**Speaker**" to go to the SMS Menus.



____5. From the Main Menu, select 2 for "**Setup Remote IPL <Initial Program Load>**" and press "**Enter**".

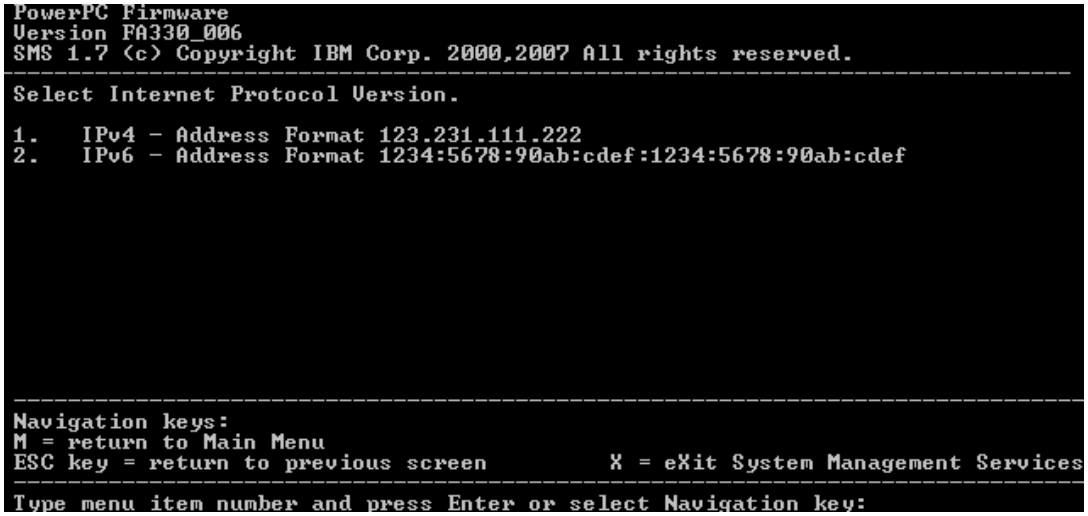


____6. From the NIC Adapters Device menu, select 1 for "**Port – 1 IBM Host Ethernet Ada**" and press "**Enter**".

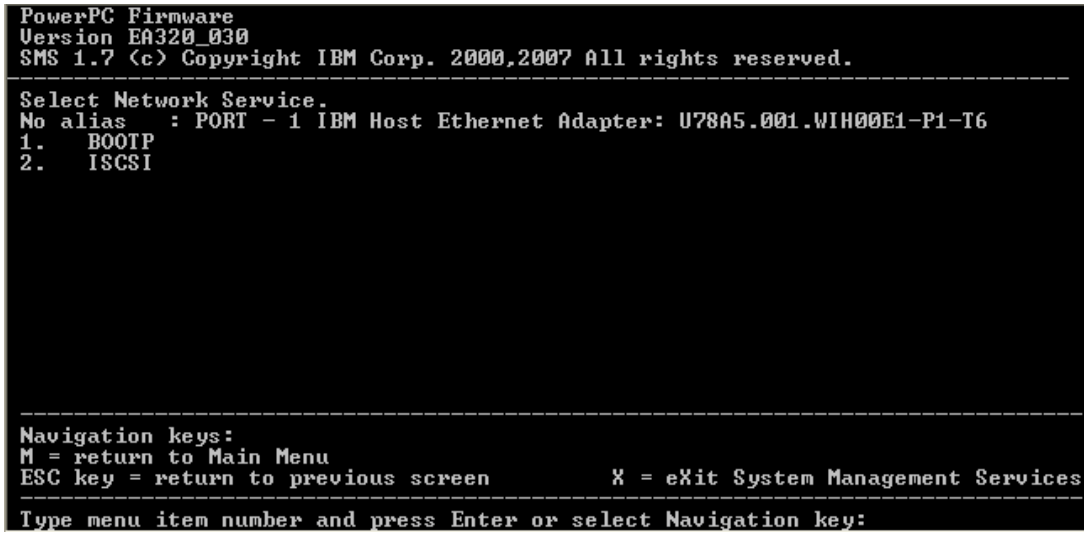


Note: If you select port 2 then you must have an Ethernet Switch Module in Bay 2 of the chassis.

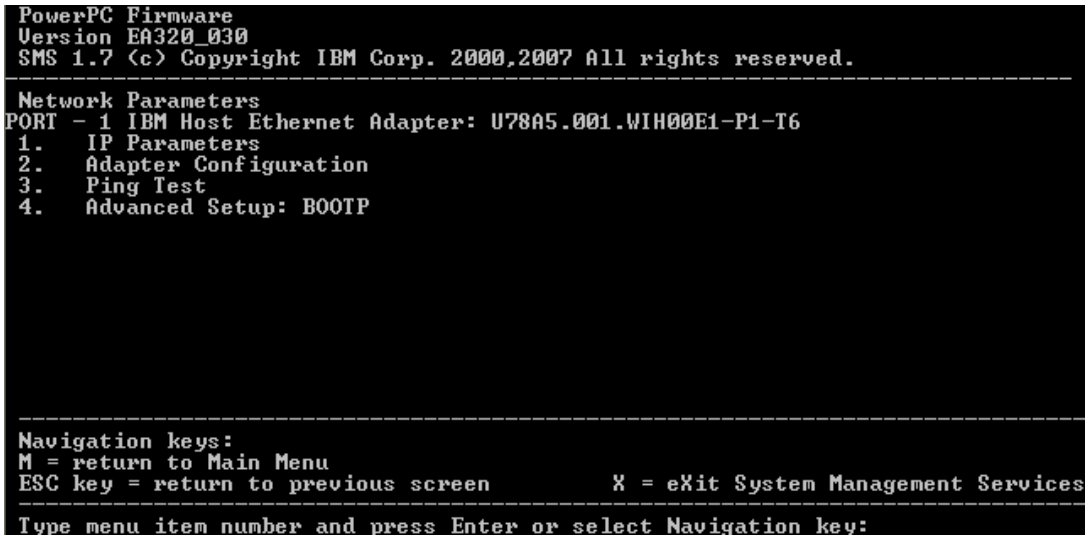
____7. From the Internet Protocol menu, select 1 for "**IPv4 – Address format 123.231.111.222**" and press "Enter".



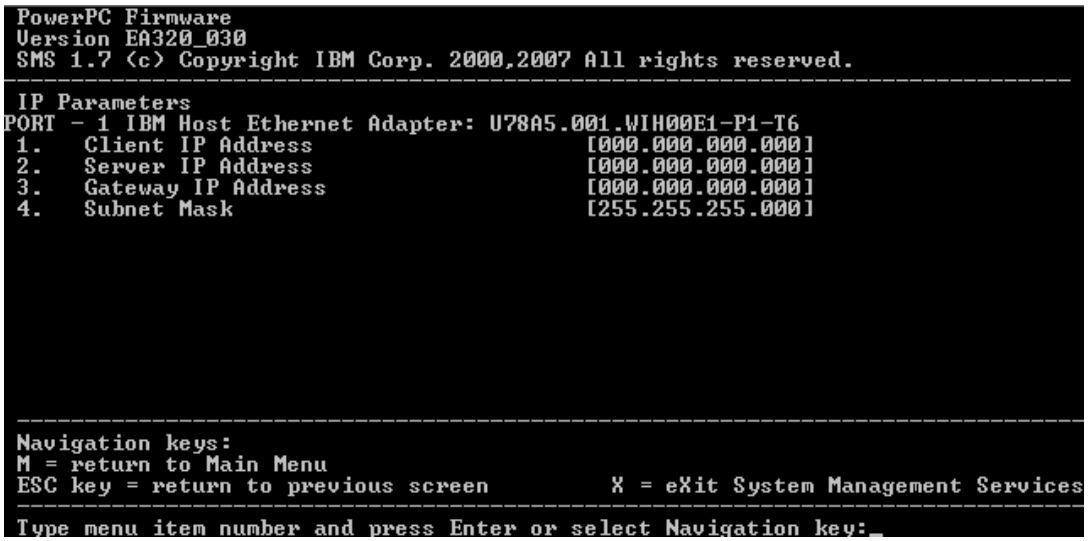
____8. From the Network Service menu, select 1 for "**BOOTP**" and press "**Enter**".



____9. From the Network Parameters menu, select 1 for "**IP Parameters**" and press "**Enter**".



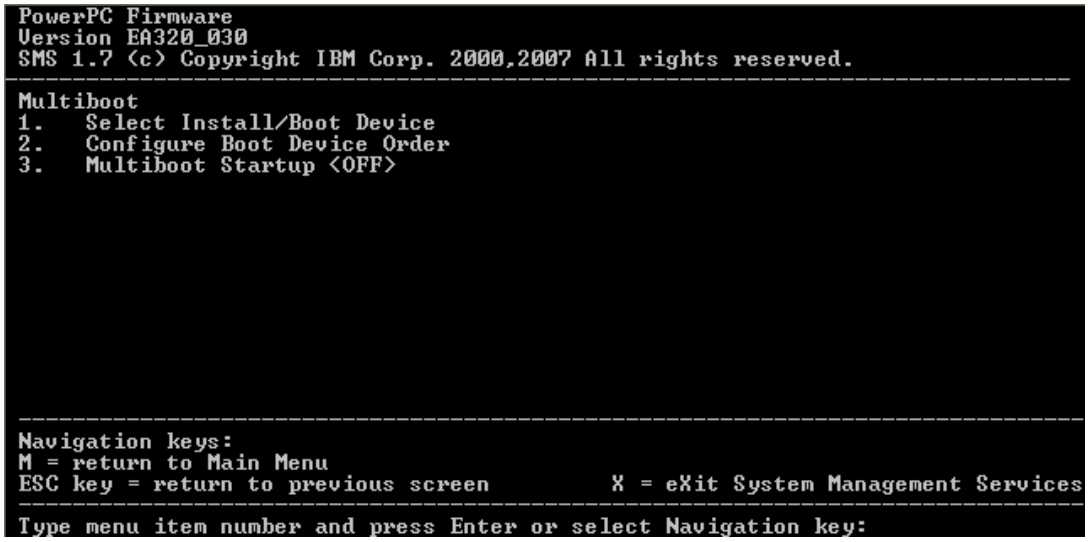
____10. At the IP Parameters menu, select the appropriate number to enter the Client IP Address, Server IP Address, Gateway IP Address, and the Subnet Mask.



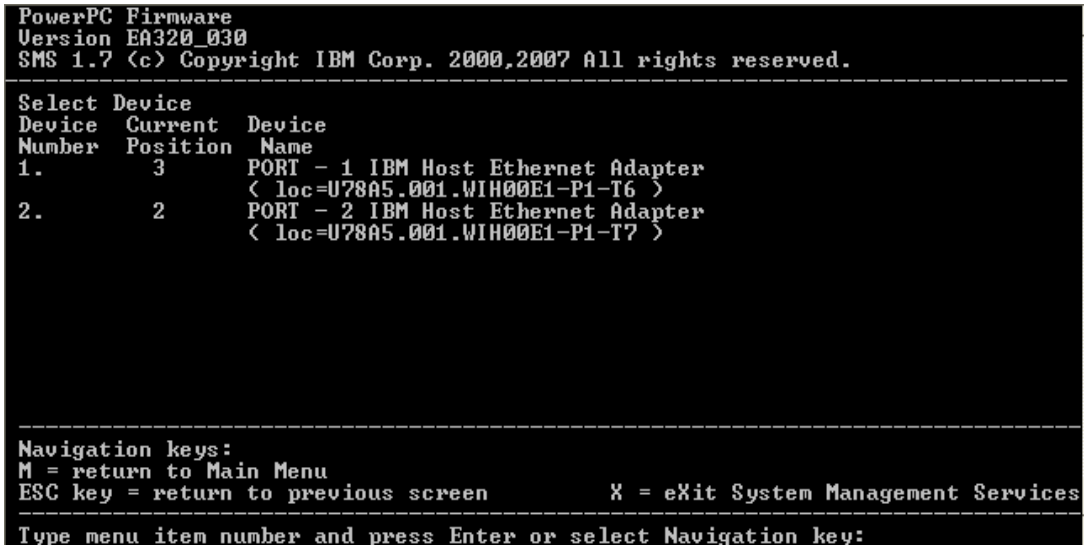
____11. Press the "**ESC**" key to go back to the Network Parameters menu and select 3 for "**Ping Test**" and press "**Enter**". Now, select 1 to "**Execute Ping Test**" and press "**Enter**".

____12. Select any key to exit from this menu. Type "**M**" to return to the Main Menu. From the Main menu, select 5 "**Select Boot Options**" and press "**Enter**".

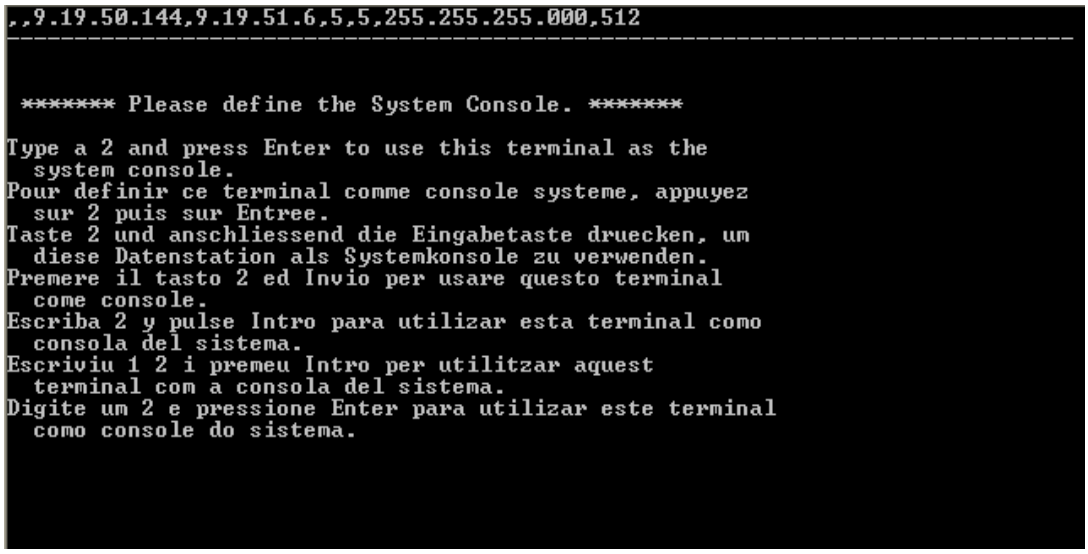
____13. From the Multiboot menu, select 1 "**Select Install/Boot Device**" and press "**Enter**".



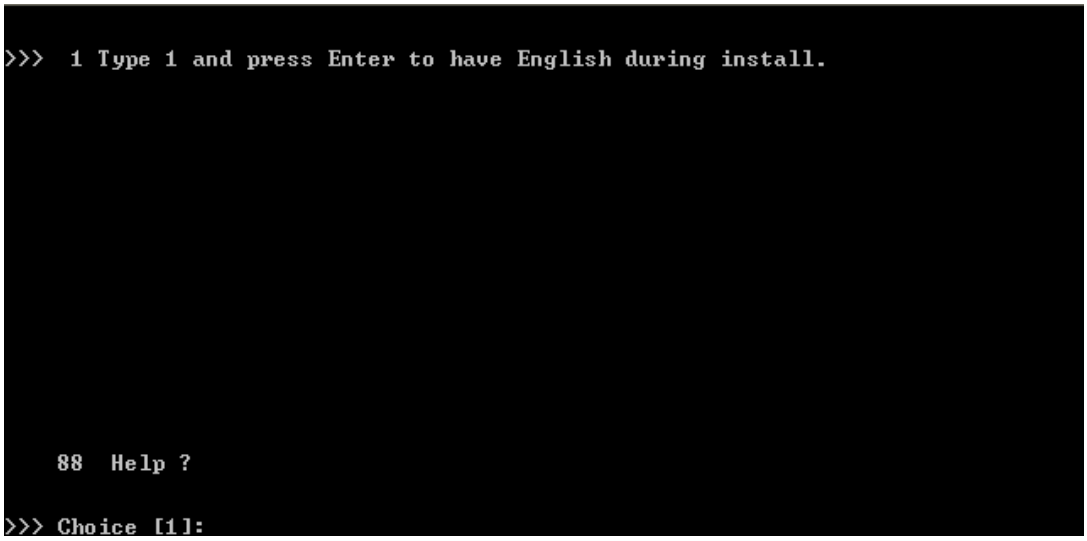
____14. From the Select Device Type menu, select 6 "**Network**" and press "**Enter**".
____15. From the Network Service menu, select 1 "**BOOTP**" and press "**Enter**".
____16. From the Select Device menu, select 1 "**Port – 1 IBM Host Ethernet Adapter <loc=U78A5.001.WIH00E1-P1-T6>**" and press "**Enter**".



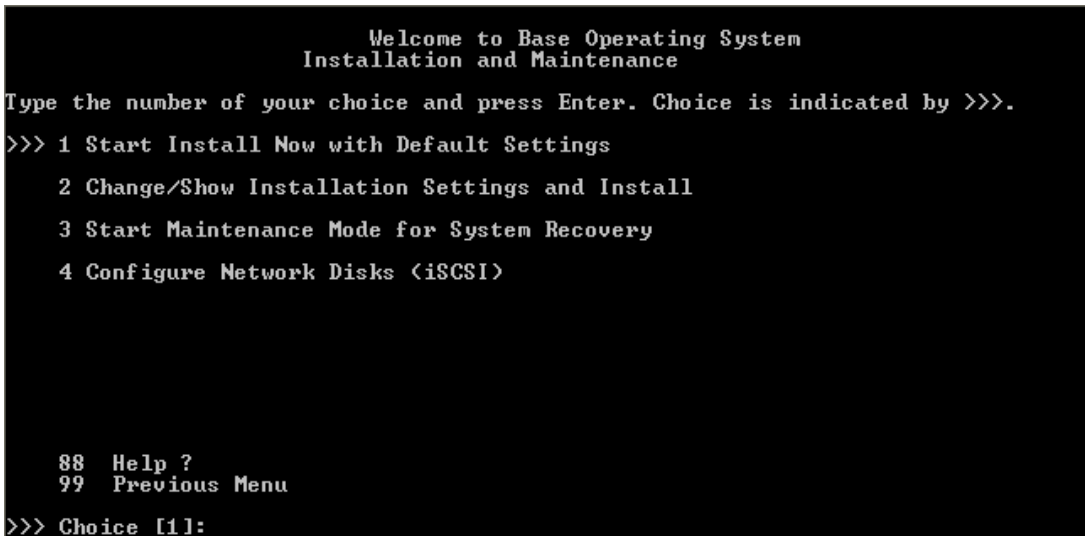
____17. From the Select Task menu, select 2 for "**Normal Mode Boot**" and press "**Enter**".
____18. At the next menu, select 1 for "**Yes**" to exit the SMS menu and install your blade. The installation process will begin.
____19. Next type "**2**" and press "**Enter**" to define the system console.



____20. Type "**1**" and press "**Enter**" to have English during Install.



____21. Type "**1**" and press "**Enter**" to install now with the default setting.



____22. Type "**1**" and press "**Enter**" to continue with the installation.

The installation process will begin and AIX6 will be installed.

This completes the AIX Install Lab.

IV. Linux Installation

In this section of the lab we walk you through installing Red Hat and SUSE Linux on a blade using a NIM Server.

A. Installing Red Hat on the Blade

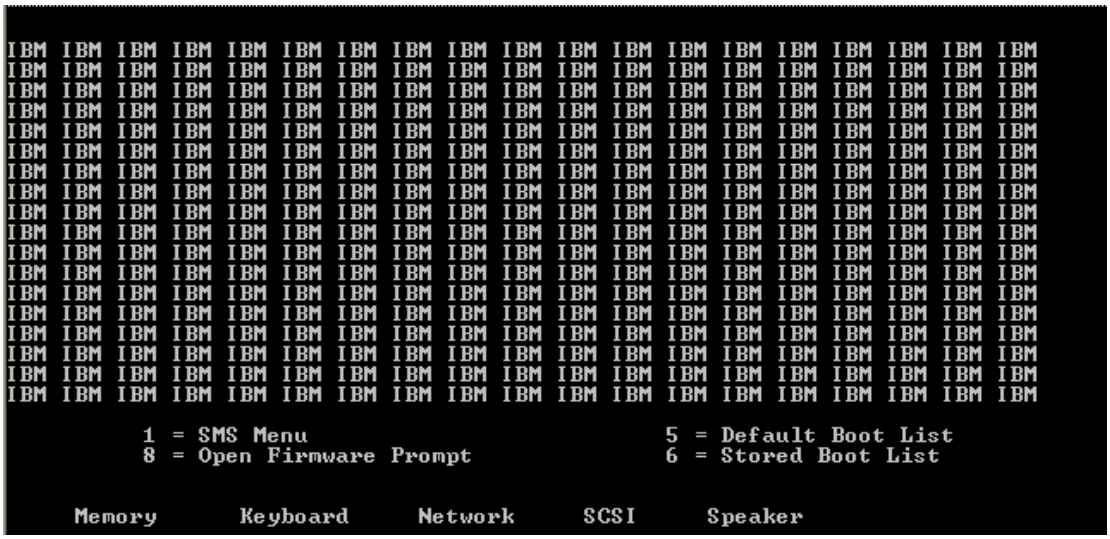
Complete the following steps to install Red Hat on the blade:

Starting the Red Hat Install Process

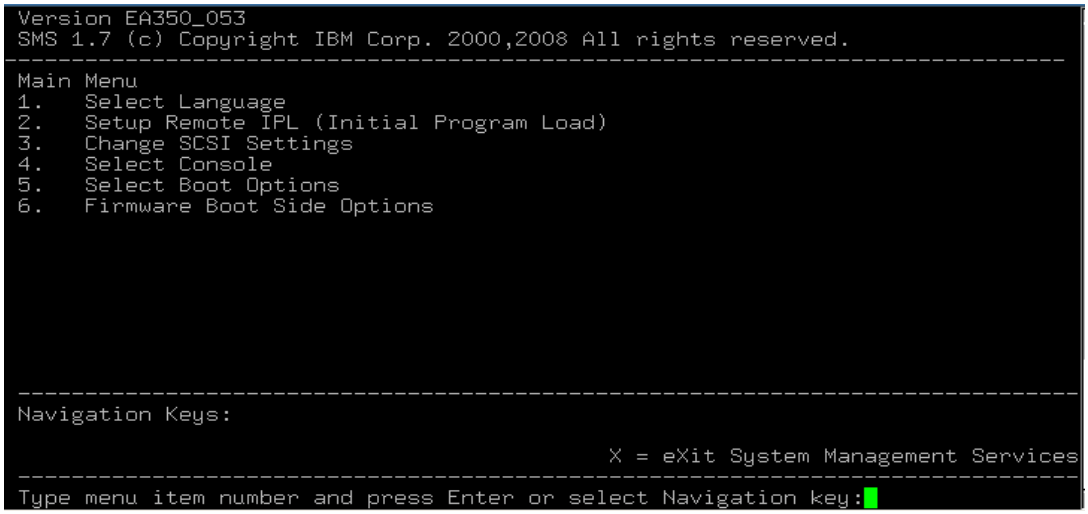
____1. Telnet using PUTTY (do not use Windows' telnet client) to the Advanced Management Module. Enter the userid and password provided before the lab.

____2. To reboot the blade and open a SOL session, type "**boot –c –T system:blade[#]**" (where # is the Bay number of the blade) and press "**Enter**".

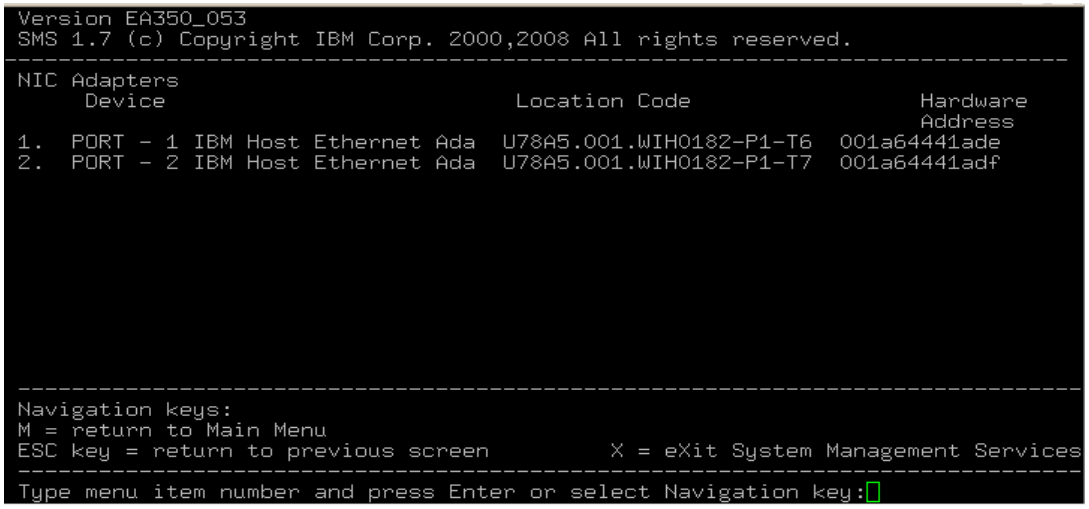
____3. Several lines will scroll up the screen. Press "**1**" on the keyboard when you see the word "**Keyboard**" and before the word "**Speaker**" to go to the SMS Menus.



____4. From the Main Menu, select 2 for "**Setup Remote IPL <Initial Program Load>**" and press "**Enter**".

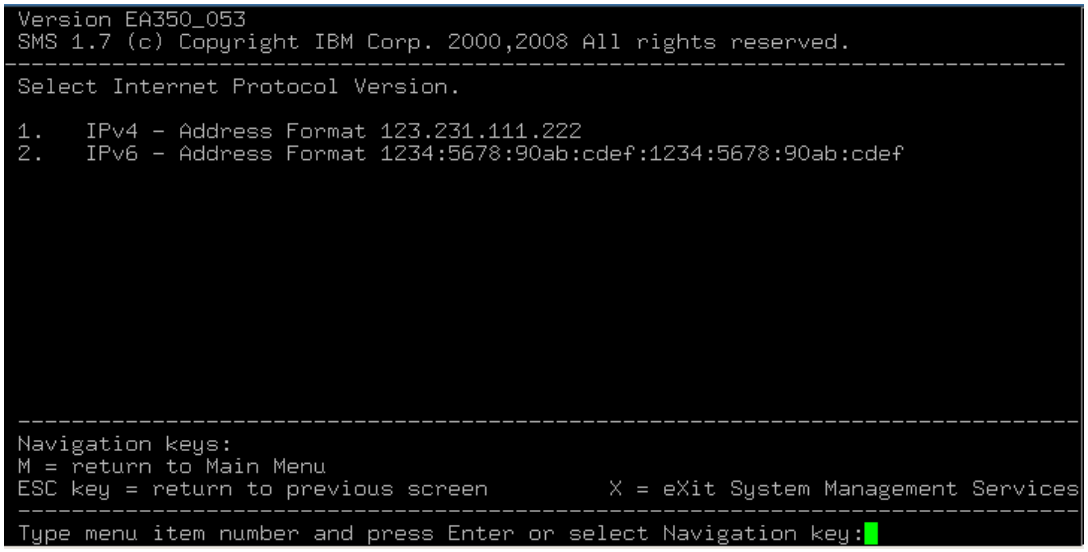


____5. From the NIC Adapters menu, select 1 for "**Port – 1 IBM Host Ethernet Ada**" and press "**Enter**".

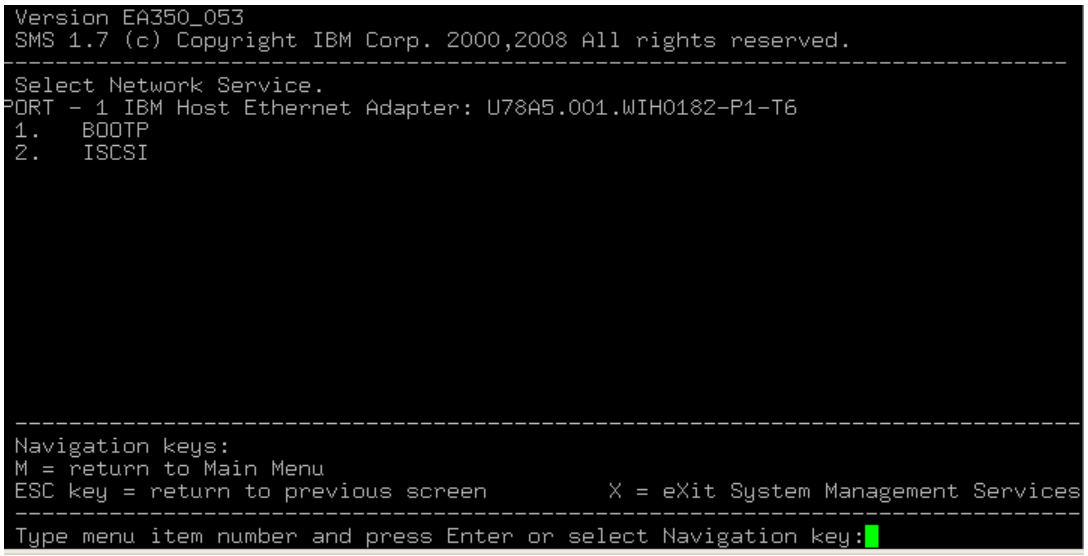


Note: If you select port 2 then you must have an Ethernet Switch Module in Bay 2 of the chassis.

____6. From the Select Internet Protocol menu, select 1 for "**IPv4**" and press "**Enter**".

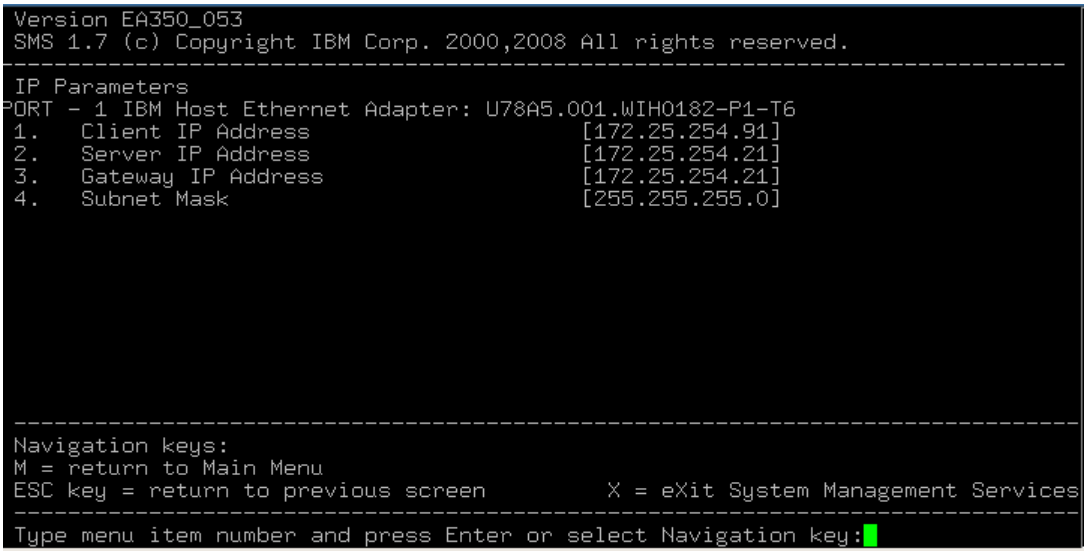


____7. From the Select Network Service menu, select 1 for "**BOOTP**" and press "**Enter**".



____8. From the Network Parameters menu, select 1 for "**IP Parameters**" and press "**Enter**".

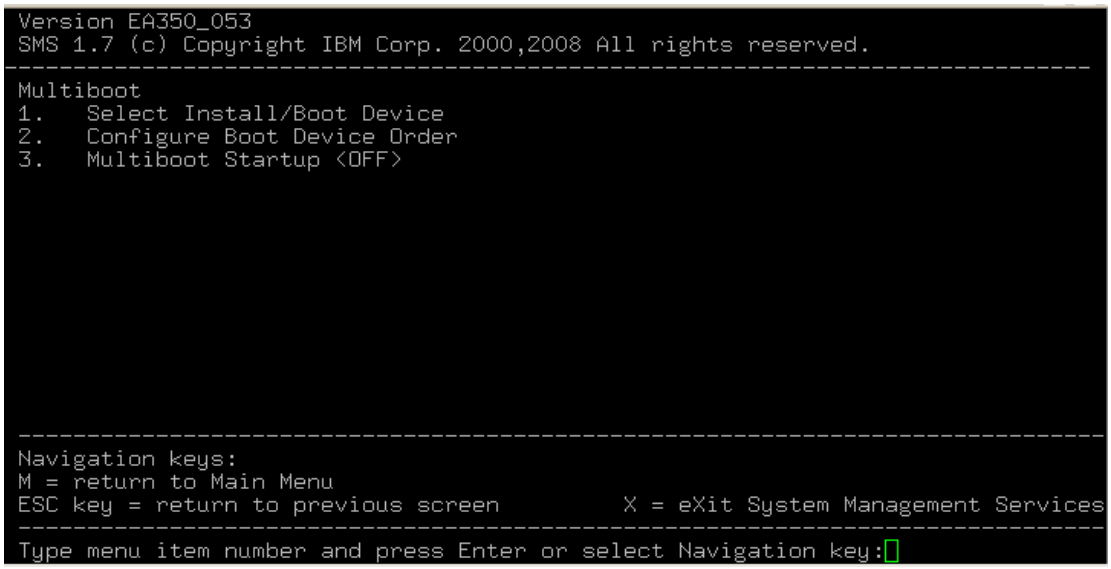
____9. At the IP Parameters menu, enter the Client IP Address, Server IP Address, Gateway IP Address, and the Subnet Mask.



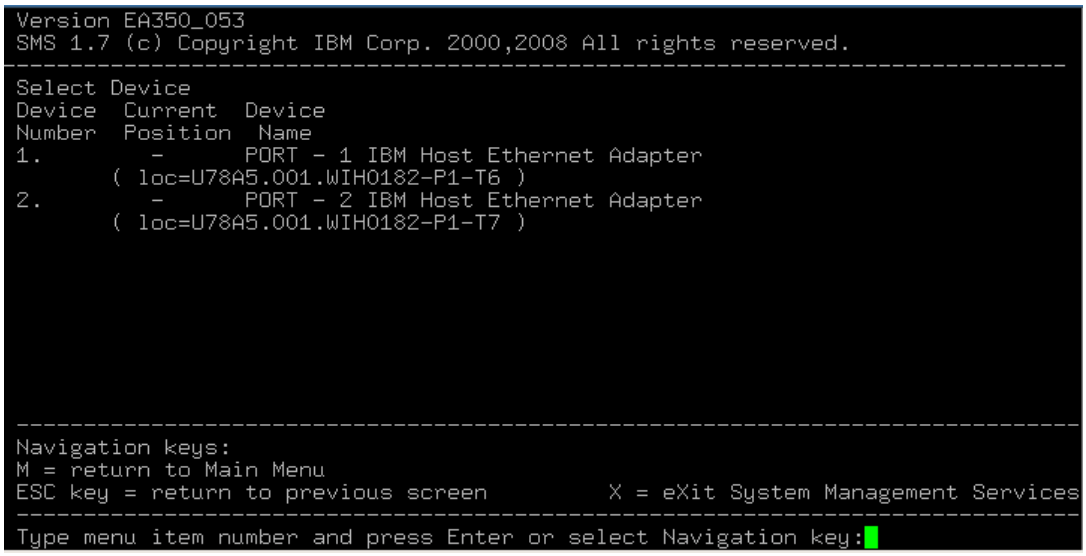
____10. Press the "**ESC**" key to go back to the Network Parameters menu and select 3 for "**Ping Test**" and press "**Enter**". Now, select 1 to "**Execute Ping Test**" and press "**Enter**".

____11. Press any key to exit from this menu. Type "**M**" to return to the Main Menu. From the Main menu, select 5 "**Select Boot Options**" and press "**Enter**".

____12. From the Multiboot menu, select 1 "**Select Install/Boot Device**" and press "**Enter**".

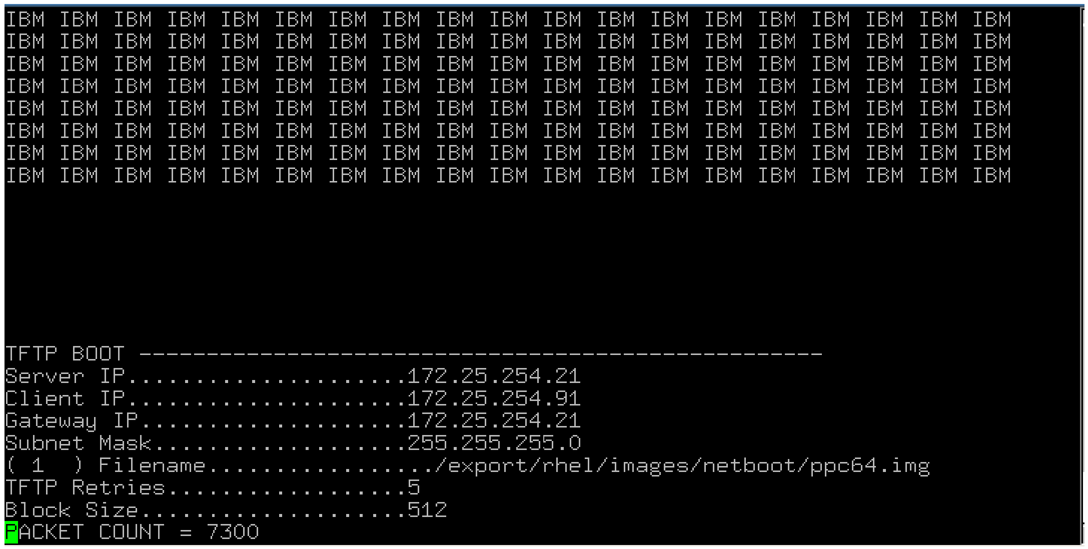


____13. From the Select Device Type menu, select 6 "**Network**" and press "**Enter**".
____14. From the Select Network Service menu, select 1 "**BOOTP**" and press "**Enter**".
____15. From the Select Device menu, select 1 "**Port – 1 IBM Host Ethernet Adapter <loc=U78A5.001.WIH0182-P1-T6>**" and press "**Enter**".



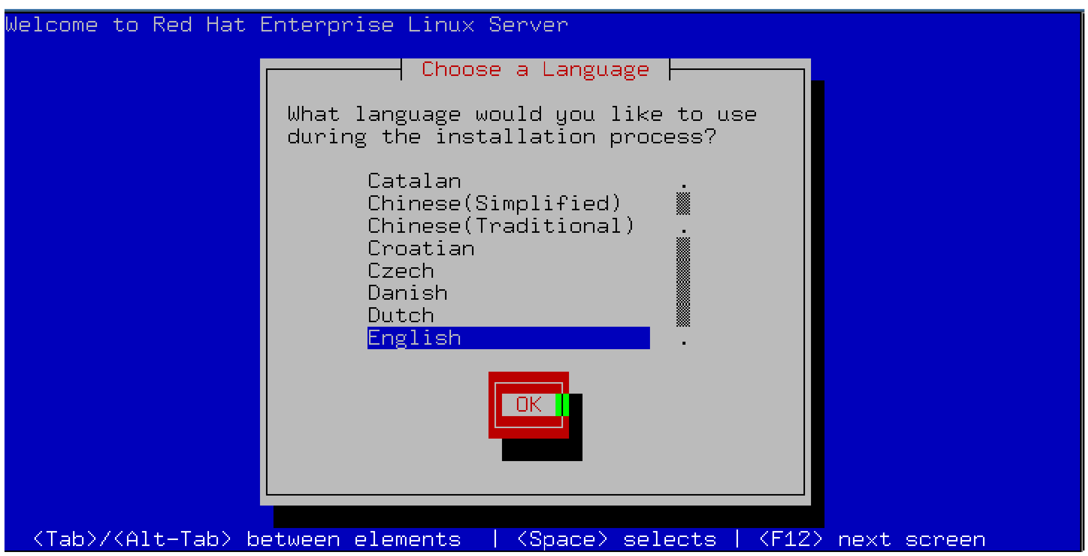
____16. From the Select Task menu, select 2 for "**Normal Mode Boot**" and press "**Enter**".
____17. At the next menu, select 1 for "**Yes**" to exit the SMS menu and install the OS on your blade.

The bootp process begins and the boot image is downloaded to the blade.

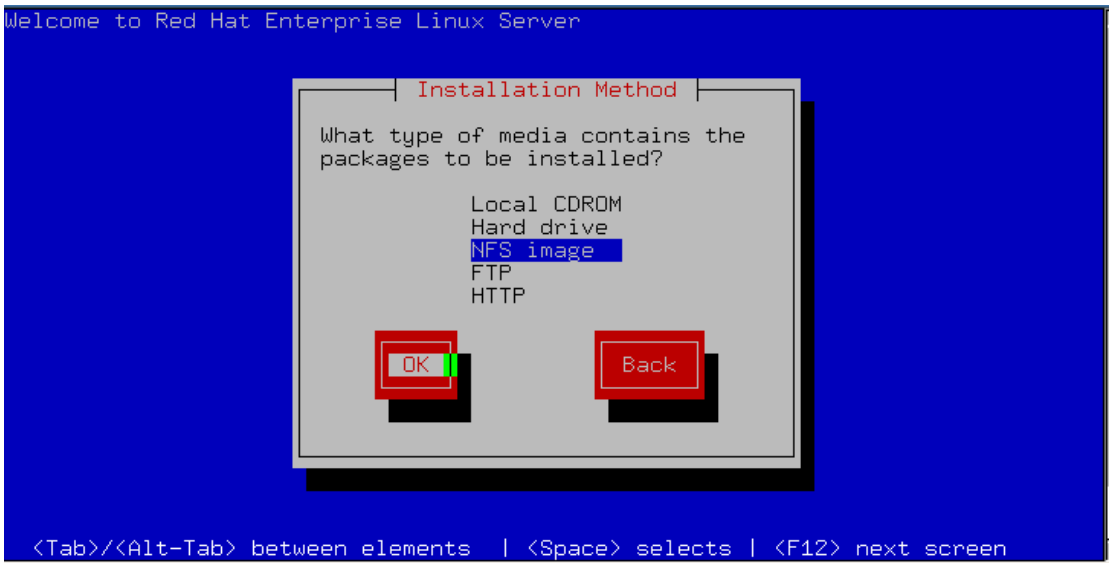


You will be presented with configuration screens from the anaconda installer. You can use the directional arrows or the Page Up or Page Down keys to scroll through lists. Use the Tab key or Alt-Tab key combination to navigate through the fields on the screen. Use the Spacebar to make your selection and the Enter key to process it.

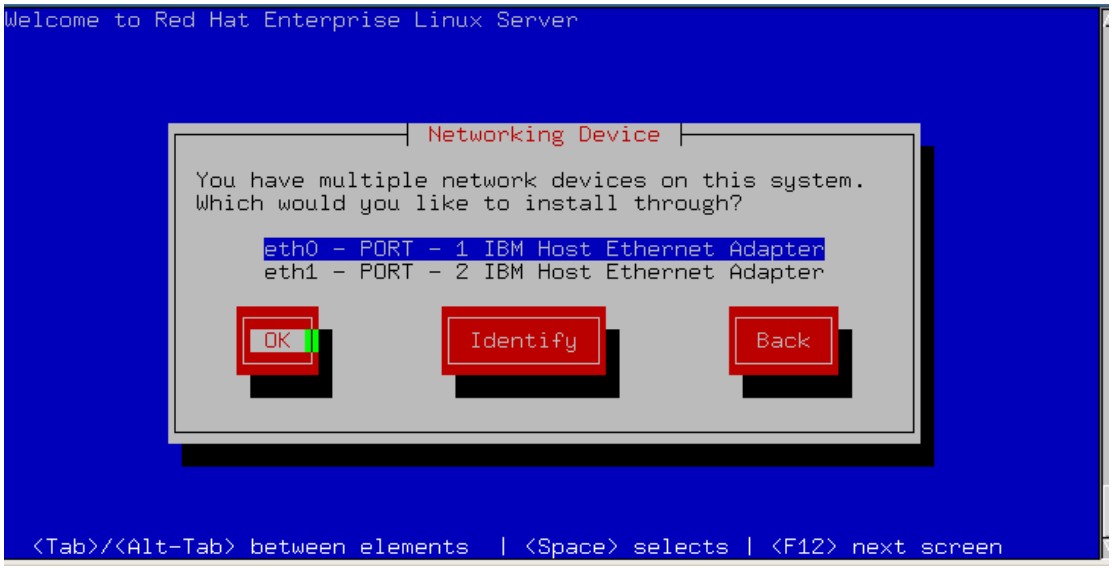
____18. Scroll to the language of your choice and press "**Enter**".



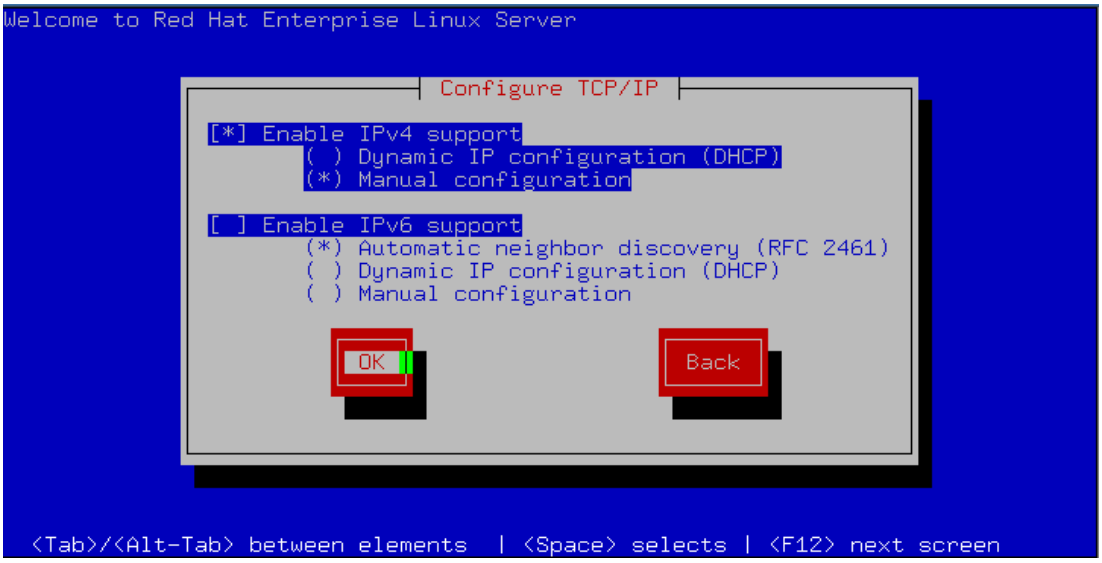
____19. Select "**NFS Image**" and press "**Enter**" to install from the NIM server.



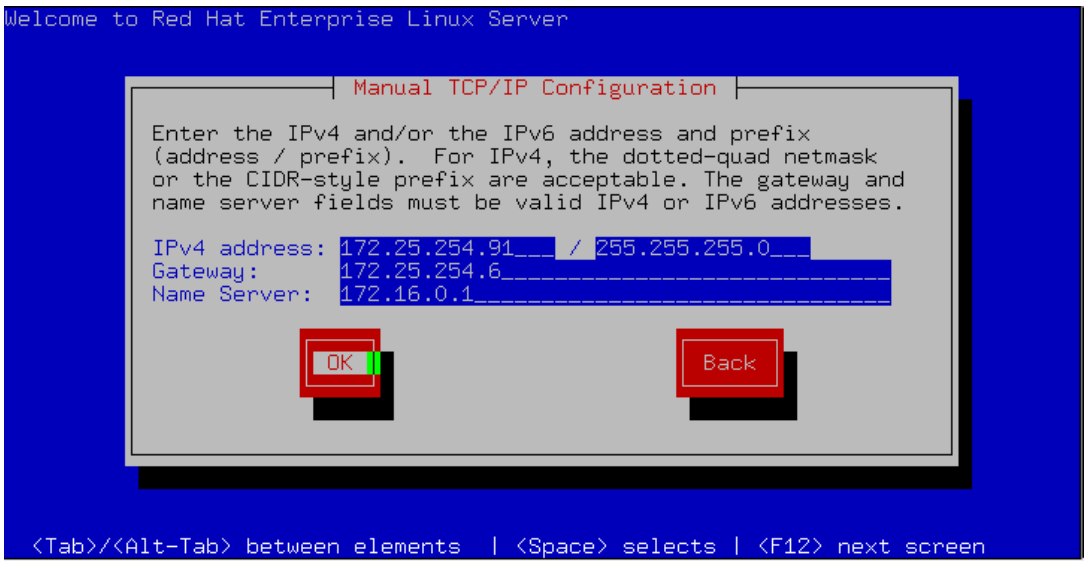
____20. Choose "**eth0**" and press "**Enter**" to setup the Ethernet port used in this lab.



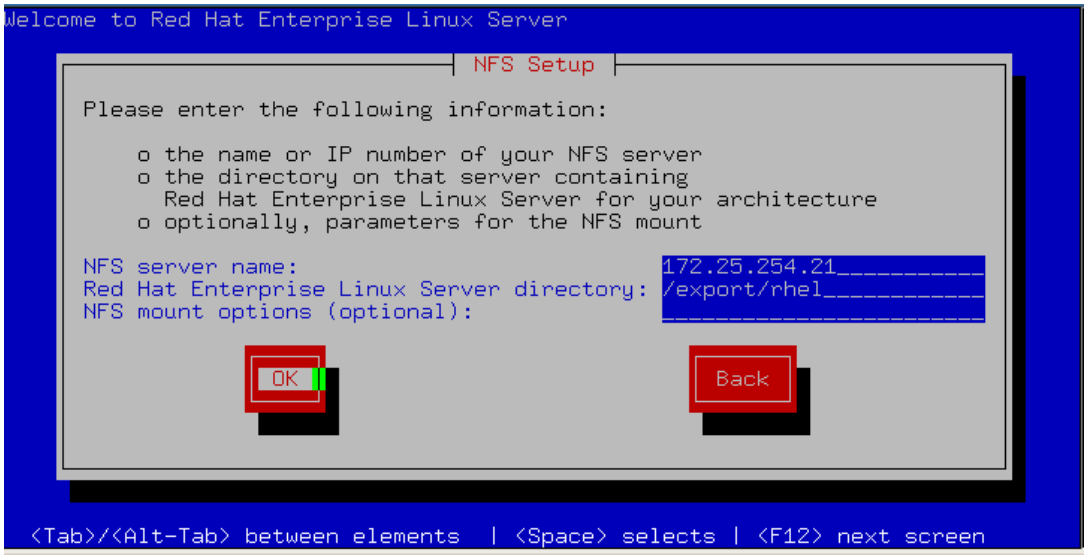
____21. Tab to the "**Manual configuration**" option and use the Spacebar to select it. Tab to the "**Enable IPv6 support**" option and use the Spacebar to deselect it. Select "**OK**" to continue.



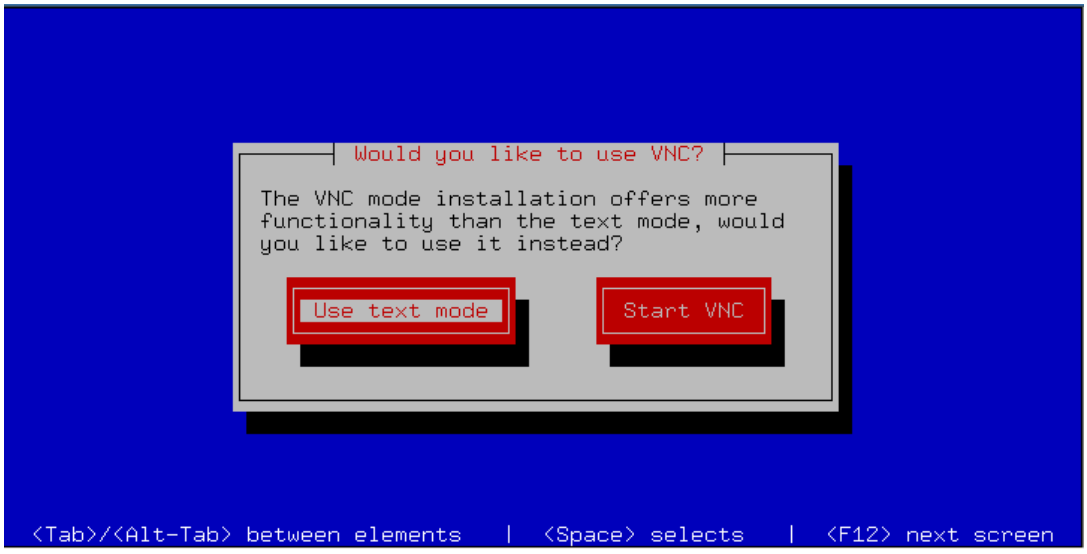
____22. Tab to the appropriate fields and input the TCP/IP information provided to you for this lab. Select "**OK**" when complete



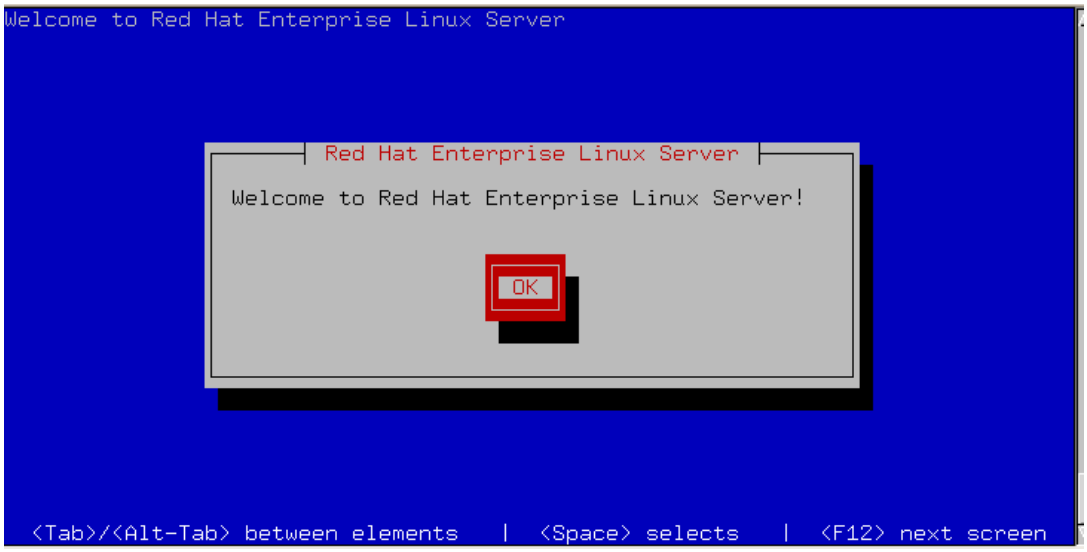
____23. Enter the NFS server's **IP address** or **name** and the **directory** where the install packages are stored on that server.



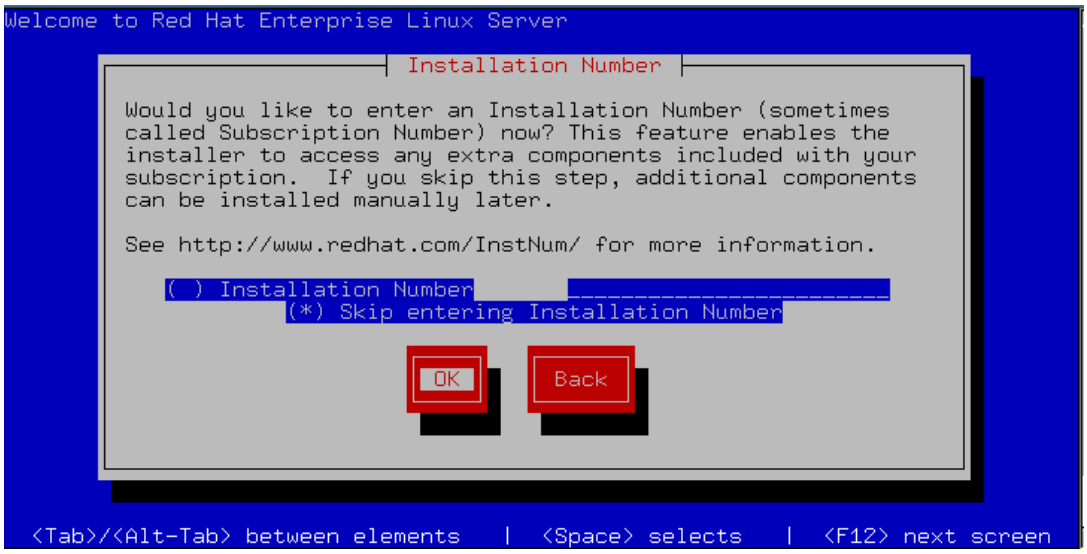
____24. Use text mode for this lab.



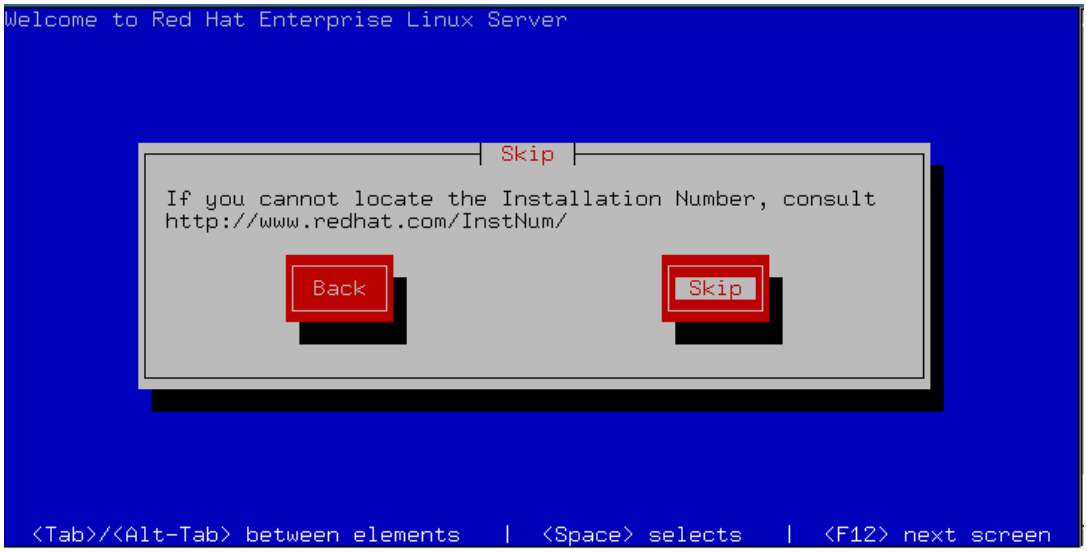
____25. Welcome to Red Hat Enterprise Linux Server! Select "**OK**" to continue the install.



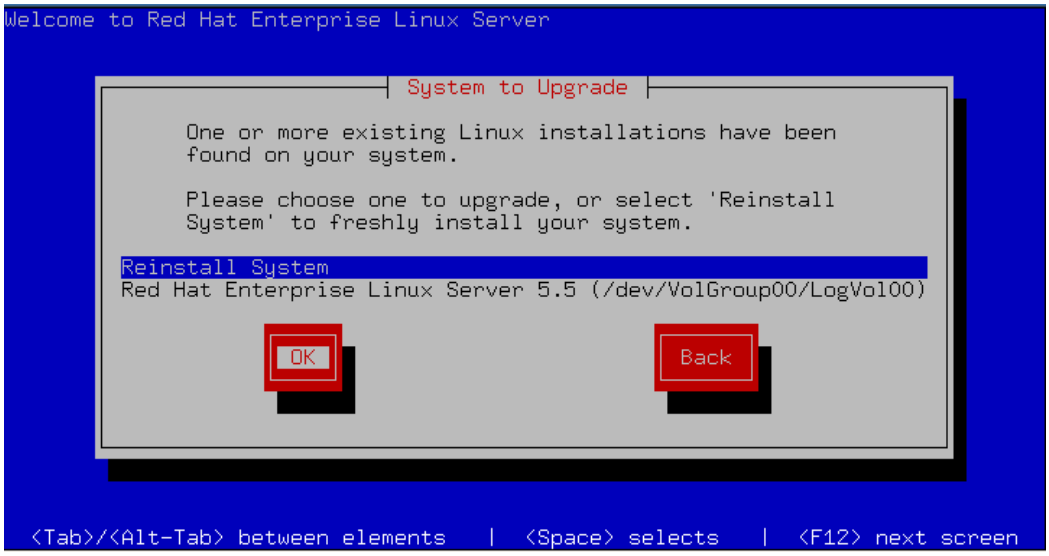
____26. As this is not a permanent install, select to "**Skip entering Installation Number**" and press "**Enter**".



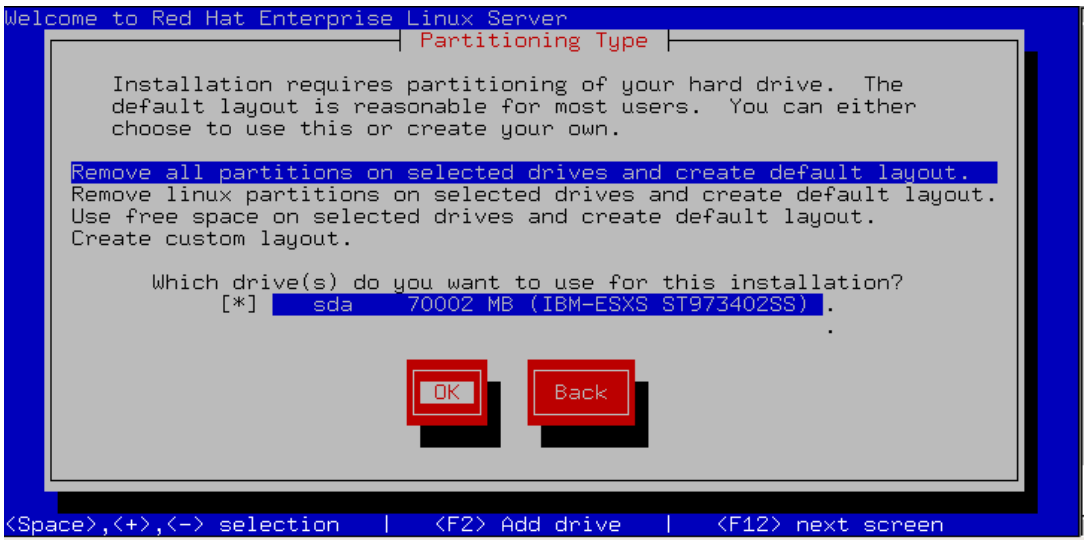
____27. Select "**Skip**" and press "**Enter**" to continue the installation.



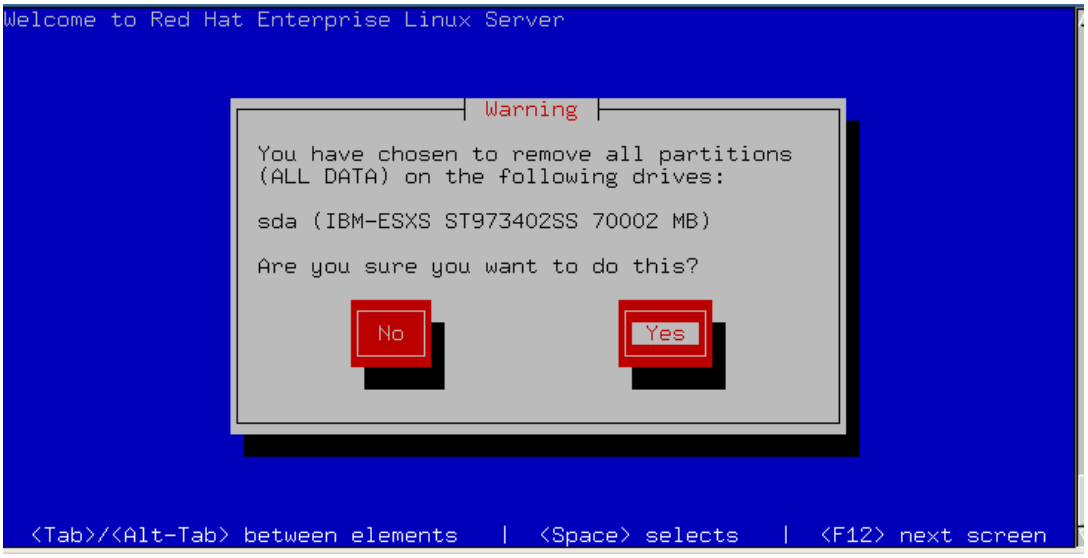
____28. You may see a screen for Initializing your disk or Upgrading an existing installation. Select to initialize the disk or to reinstall the system, **OK** and press enter to continue.



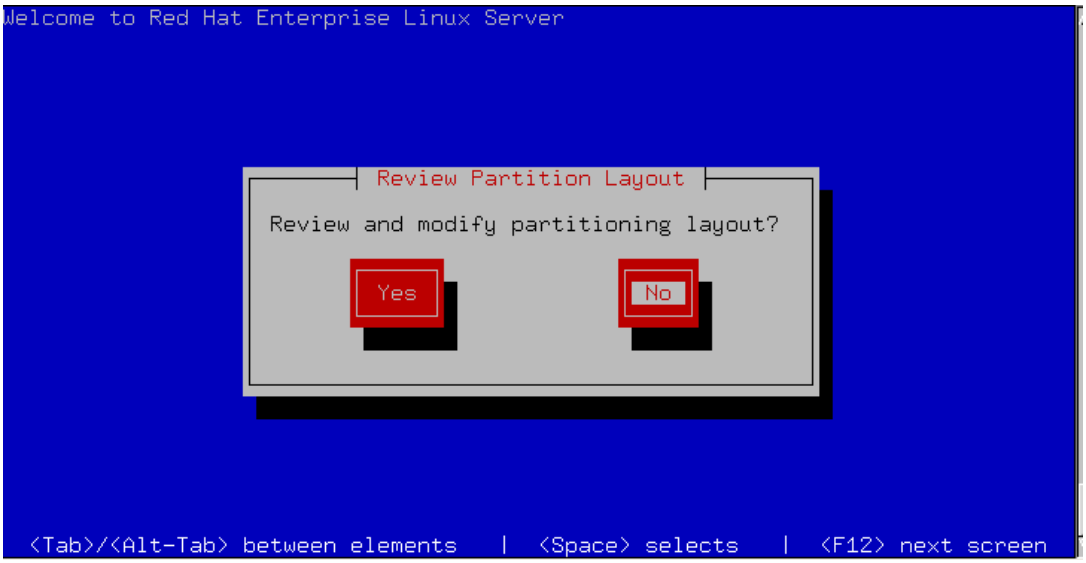
____29. Select to “Remove all partitions on selected drives and create default layout” on drive “sda” for this installation.



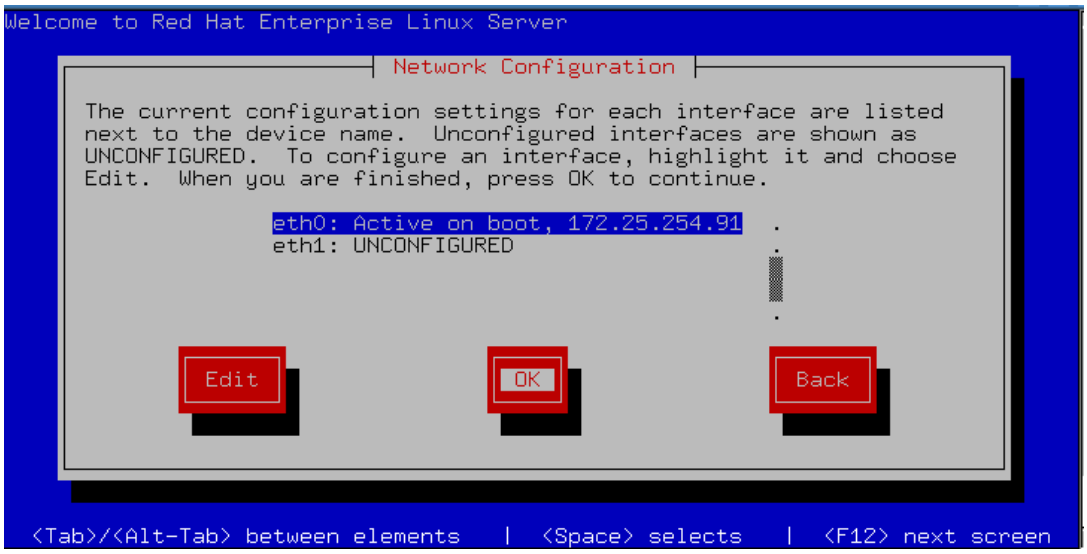
____29. Select "**Yes**" to acknowledge the warning and press "**Enter**".



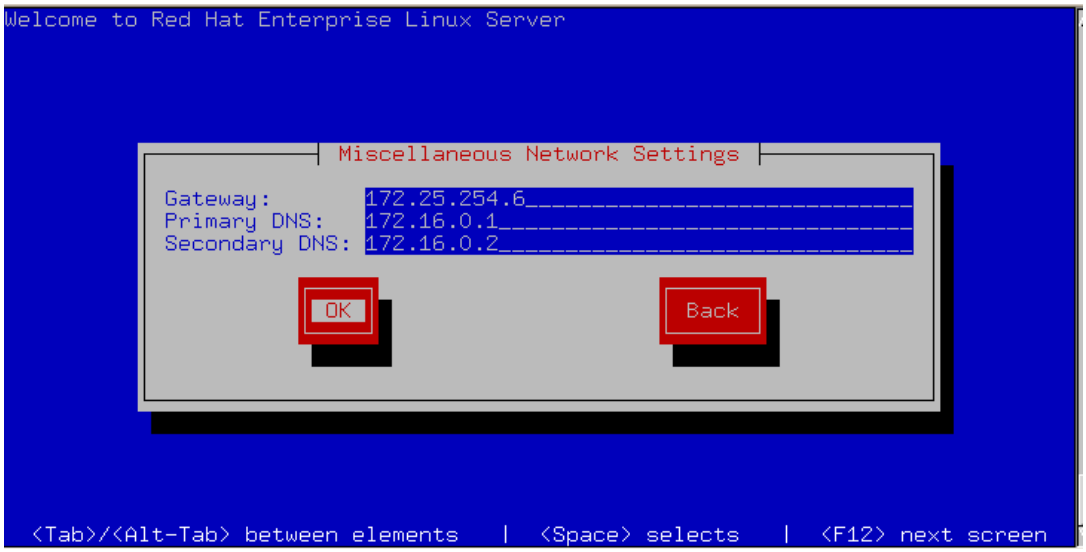
____30. Select "**No**" and press "**Enter**" to continue. Tuning the partition layout is not part of this course.



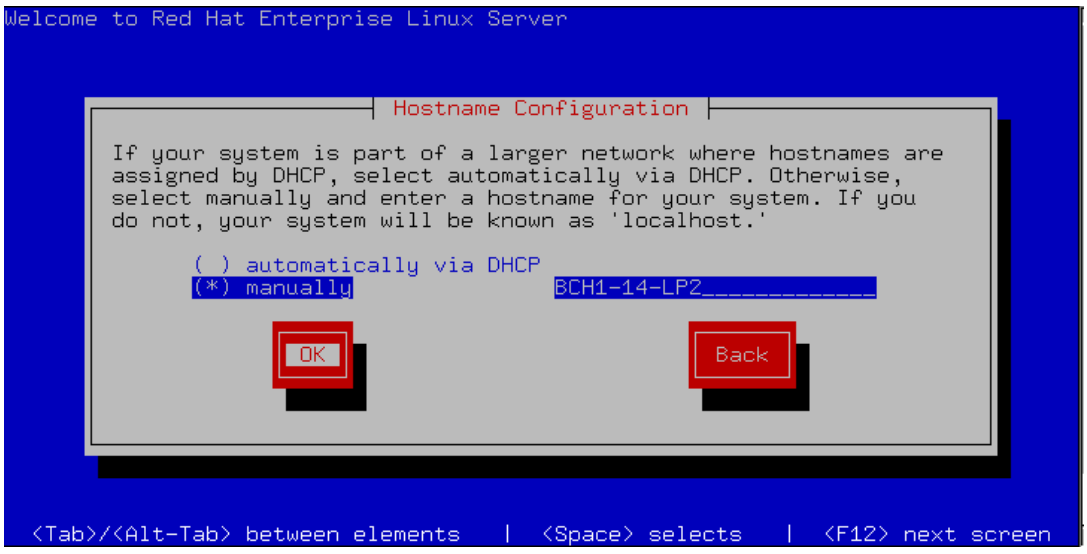
____31. Select "**eth0**" and "**OK**" and press "**Enter**" to continue.



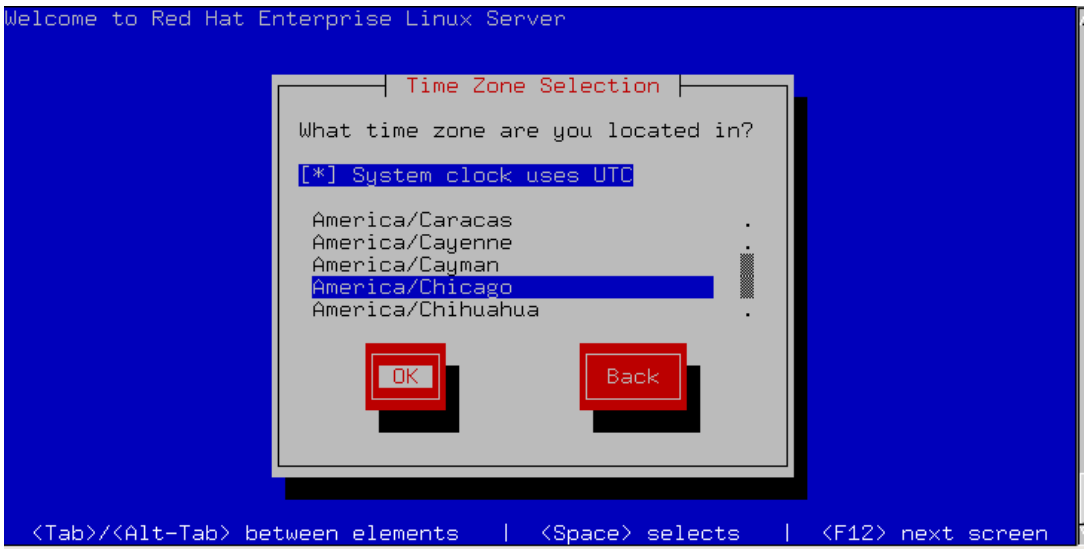
____32. Enter the **Gateway** and **DNS** IP addresses as provided in the class material and press "**Enter**" to continue.



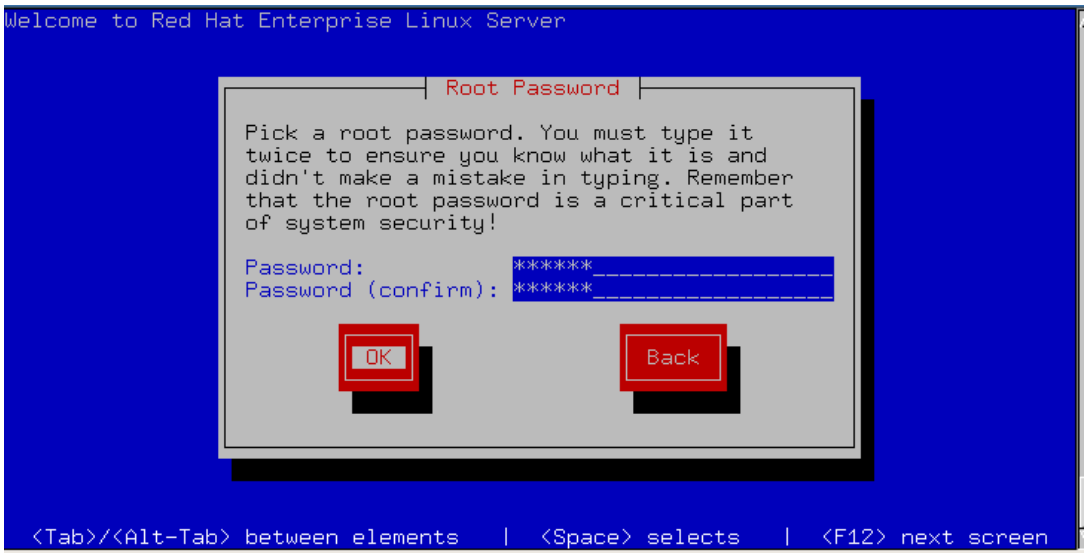
____33. Select "**manually**" and enter the **hostname** you were provided and press "**Enter**". **Note**: Linux will not allow the use of "_" in the lab's hostname.



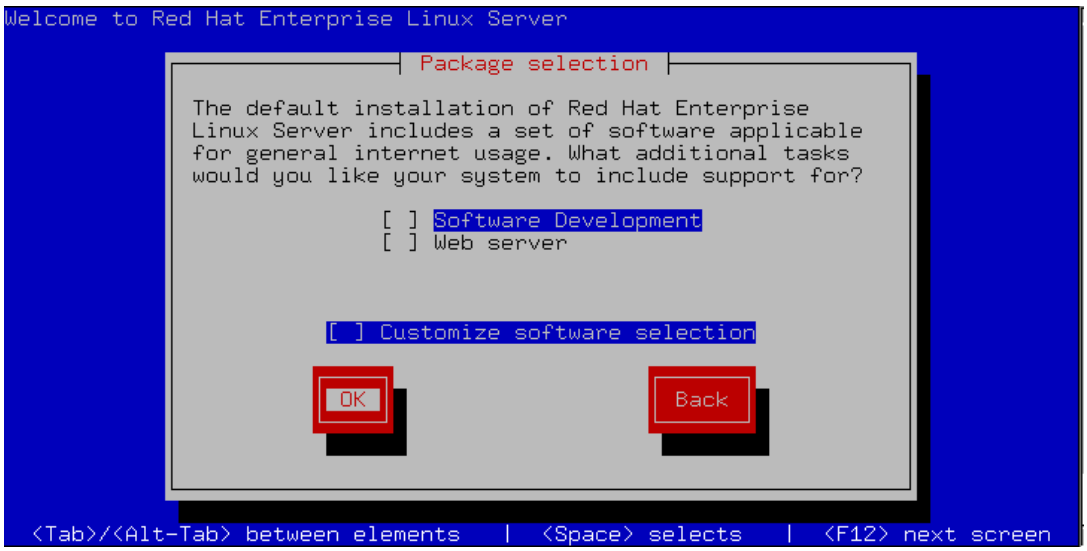
____34. Choose the **time zone** for your location and press "**Enter**".



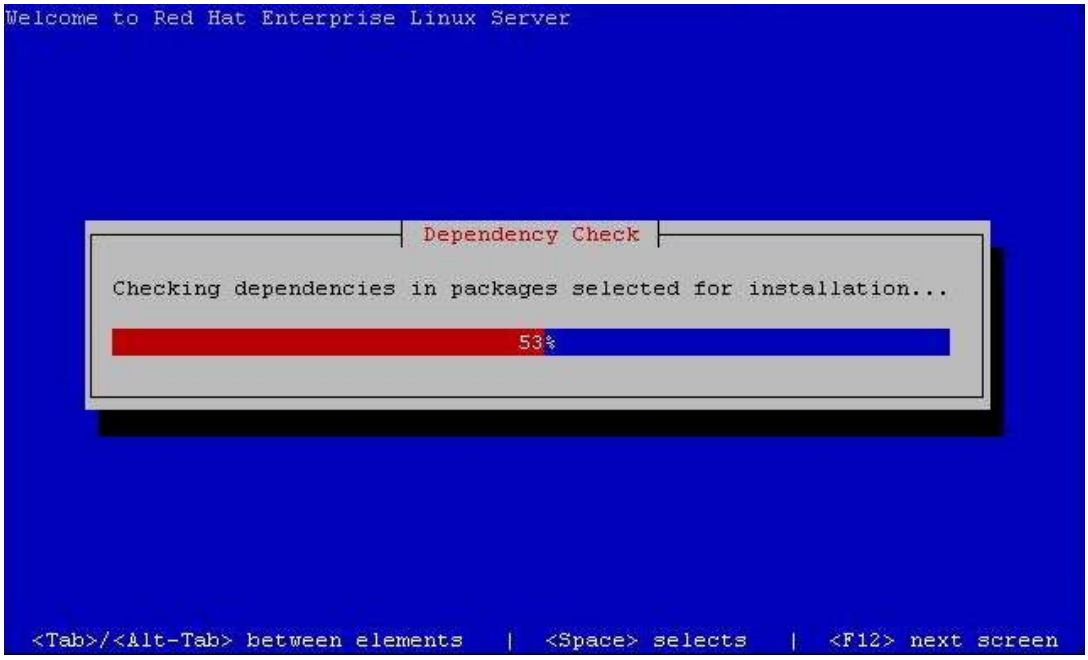
____35. Enter a root password. For this lab, please use "**PSTRAIN2**".



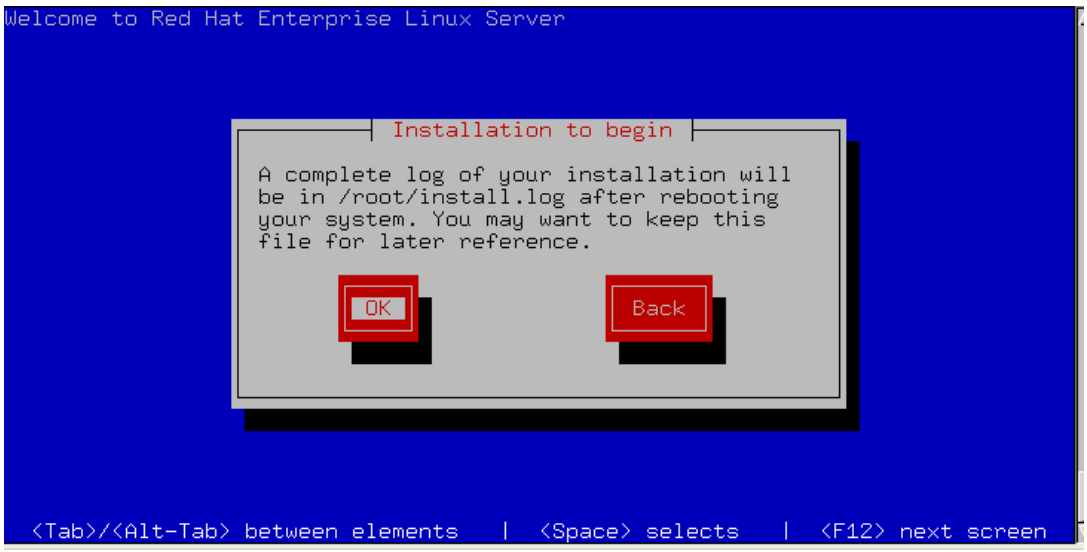
____36. For this lab, just leave the default installation, select "**OK"** and press "**Enter**" to continue.



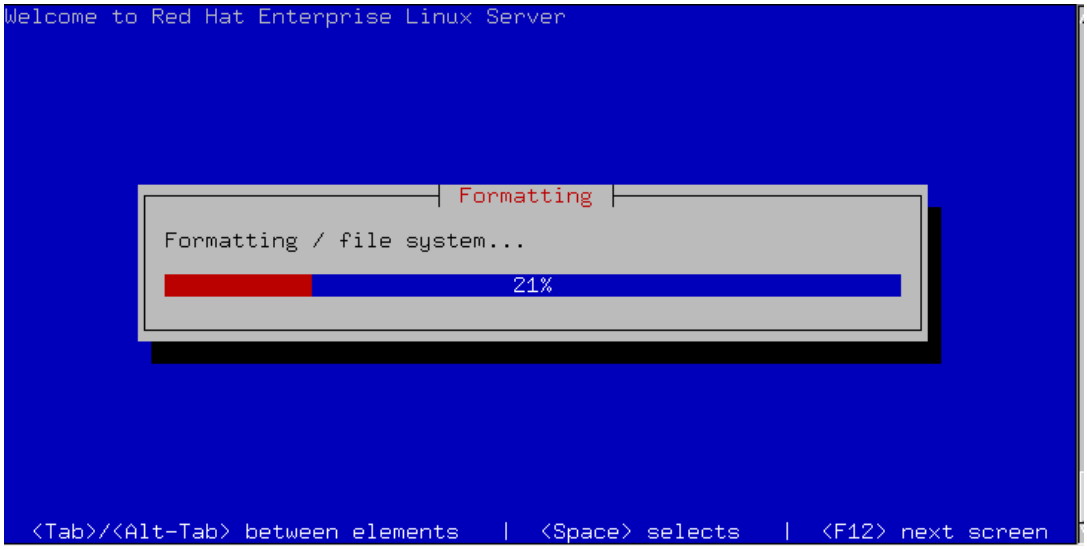
____37. An install package dependency check is run.



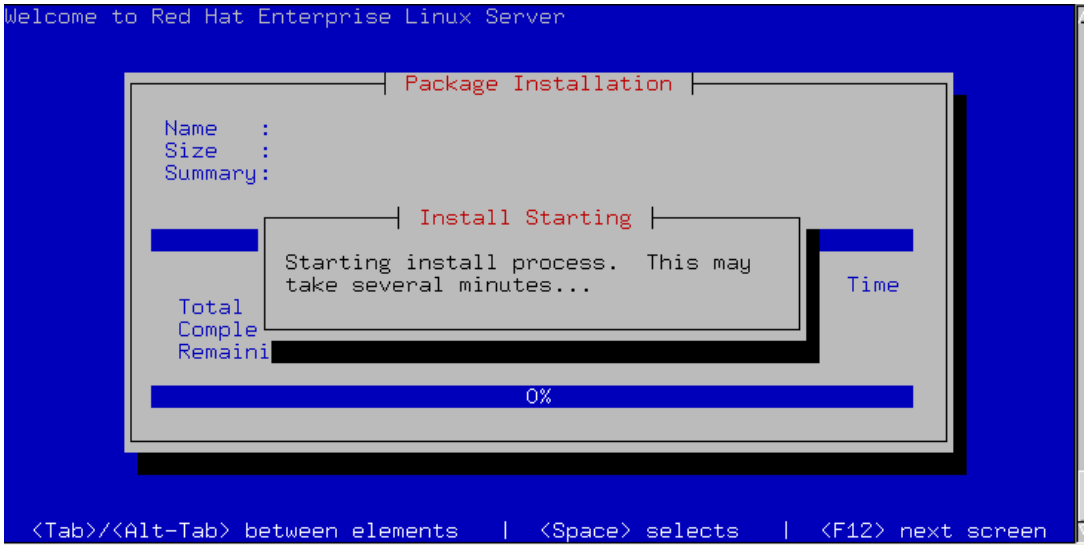
____38. Note the log location and press "**Enter**" to continue.



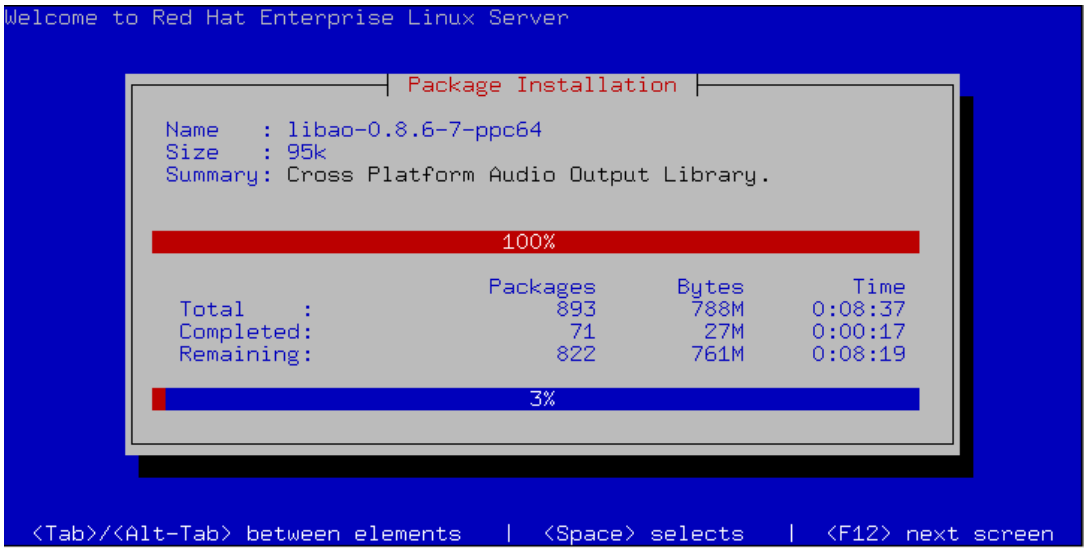
____39. The filesystems will now be formatted.



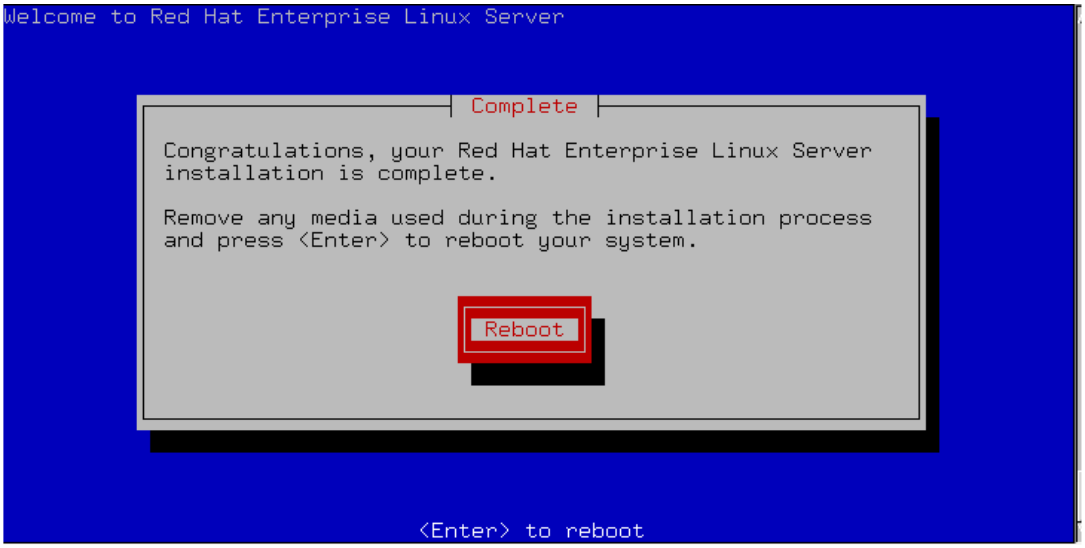
____40. The installation begins.



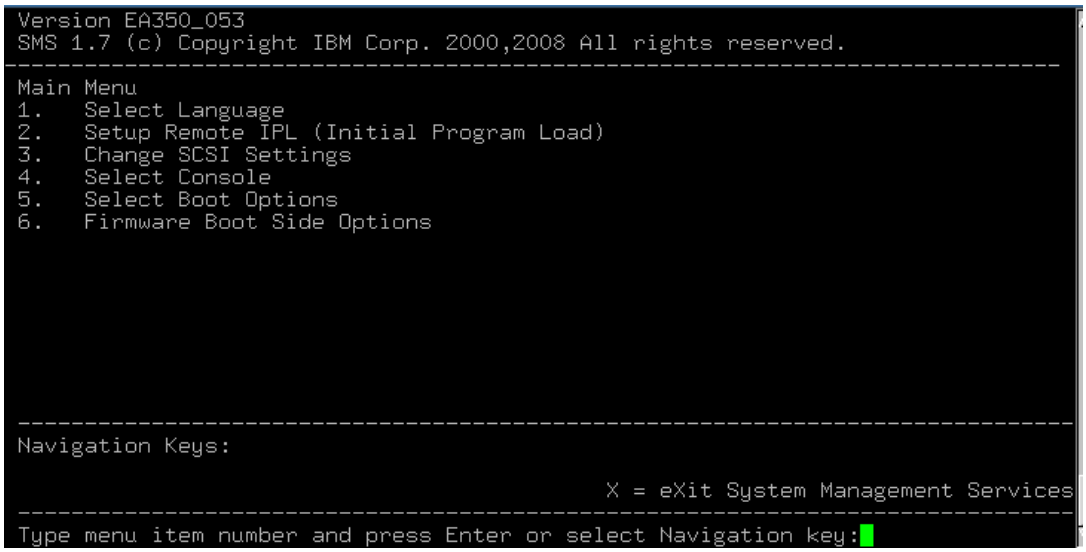
____41. You can watch the progress of the individual package installations.



____42. Once the installation completes, press "**Enter**" to reboot the server.



____43. You will need to press "**1**" and enter the SMS menus to select to boot from the disk.



____44. For this lab, just select "**Exit**" and press "**Enter**".

____45. This completes the Red Hat Install Lab. You may log in as root and your password should be "**PSTRAIN2**".

The Red Hat installation is complete.

B. SUSE Installation

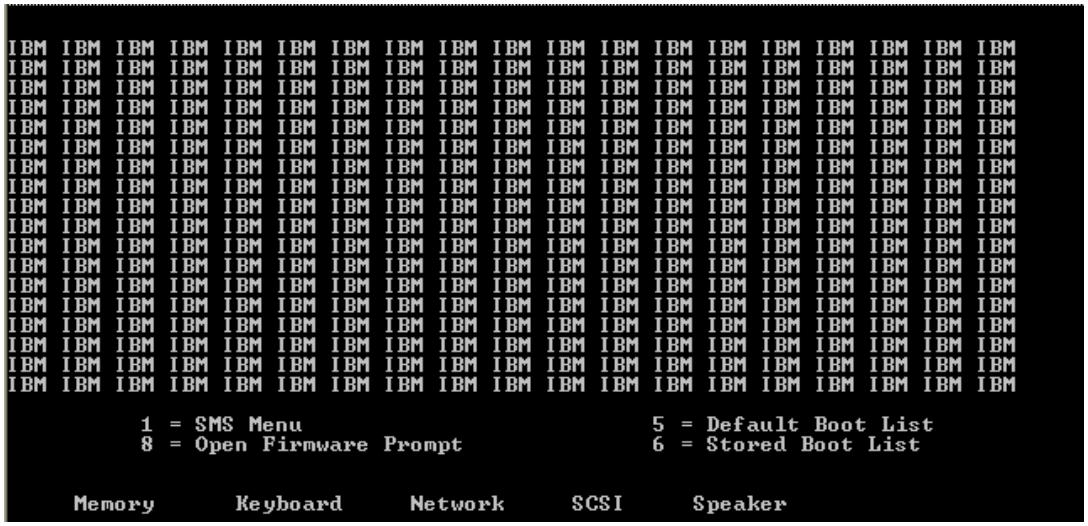
Starting the SUSE Install Process

Complete the following steps to install SUSE on the blade:

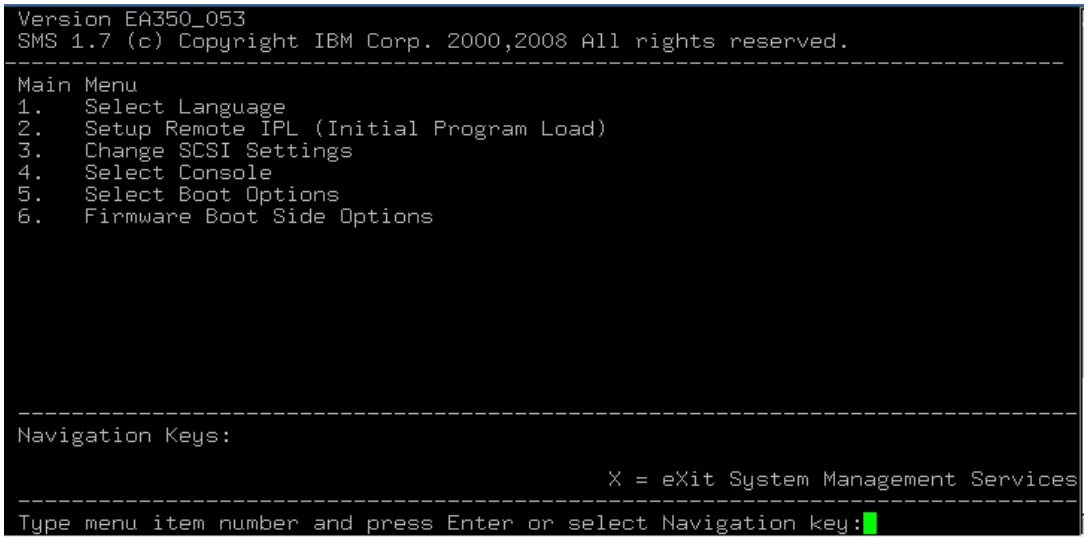
____1. Telnet using PUTTY (do not use Windows' telnet client) to the Advanced Management Module. Enter the userid and password provided before the lab.

____2. To reboot the blade and open a SOL session type "**boot –c –T system:blade[#]**" (where # is the Bay number of the blade) and press "**Enter**".

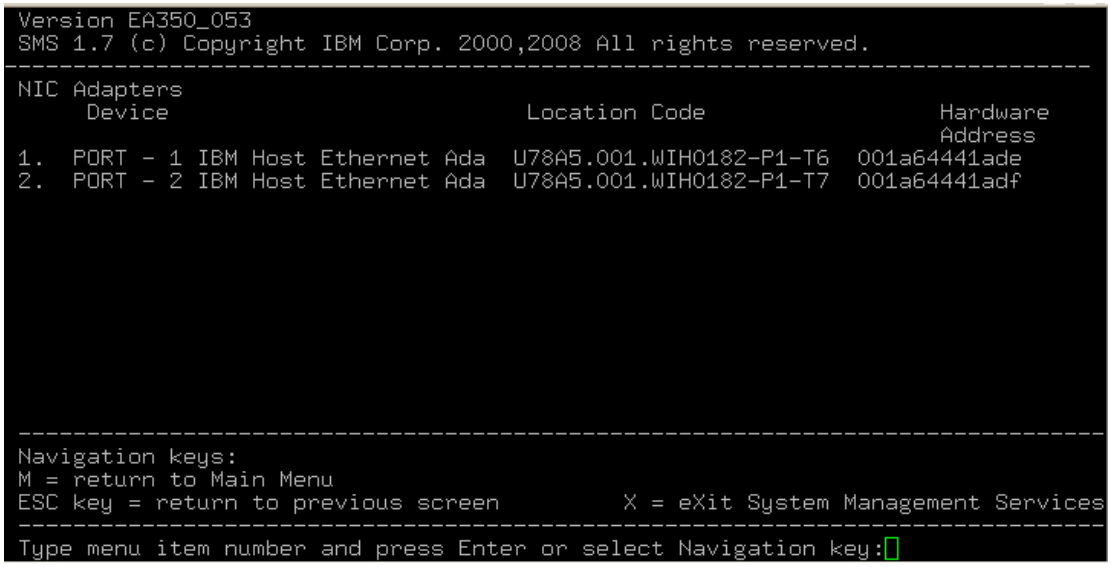
____3. Several lines will scroll up the screen. Press "**1**" on the keyboard when you see the word "**Keyboard**" and before the word "**Speaker**" to go to the SMS Menus.



____4. From the Main Menu, select 2 for "**Setup Remote IPL <Initial Program Load>**" and press "**Enter**".

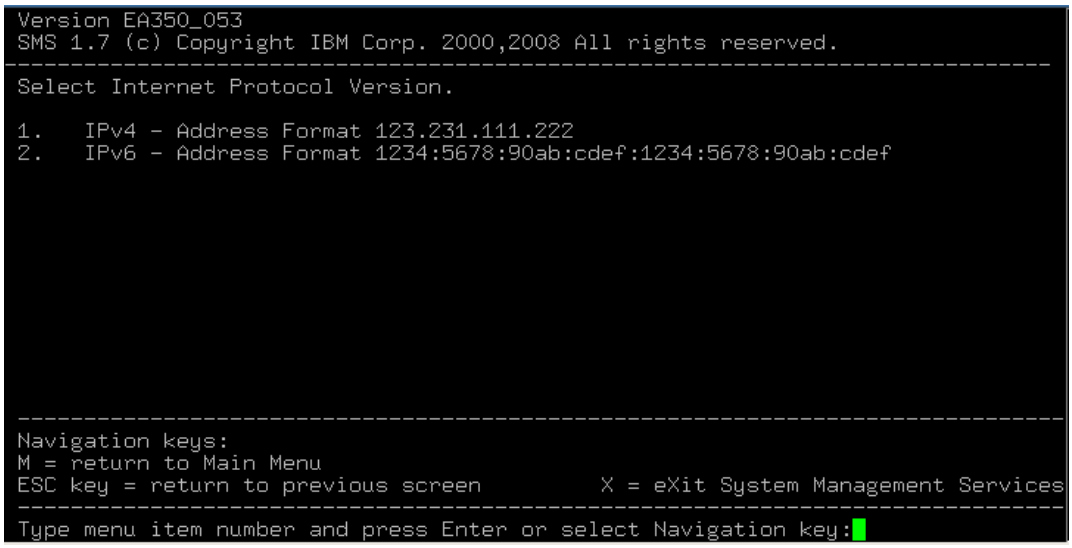


____5. From the NIC Adapters menu, select 1 for "**Port – 1 IBM Host Ethernet Ada**" and press "**Enter**".



Note: If you select port 2 then you must have an Ethernet Switch Module in Bay 2 of the chassis.

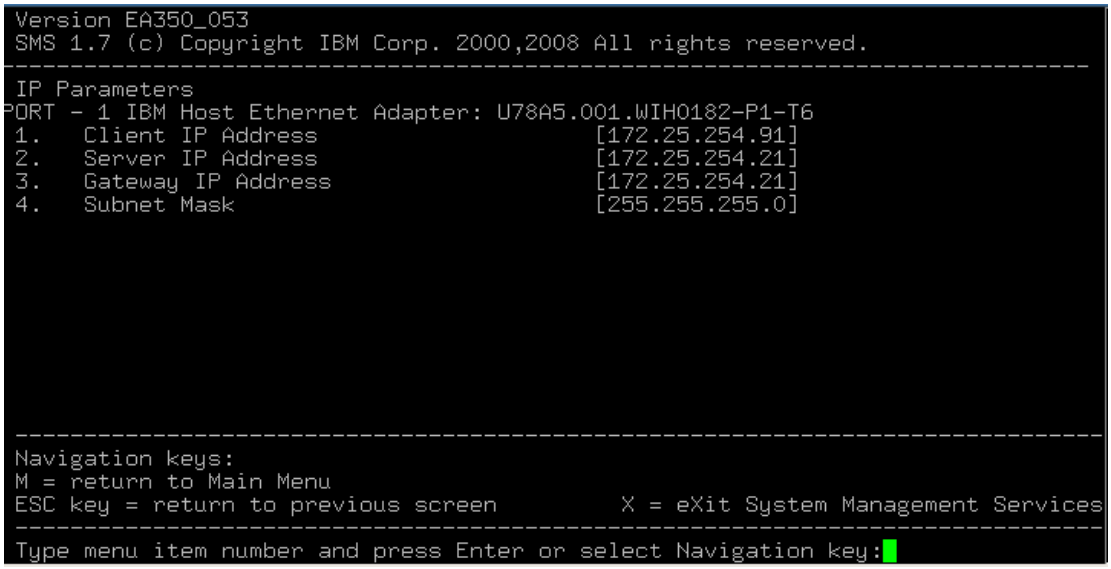
____6. From the Select Internet Protocol menu, select 1 for "**IPv4**" and press "**Enter**".



____7. From the Select Network Service menu, select 1 for "**BOOTP**" and press "**Enter**".

____8. From the Network Parameters menu, select 1 for "**IP Parameters**" and press "**Enter**".

____9. At the IP Parameters menu, enter the Client IP Address, Server IP Address, Gateway IP Address, and the Subnet Mask.



____10. Press the "**ESC**" key to go back to the Network Parameters menu and select 3 for "**Ping Test**" and press "**Enter**". Now, select 1 to "**Execute Ping Test**" and press "**Enter**".

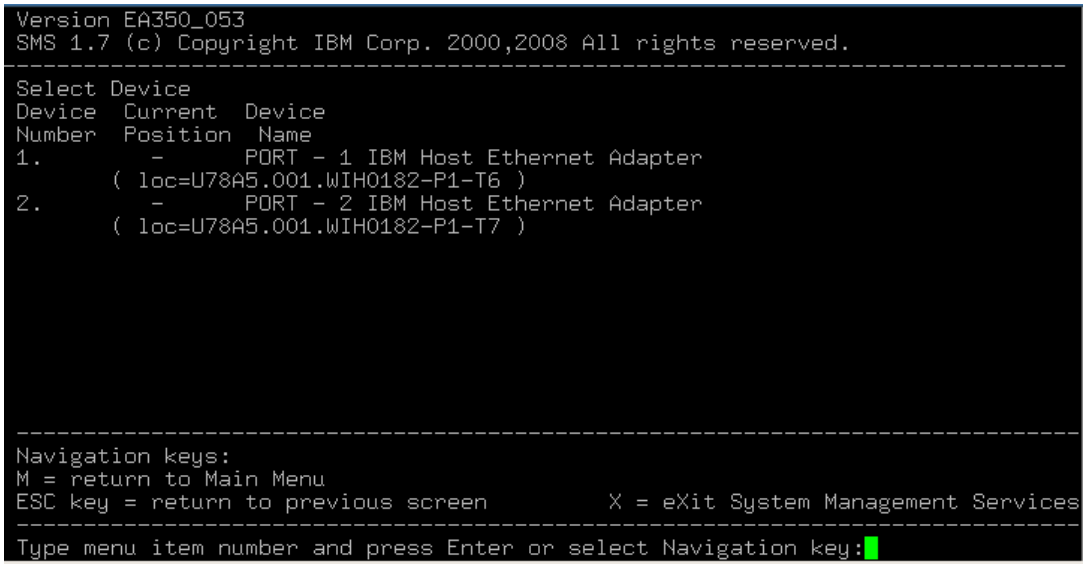
____11. Press any key to exit from this menu. Type "**M**" to return to the Main Menu. From the Main menu, select 5 "**Select Boot Options**" and press "**Enter**".

____12. From the Multiboot menu, select 1 "**Select Install/Boot Device**" and press "**Enter**".

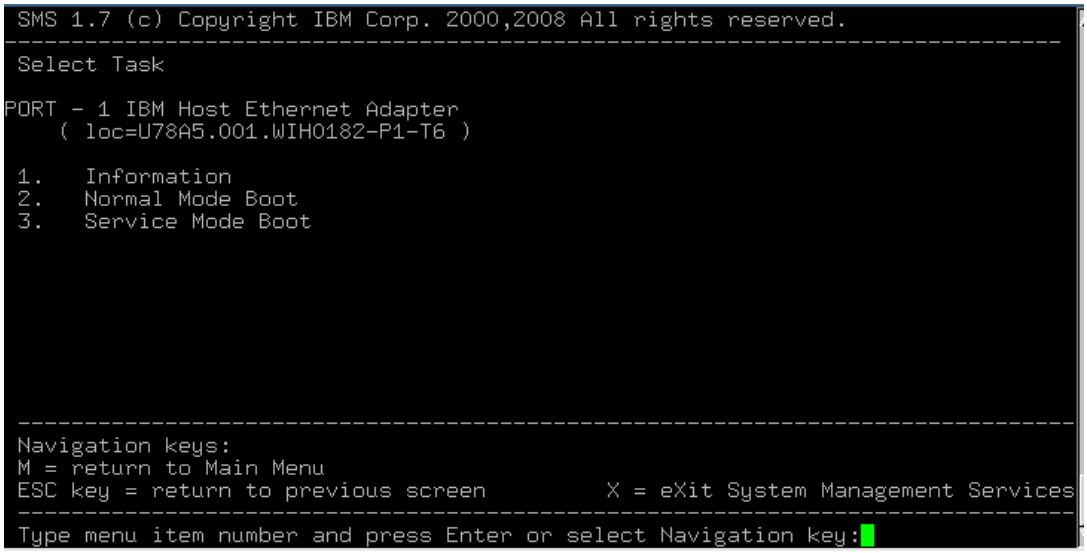
____13. From the Select Device Type menu, select 6 "**Network**" and press "**Enter**".

____14. From the Select Network Service menu, select 1 "**BOOTP**" and press "**Enter**".

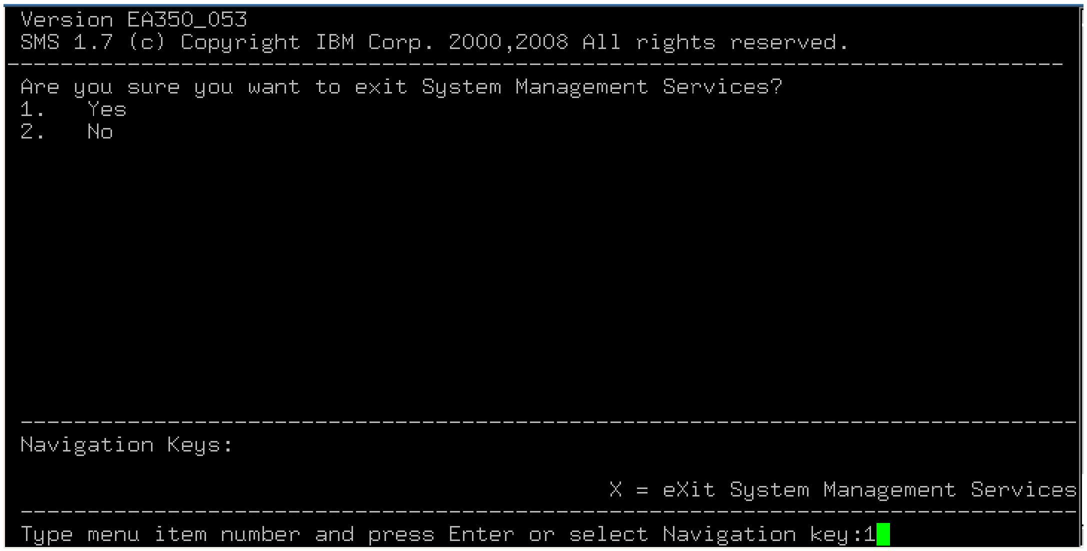
____15. From the Select Device menu, select 1 "**Port – 1 IBM Host Ethernet Adapter <loc=U78A5.001.WIH0182-P1-T6>**" and press "**Enter**".



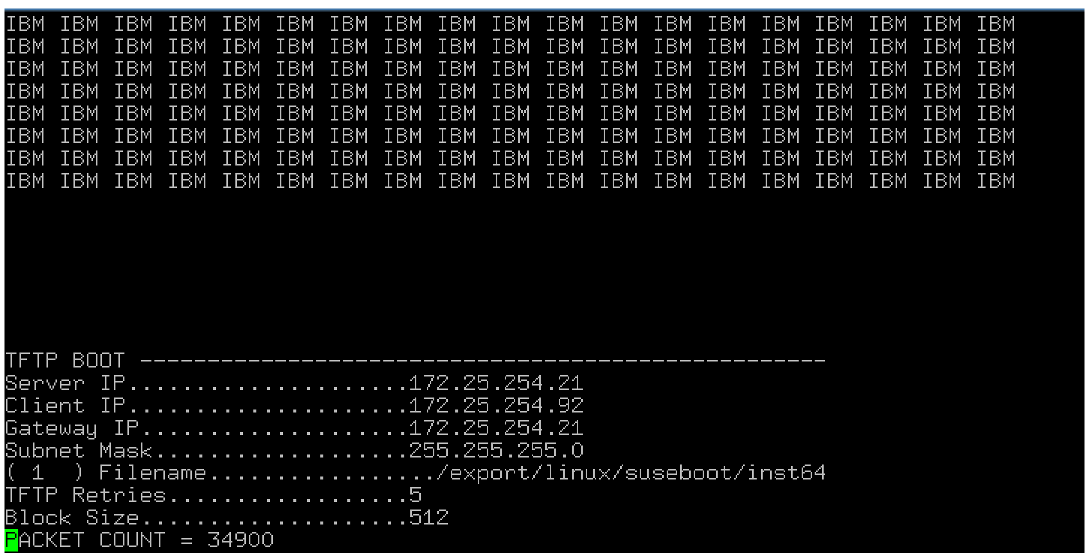
____16. From the Select Task menu, select 2 for "**Normal Mode Boot**" and press "**Enter**".



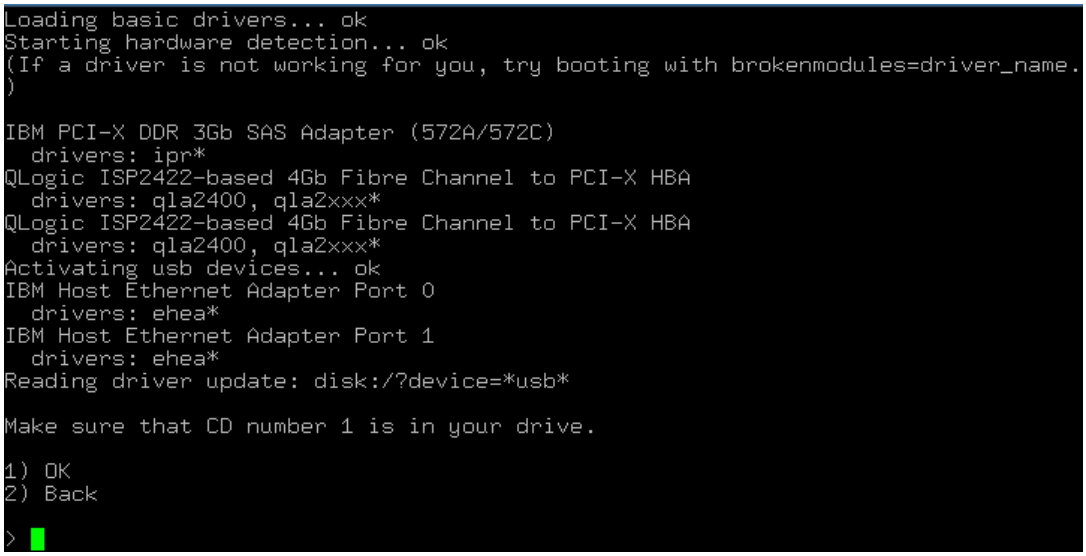
____17. At the next menu, select 1 for "**Yes**" to exit the SMS menu and install the OS on your blade.



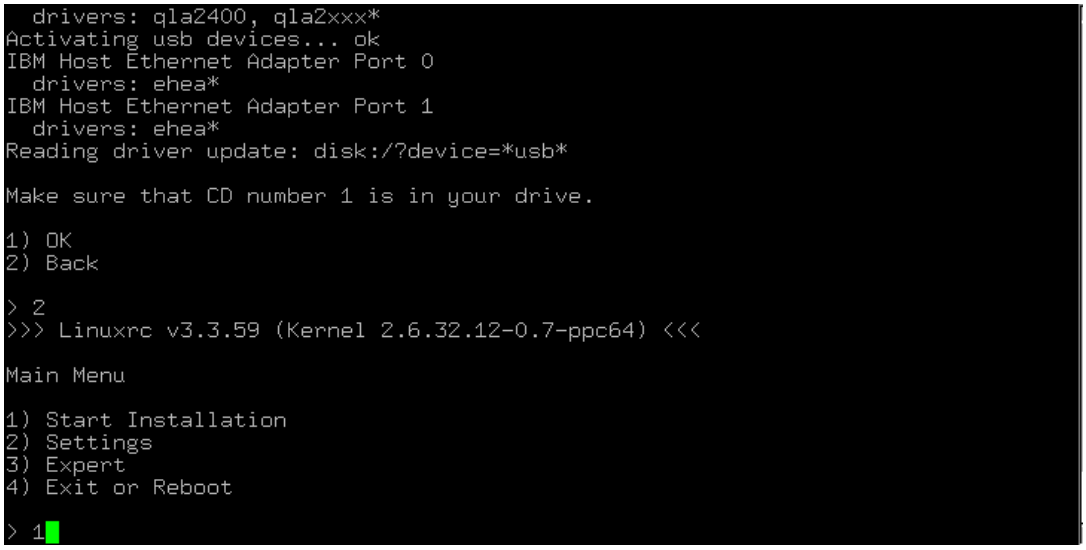
____18. The bootp process begins and the boot image is downloaded to the blade.



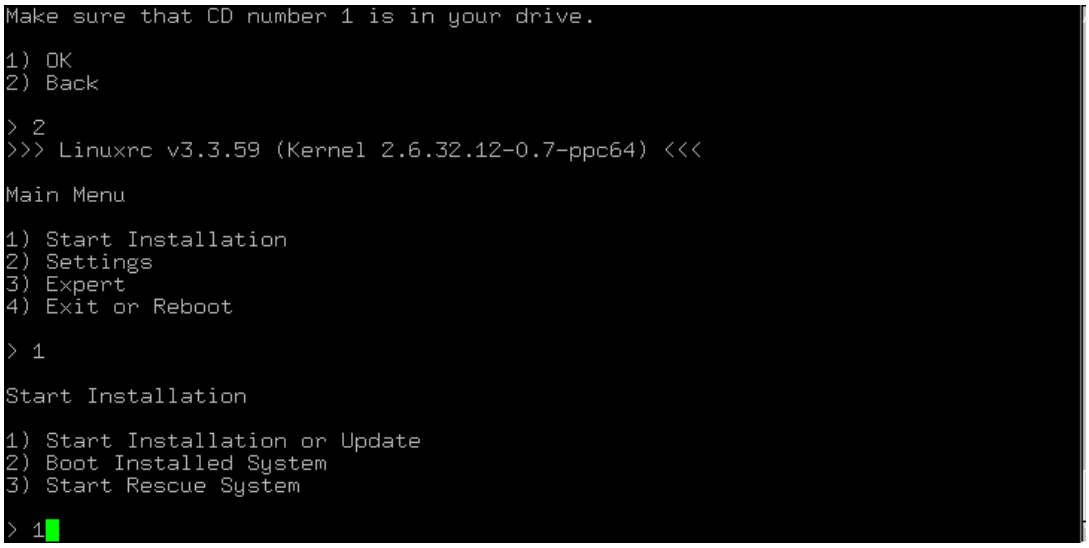
____19. After the drivers have loaded, you will be prompted to ready the CD for install. Since this lab will use the network installation method, select **2** to go back.



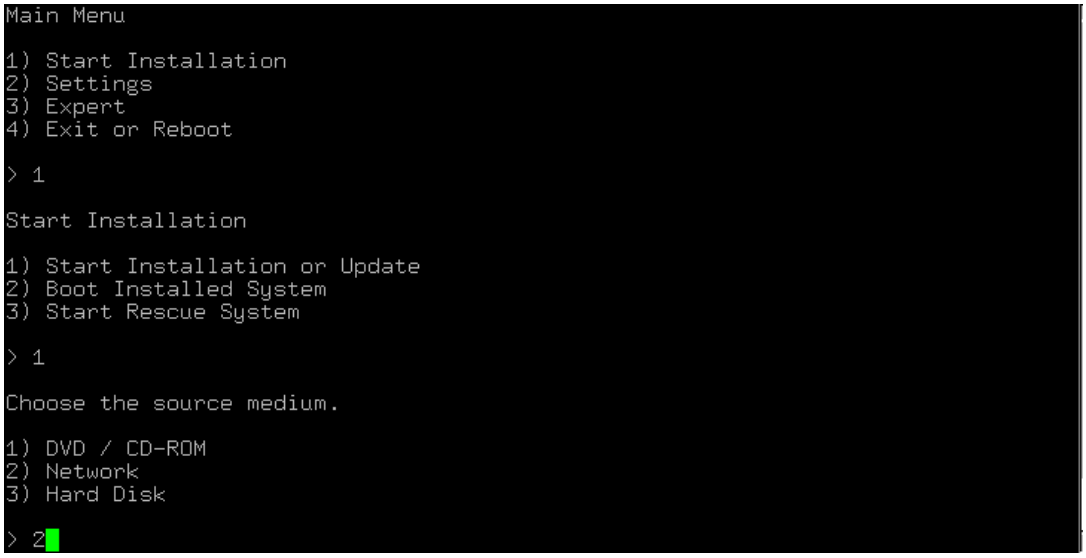
____20. Select "**1) Start Installation**" and press "**Enter**".



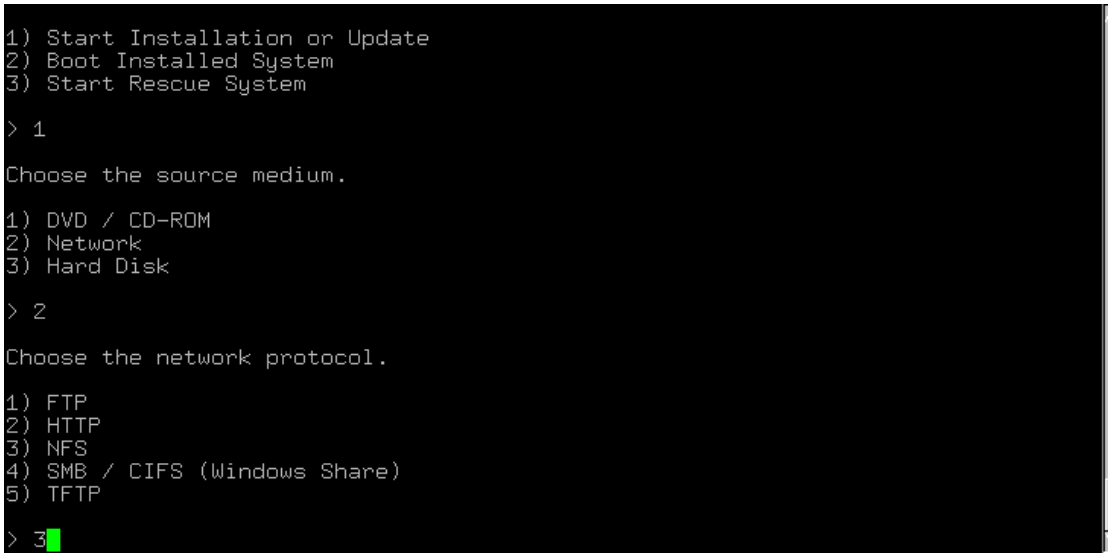
____21. Select "**1) Start Installation or Update**" and press "**Enter**".



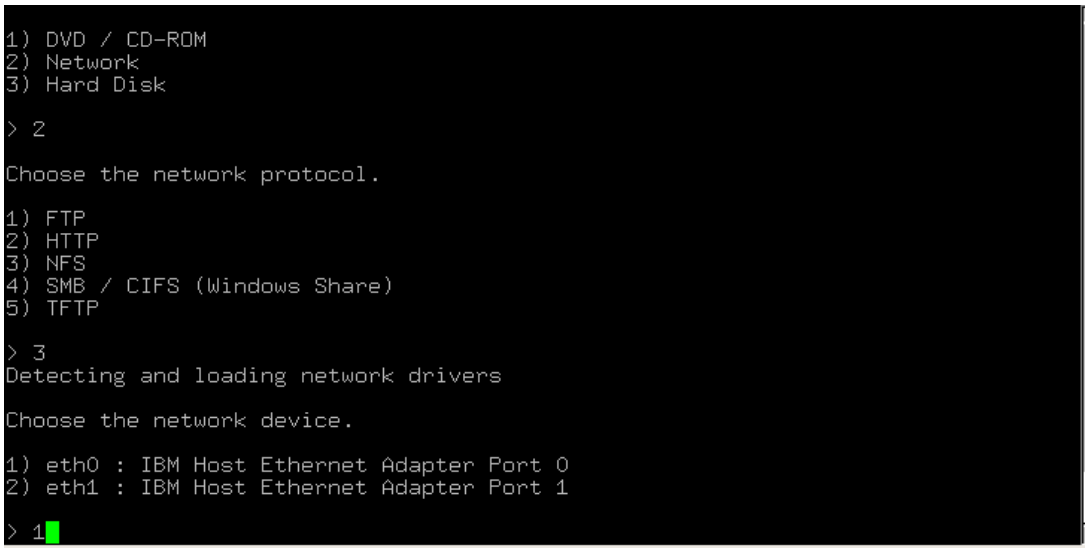
____22. Select "**2) Network**" as your source and press "**Enter**".



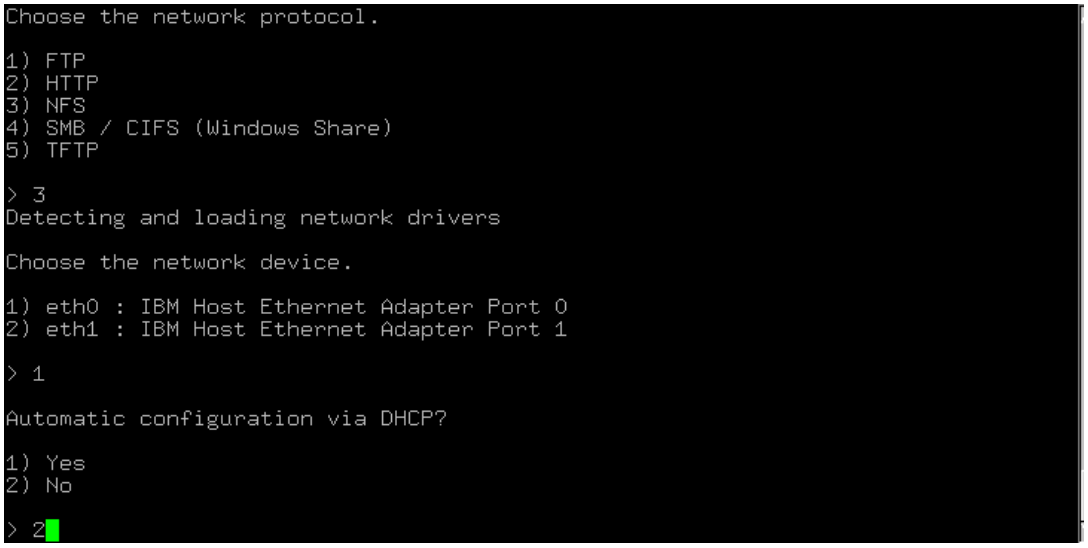
____23. Select "**3) NFS**" for the network protocol and press "**Enter**".



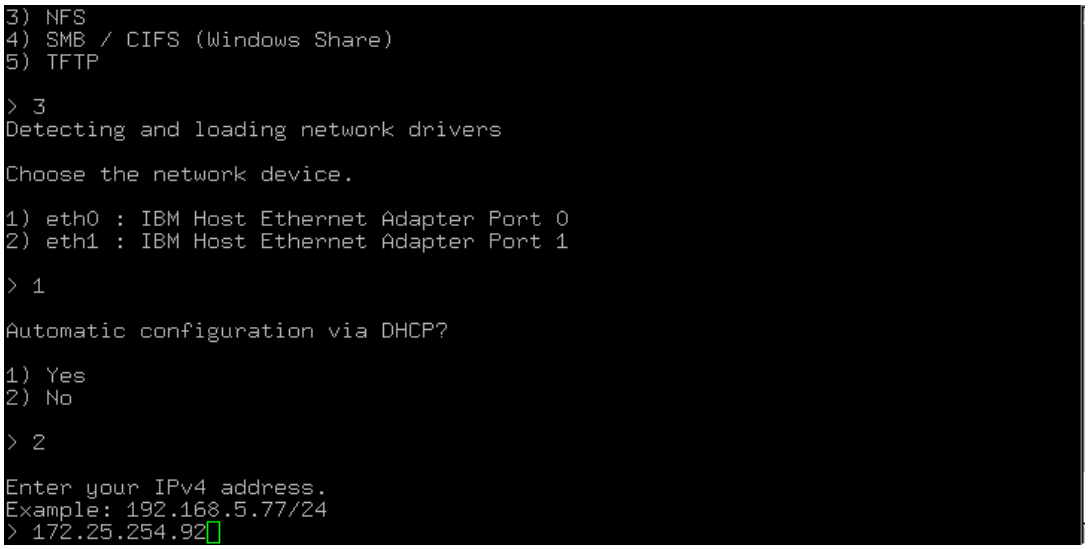
____24. Select "**1) eth0**" as the network device and press "**Enter**".



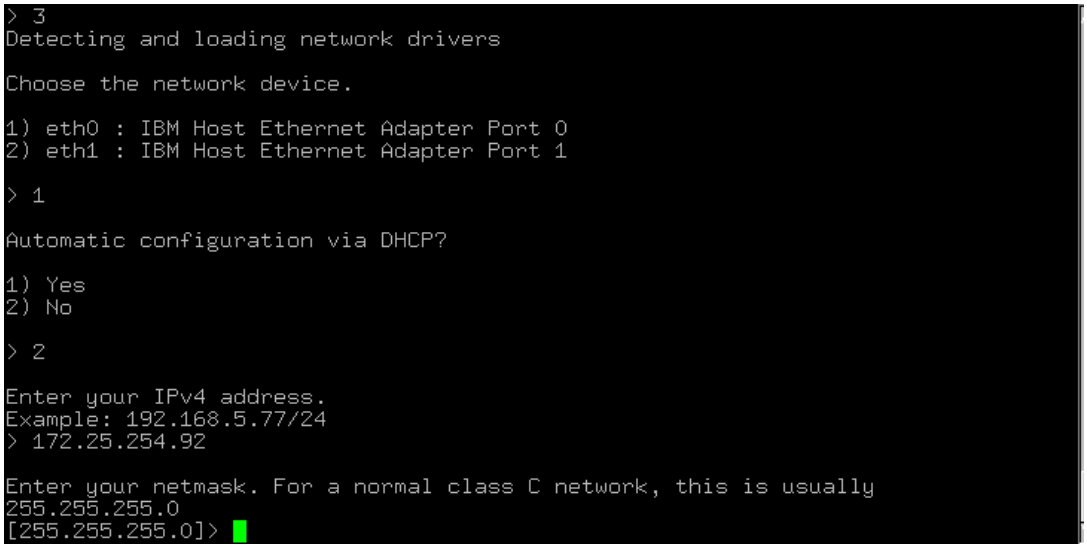
____25. Select "**2) No**" to hard-code the IP address and press "**Enter**".



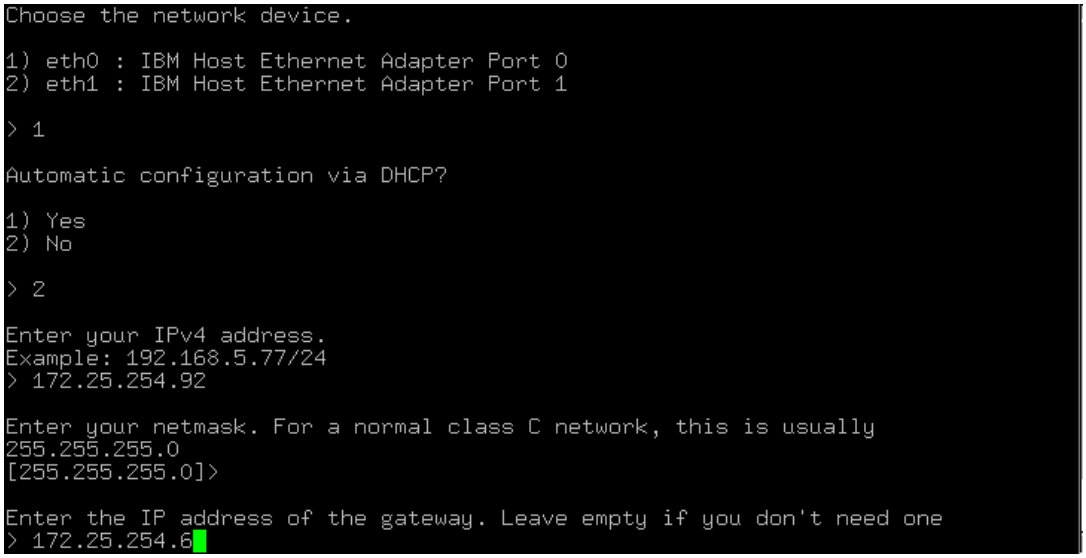
____26. Enter the IP address provided for this lab and press "**Enter**".



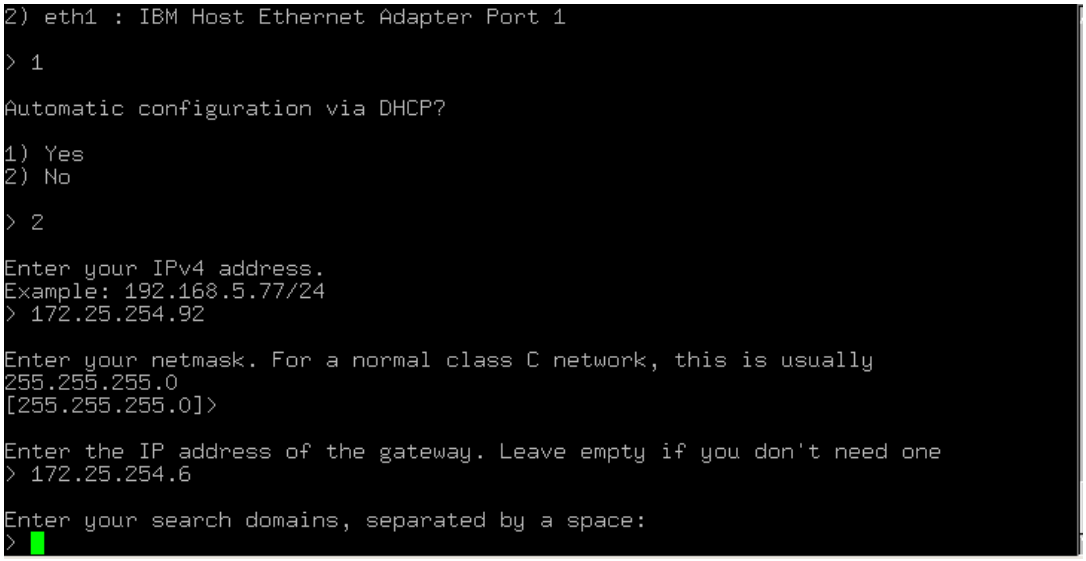
____27. Press "**Enter**" to use the default netmask.



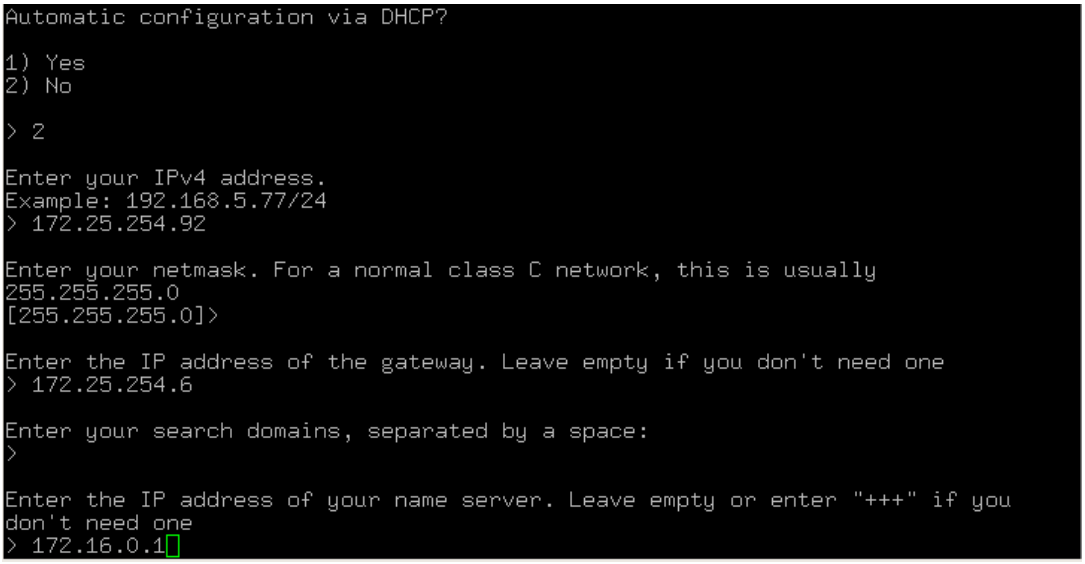
____28. Enter the Gateway IP address provided for this lab and press "**Enter**".



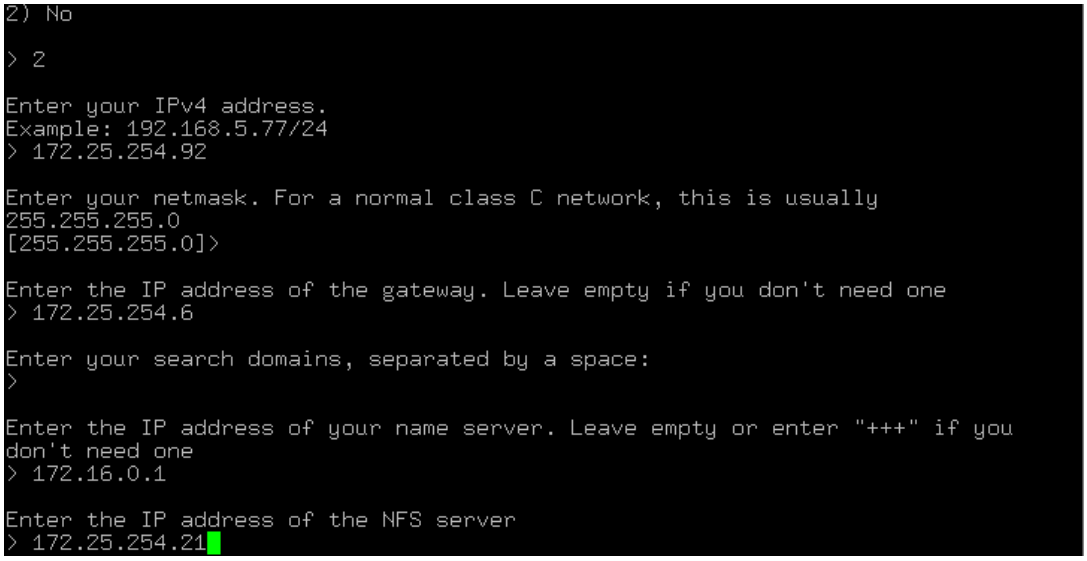
____29. Press "**Enter**" to leave the search domain empty.



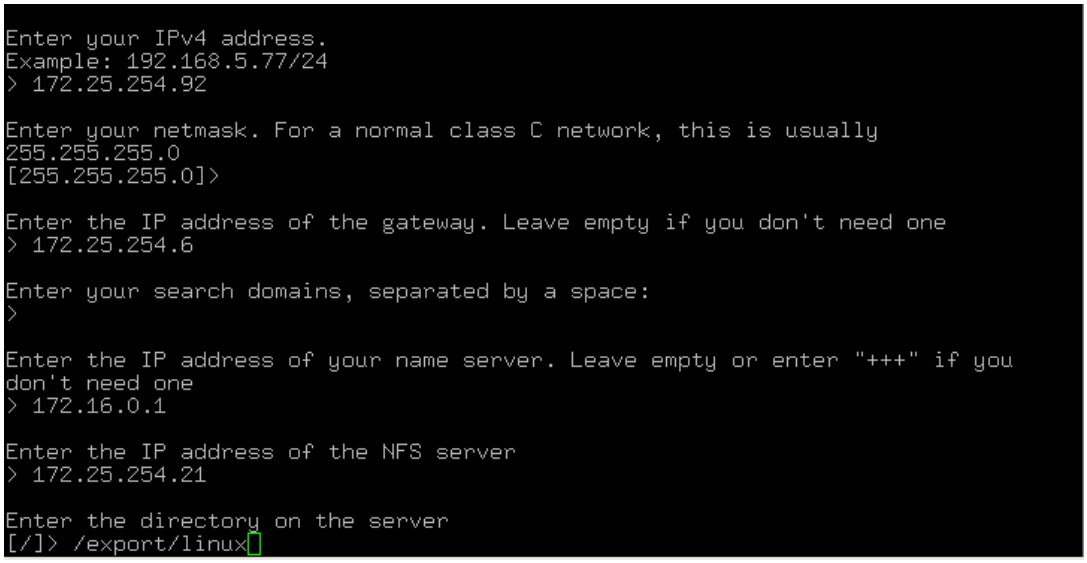
____30. Input the IP address provided for your name server and press "**Enter**".



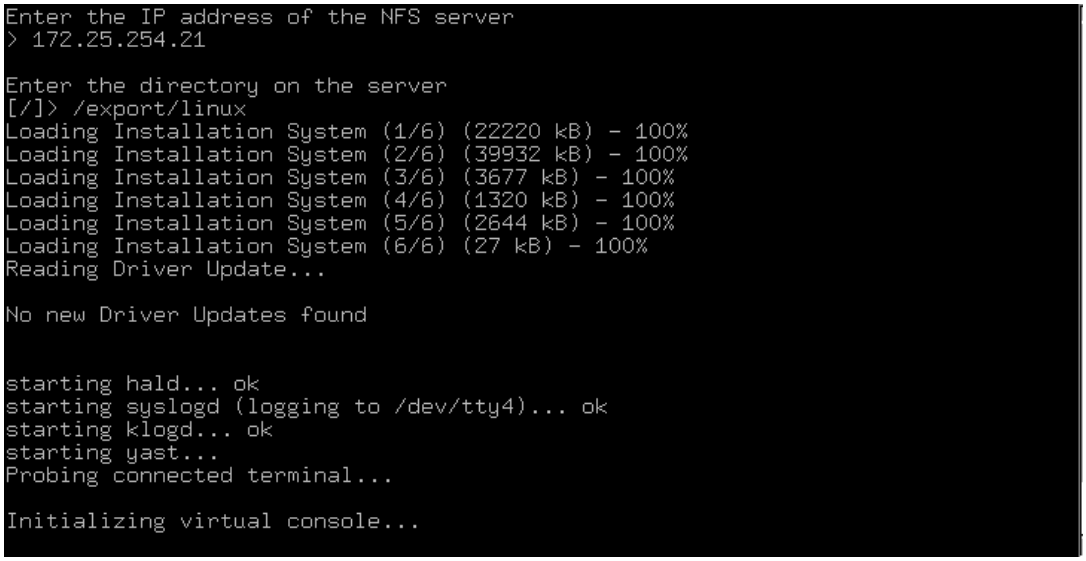
____31. Input the NFS server's IP address and press "**Enter**".



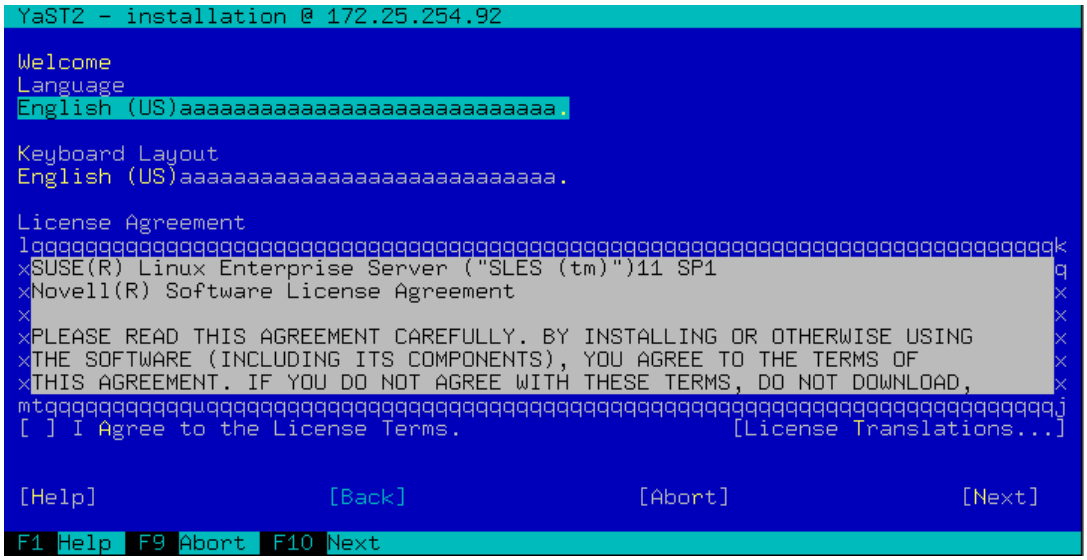
____32. Input the /export/linux directory used to serve the install files and press "**Enter**".



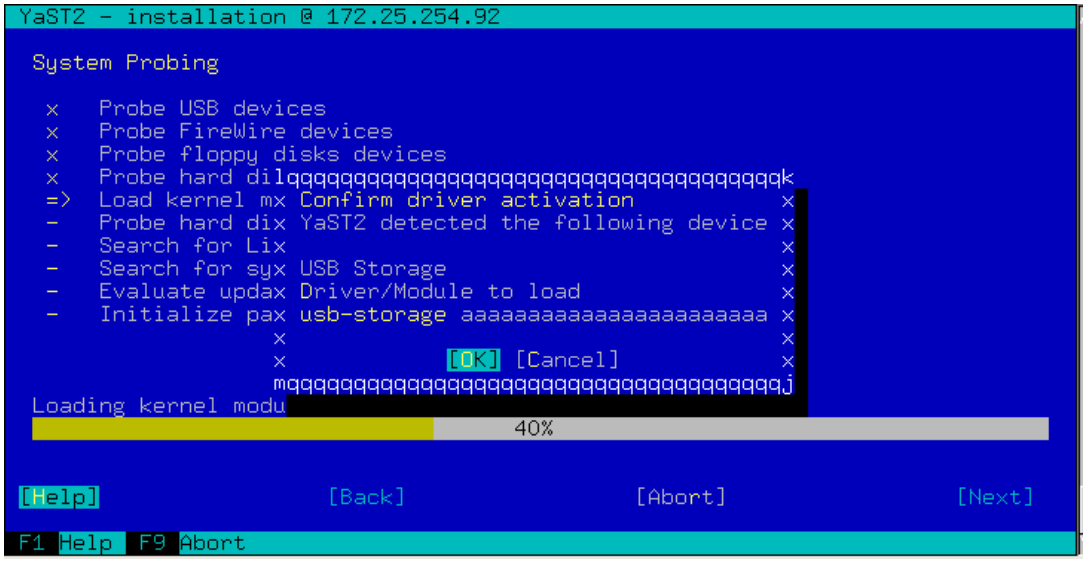
____33. The YaST installer code is loaded.



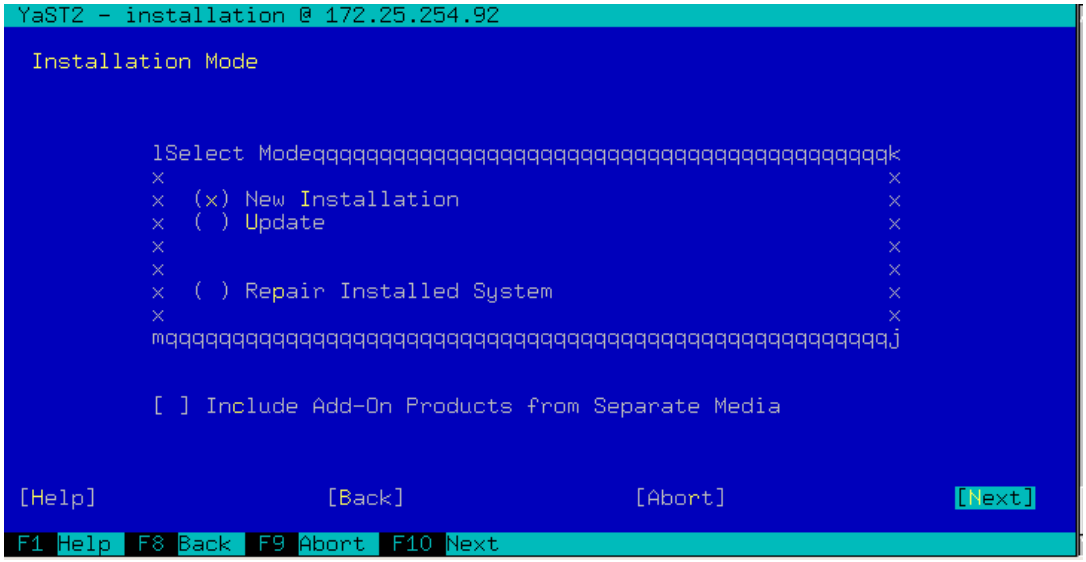
____34. Tab to the **I agree to the License Terms** box, use the space bar to select it, then tab to the **Next** option and press "**Enter**".



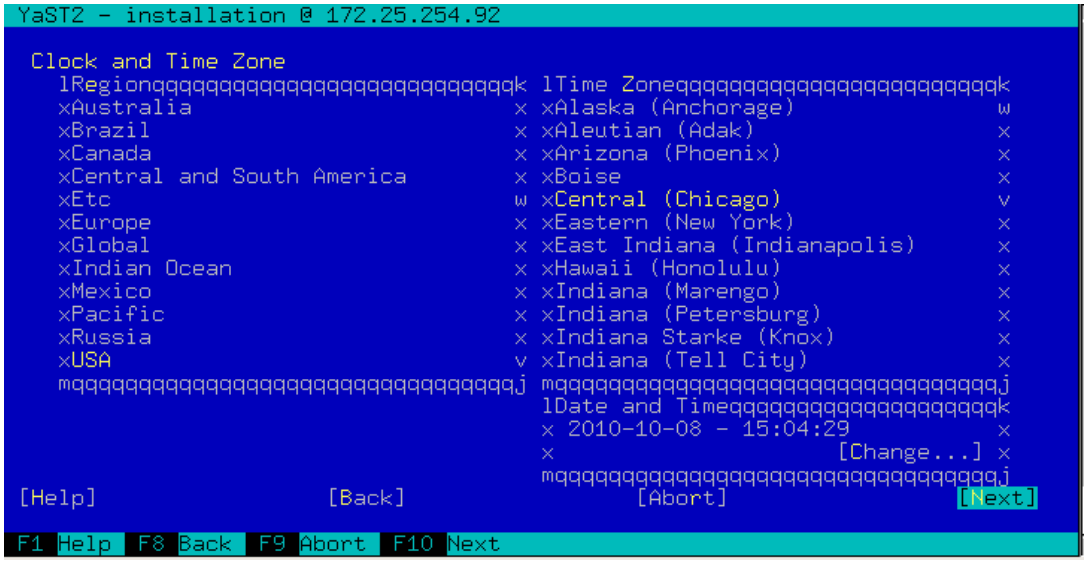
____35. Select "**OK**" and press "**Enter**" to activate any device drivers installed on the system.



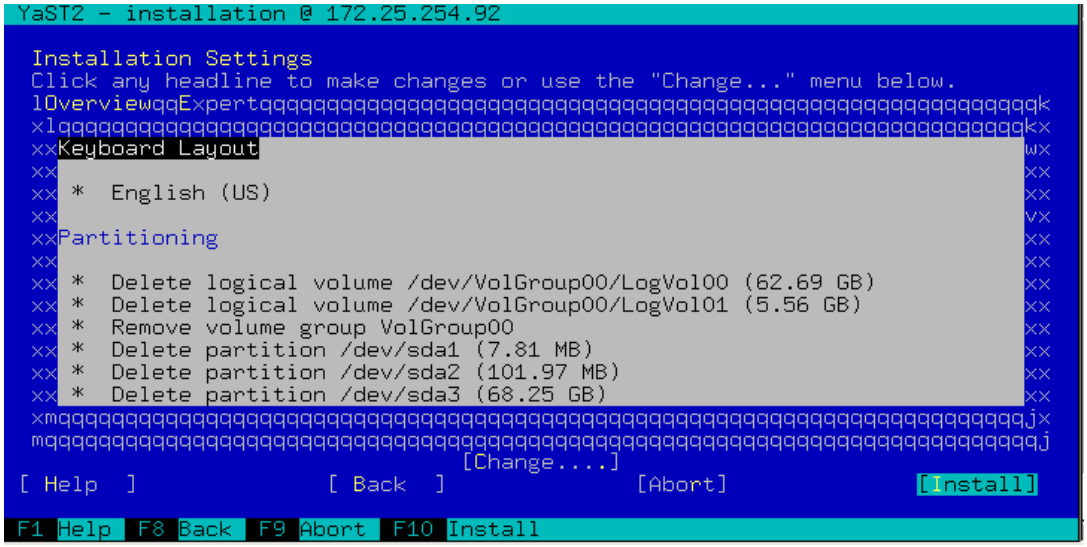
____36. Select "**New Installation**" and **Next**, then press "**Enter**".



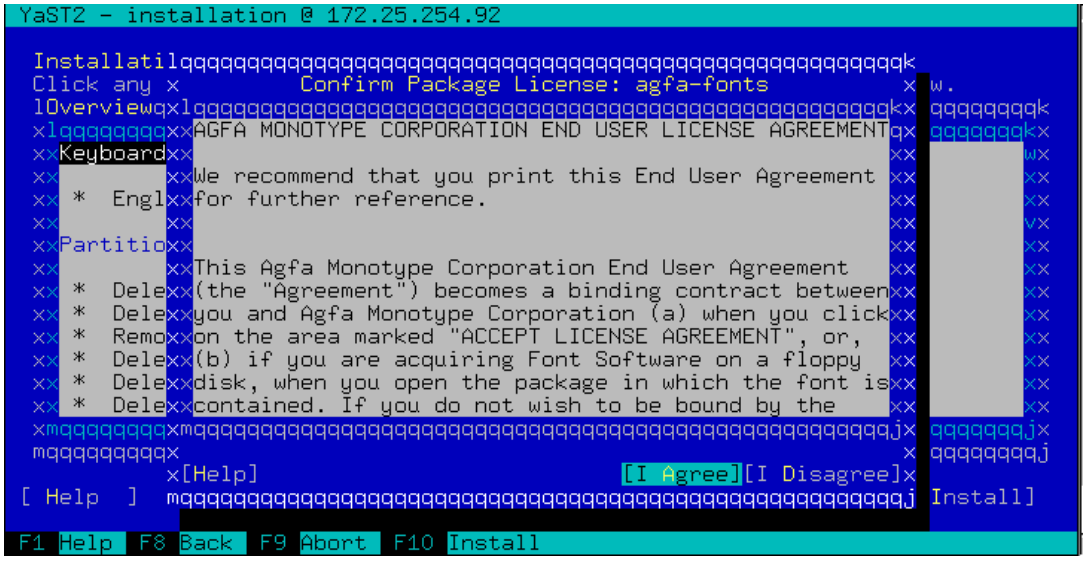
____37. Select your **Region** and **Time Zone** by tabbing between fields and using the arrow keys to scroll the lists. Change the **Date and Time** if necessary and tab to **Next**. Press "**Enter**" to input your options.



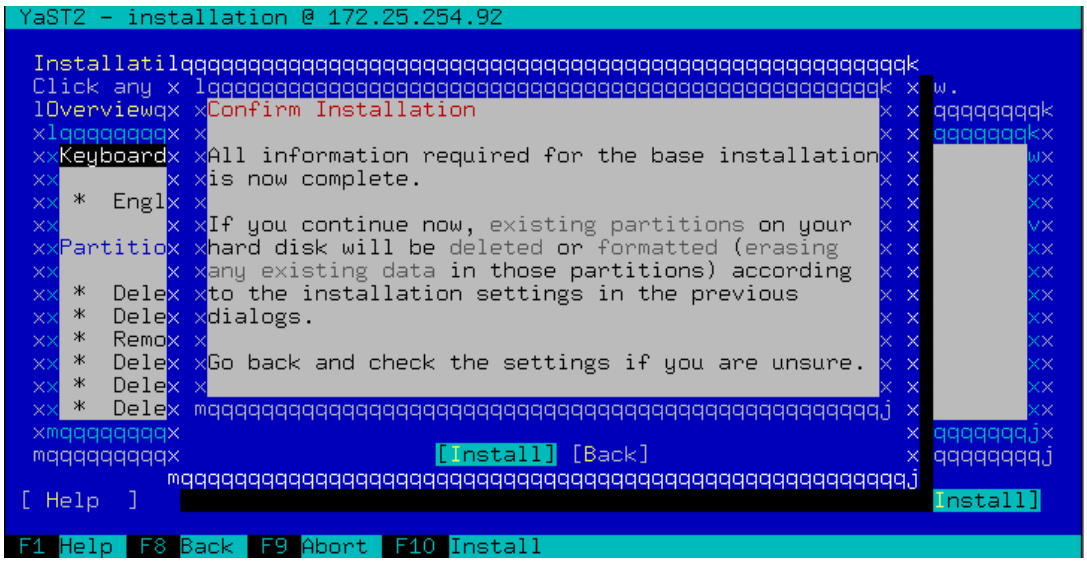
____38. Accept the default partitioning scheme, press "**Enter**" with the **Install** option selected.



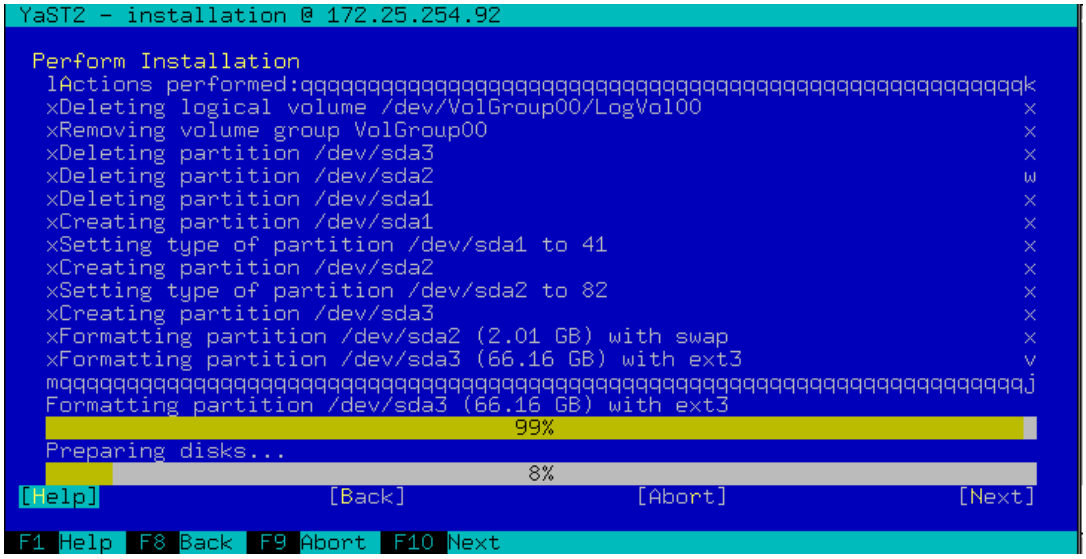
____39. Agree to the **License Agreement** for the Agfa font package and press "**Enter**".



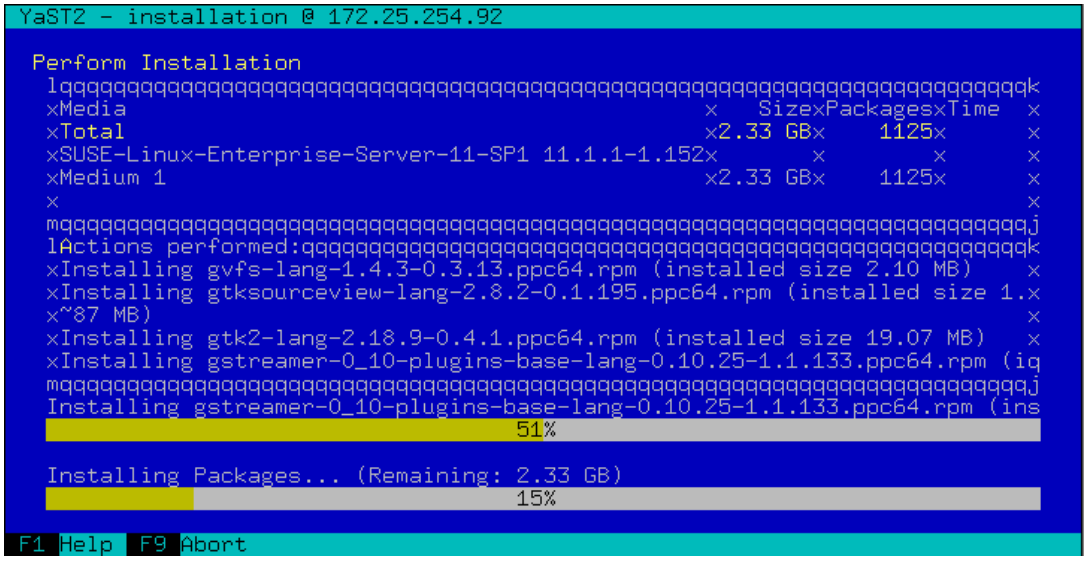
____40. Confirm you're ready to begin the **Install** and press "**Enter**".



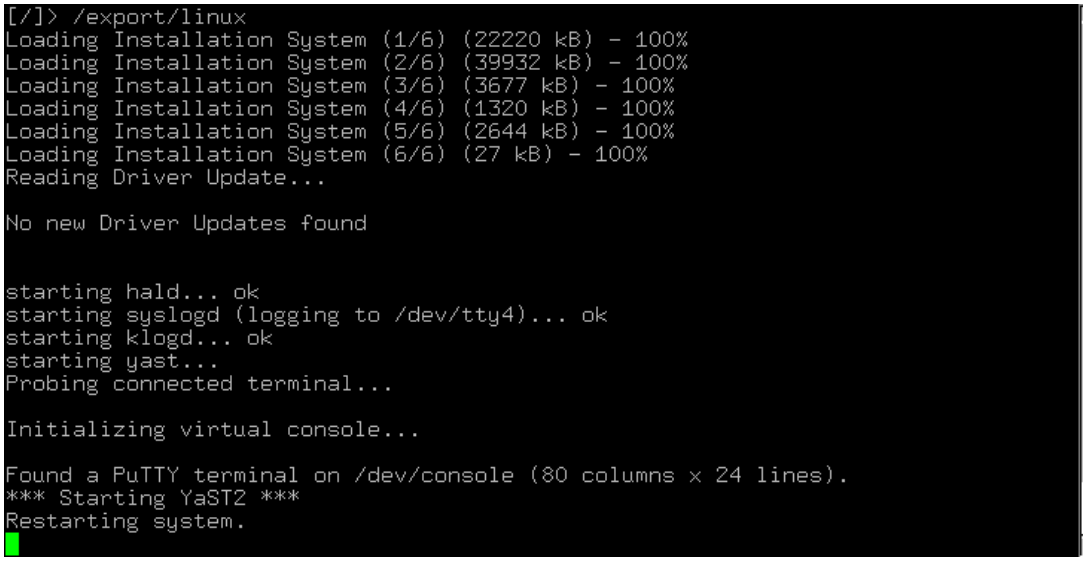
____41. The disks will be partitioned and formatted.



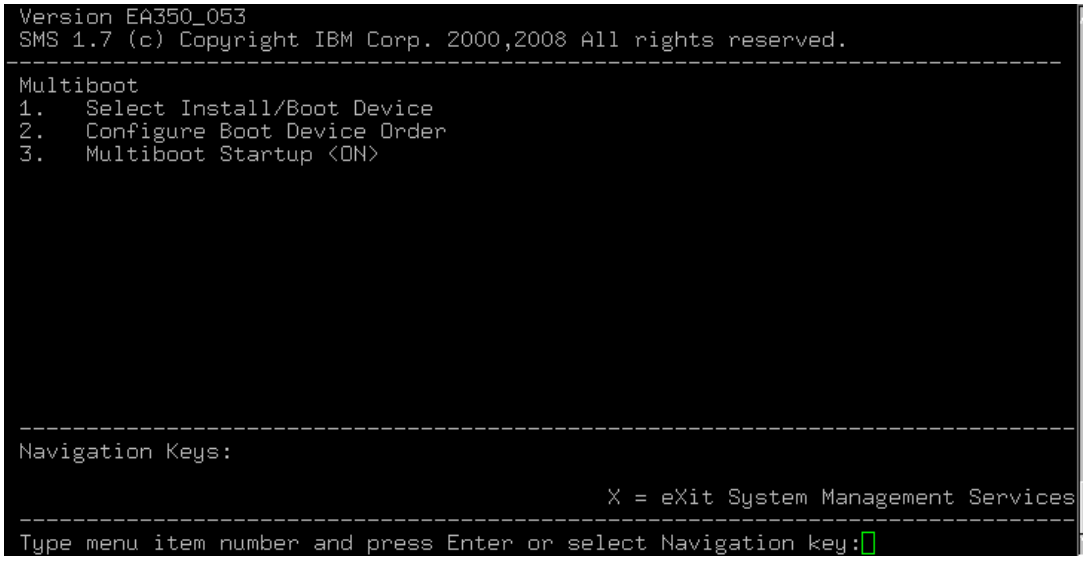
____42. The selected packages will then be installed.



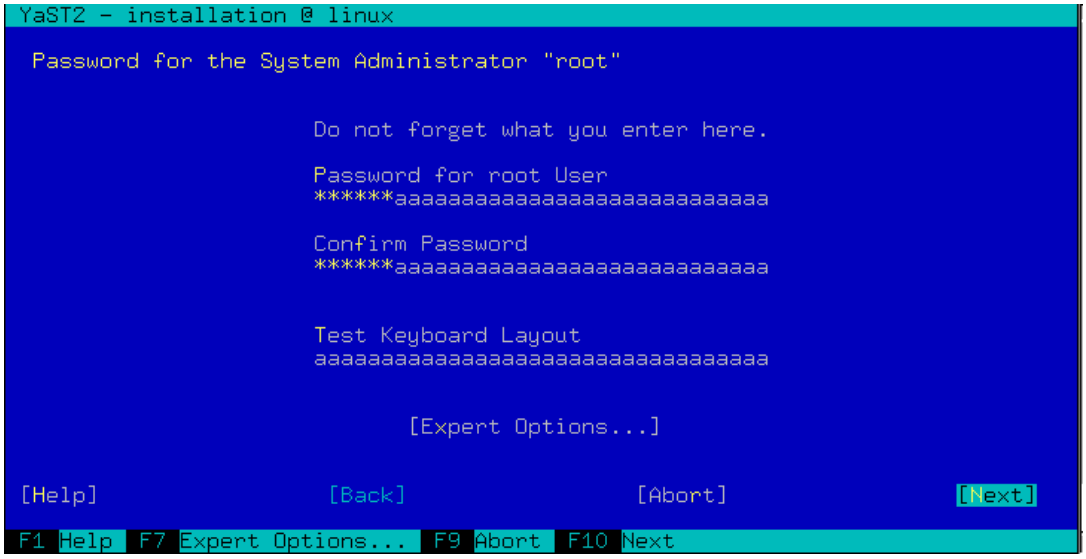
____43. Once the installation is complete, the system will automatically reboot.



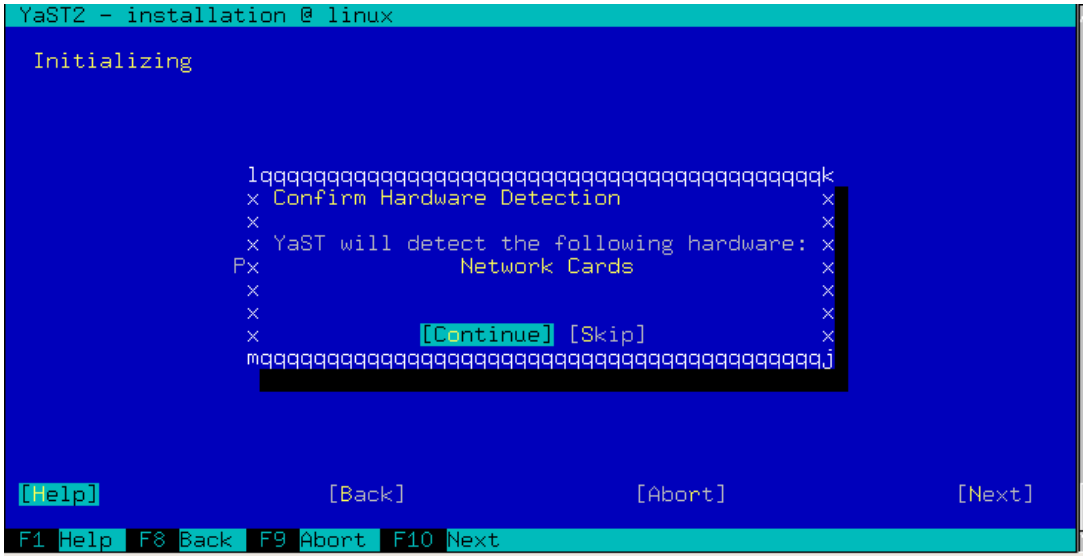
____44. At the SMS menu, select the disk as the boot device.



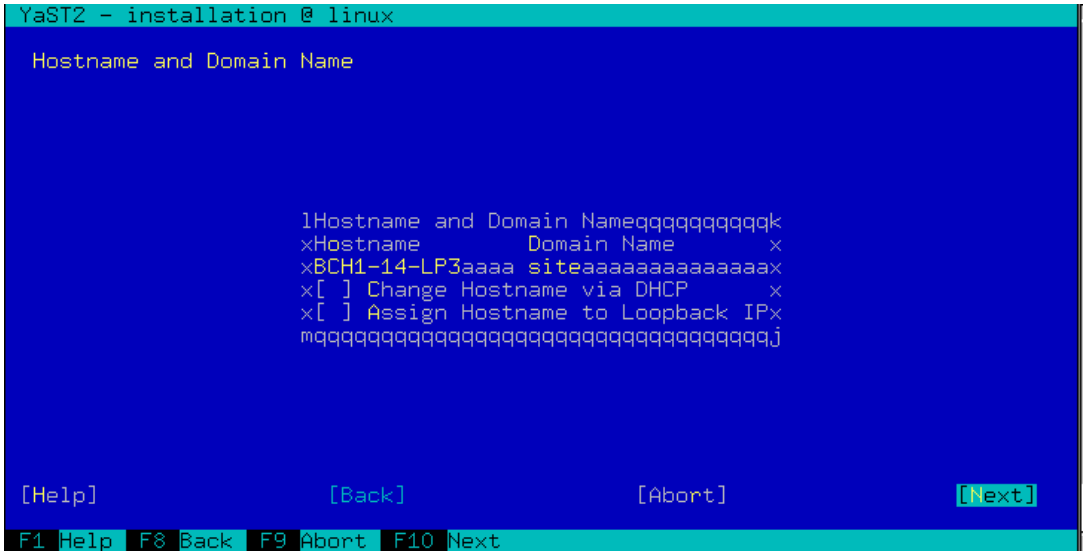
____45. Enter and confirm a **password** (**PSTRAIN2**) for the root user, tab to **Next** and press "**Enter**".



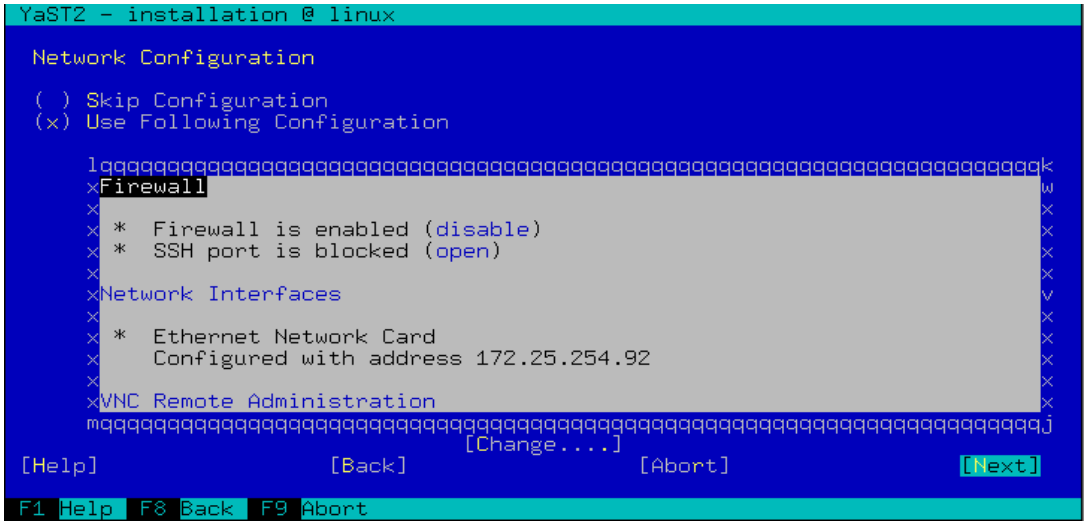
____46. Press "**Enter**" to **Continue** with the Network Card detection.



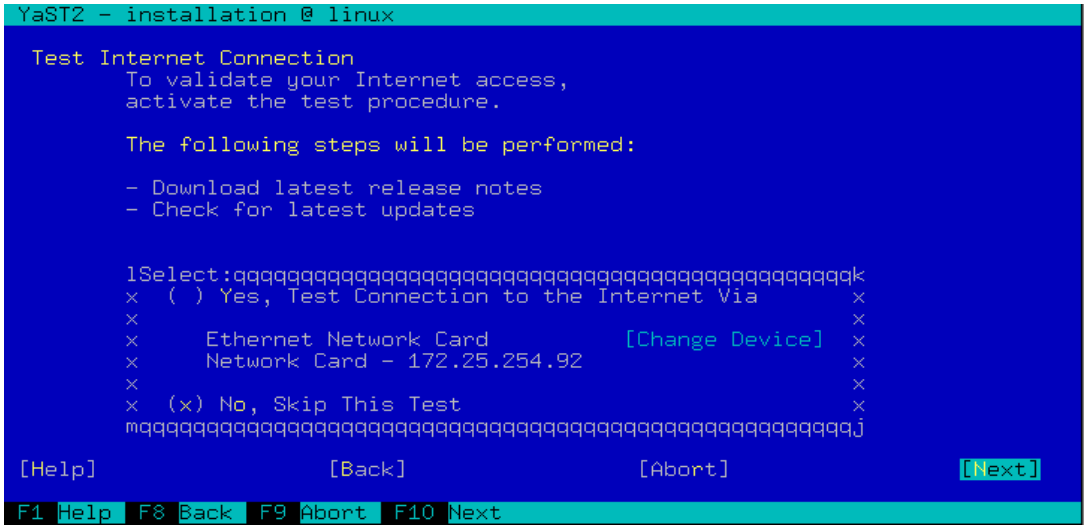
____47. Set the **hostname** to be used for your installation, uncheck the **Change Hostname via DHCP** box since it isn't used in the lab environment, tab to **Next** and press "**Enter**".



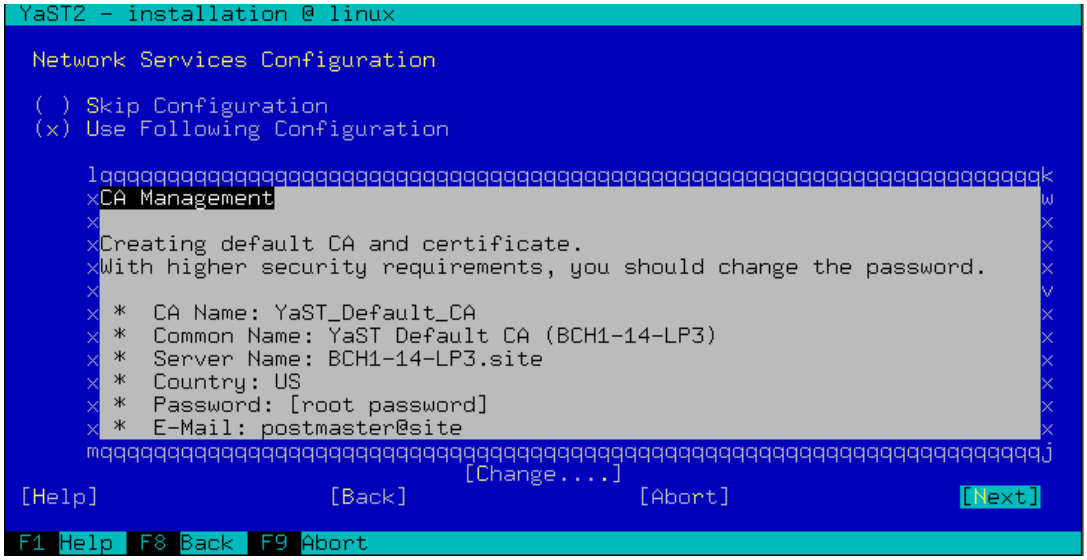
____48. Press "**Enter**" to use the default configuration for the remainder of the network settings.



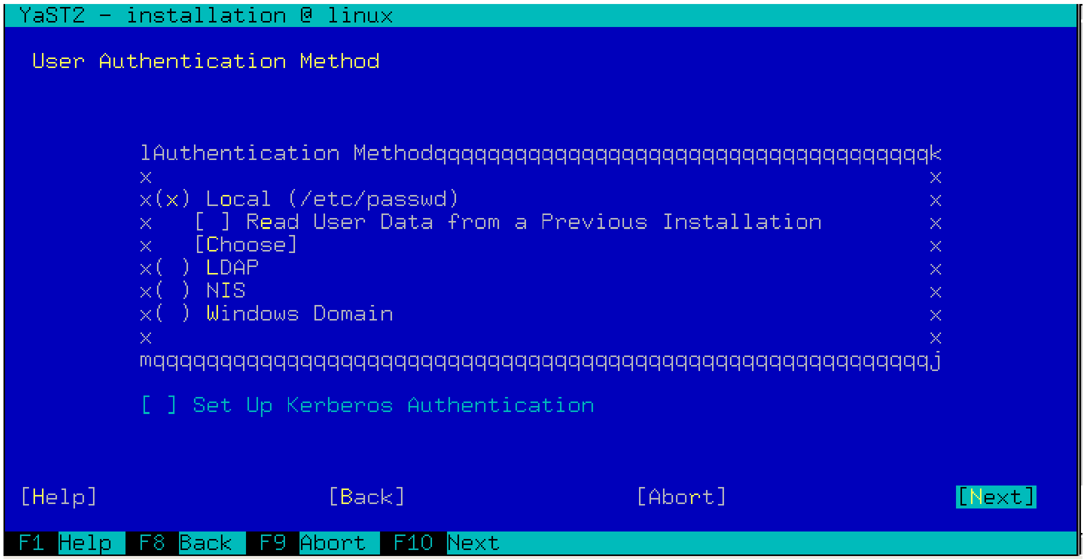
____49. Select "**No**" to skip the Internet connection test, tab to **Next** and press "**Enter**".



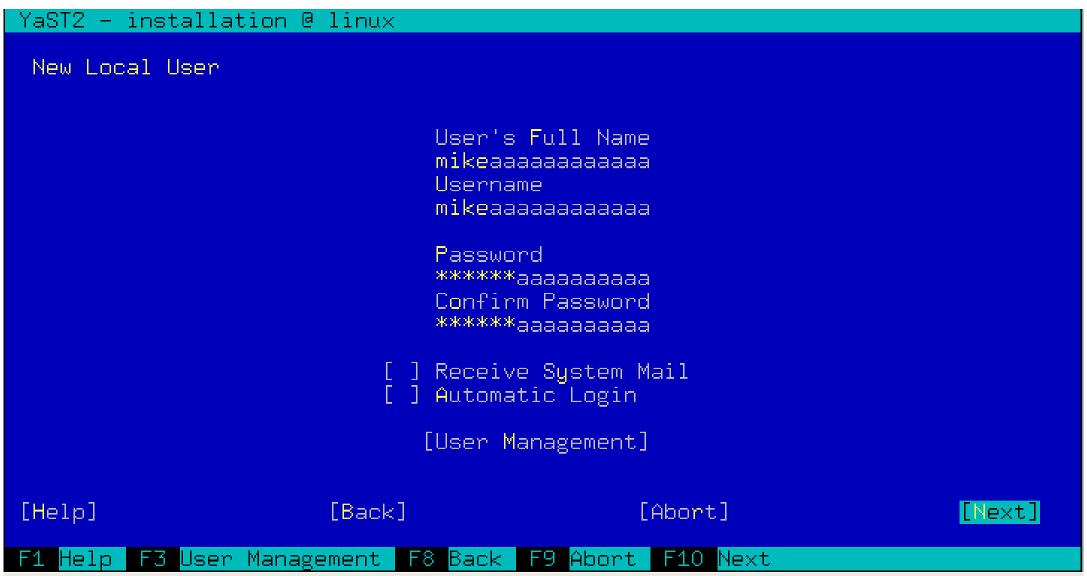
____50. Select **Next** and press "**Enter**" to configure the Certificate Authority.



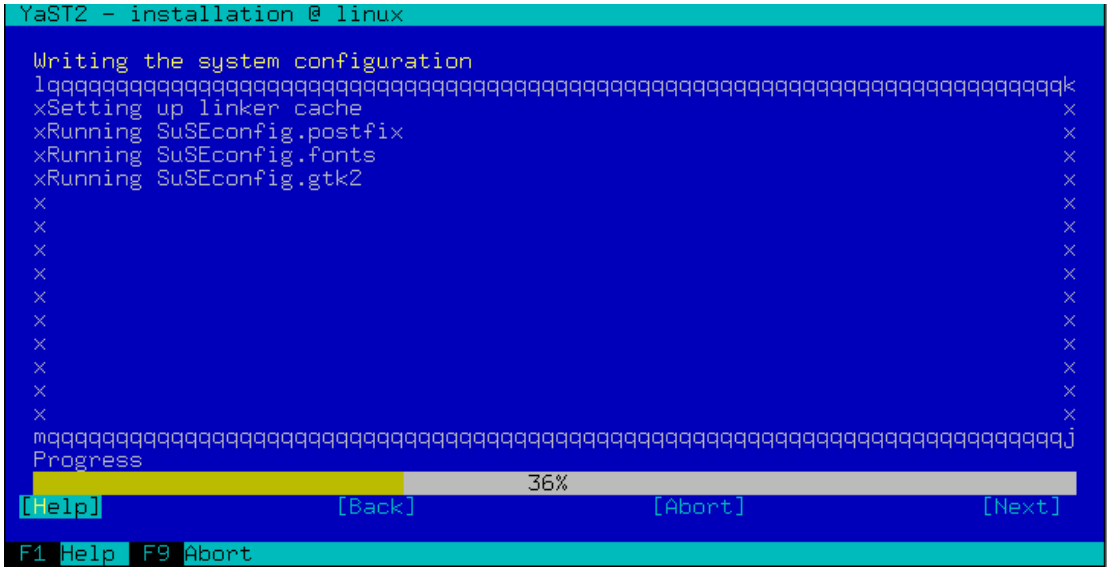
____51. Select **Local** authentication, tab to **Next** and press "**Enter**".



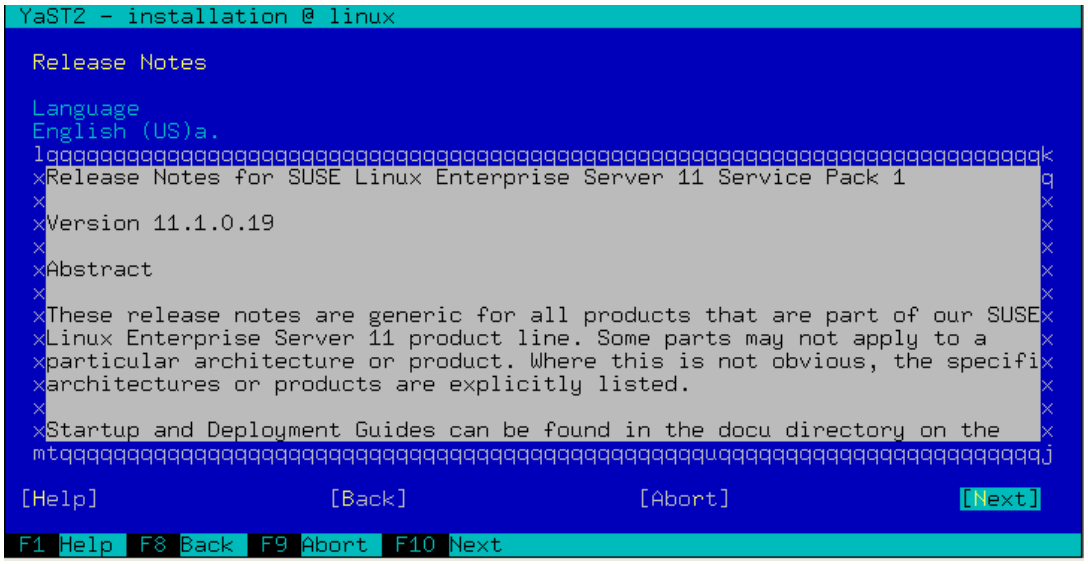
____52. Create a local **user** ID (**PSTRAIN2**) and **password** (**PSTRAIN2**), tab to **Next** and press “**Enter**”.



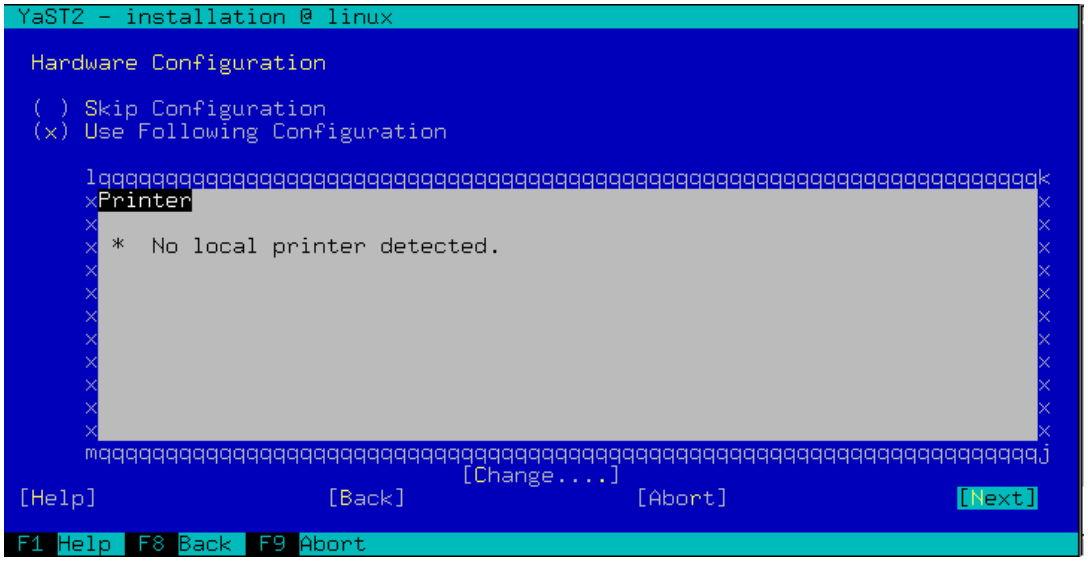
____53. Your configuration choices will then be written to disk and appropriate processes and daemons started.



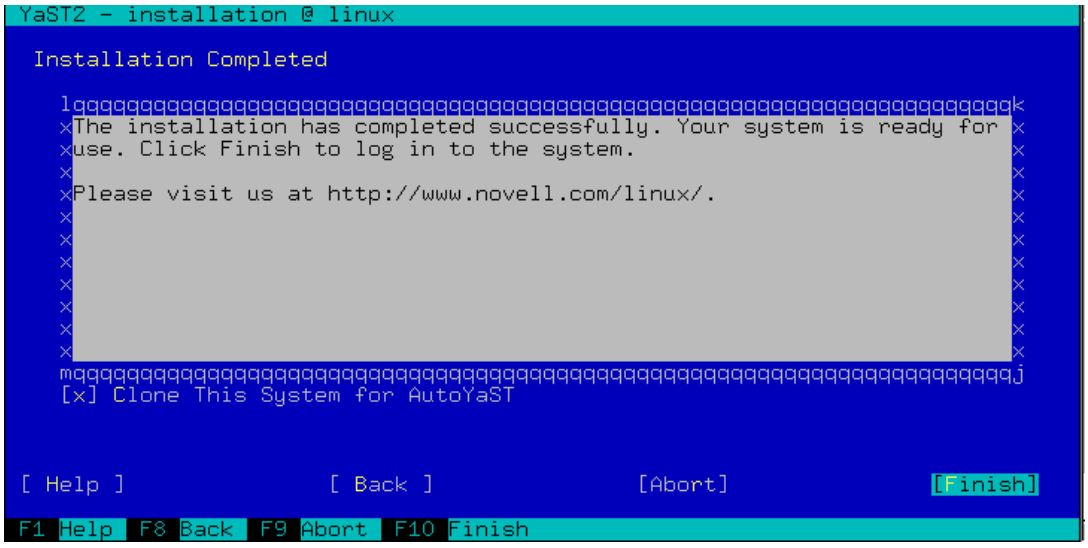
____54. You may review the Release Notes, then tab to **Next** and press "**Enter**" to continue.



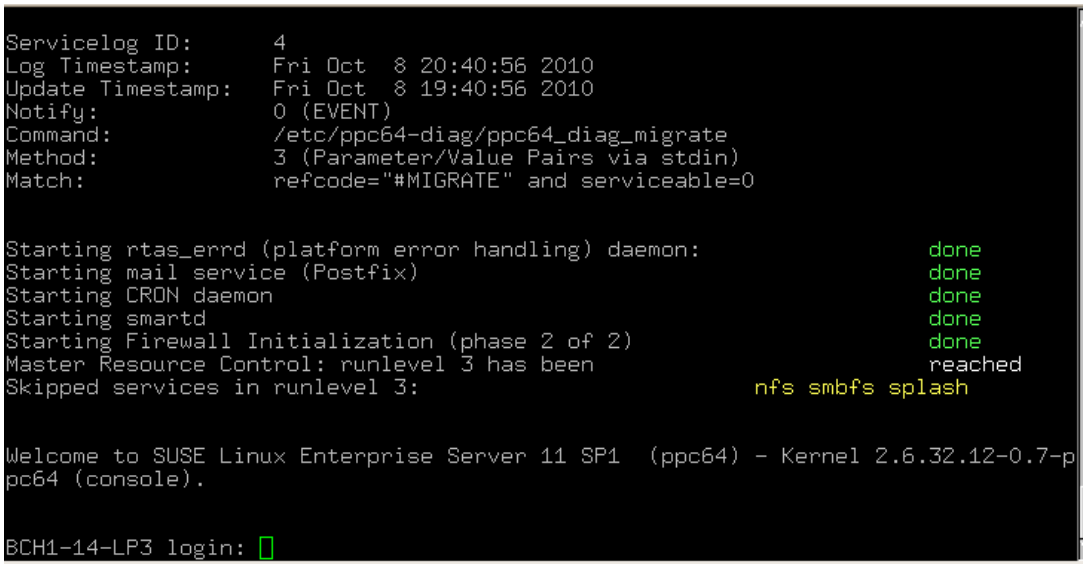
____55. Peripheral hardware is then detected and configured. Tab to **Next** and press "**Enter**" when complete.



____56. Uncheck the **Clone This System for AutoYaST** box as you won't need it here. Tab to **Finish** and press "**Enter**".



____57. The system will complete the boot process and you will be able to login. This completes the SUSE installation lab.



The SUSE installation is complete.

Addendum – Brad/Bob

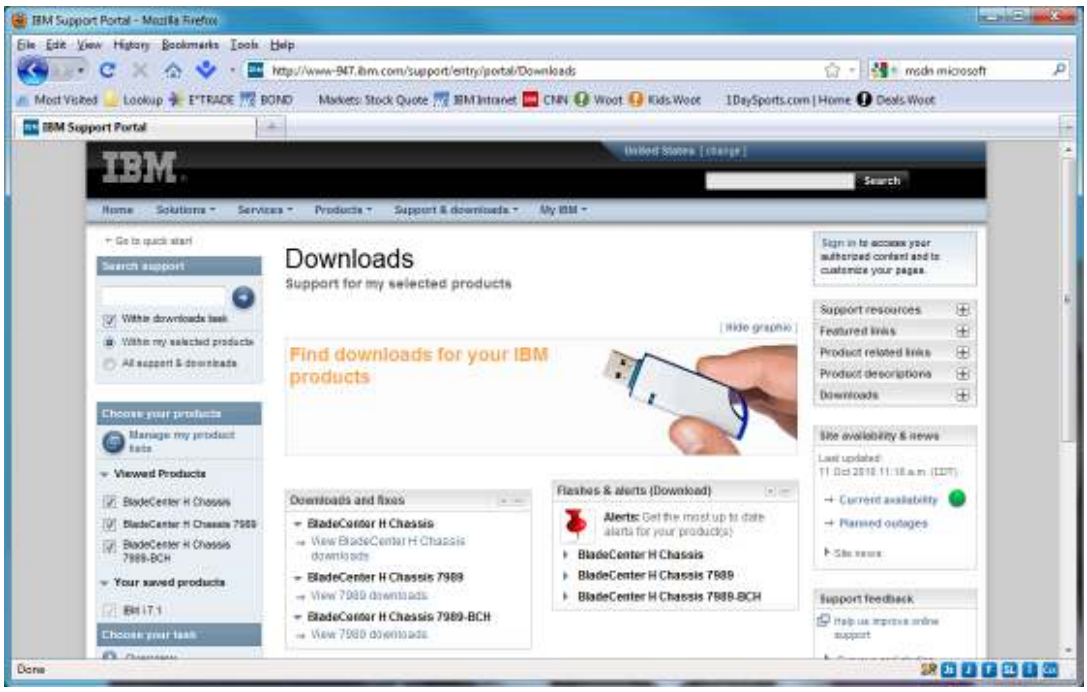
How to Tips

The Addendum contains “How to Tips” which will be instrumental in working with the POWER processor-based Blades and the BladeCenter.

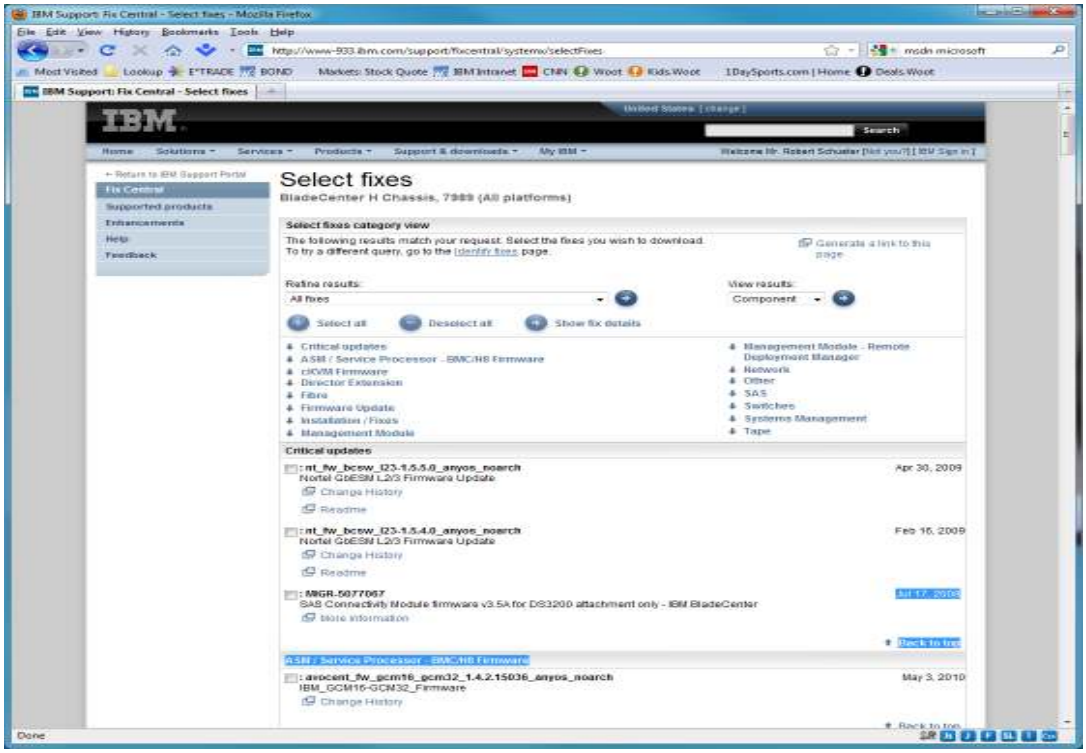
A. Support and Downloads

Below are screen shots of the IBM Support Portal that is used for updating various Blade-Center Chassis, Blades, and Options installed in the Chassis.

www.ibm.com/support



- Select BladeCenter

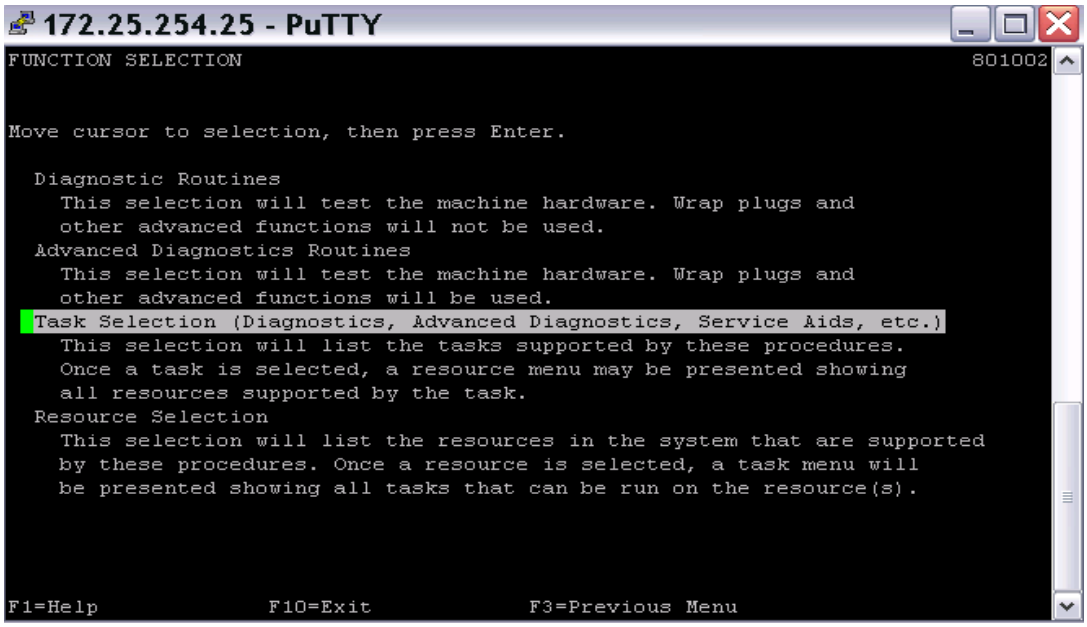


- Select from the list of available BladeCenter Chassis and Select OS if desired.

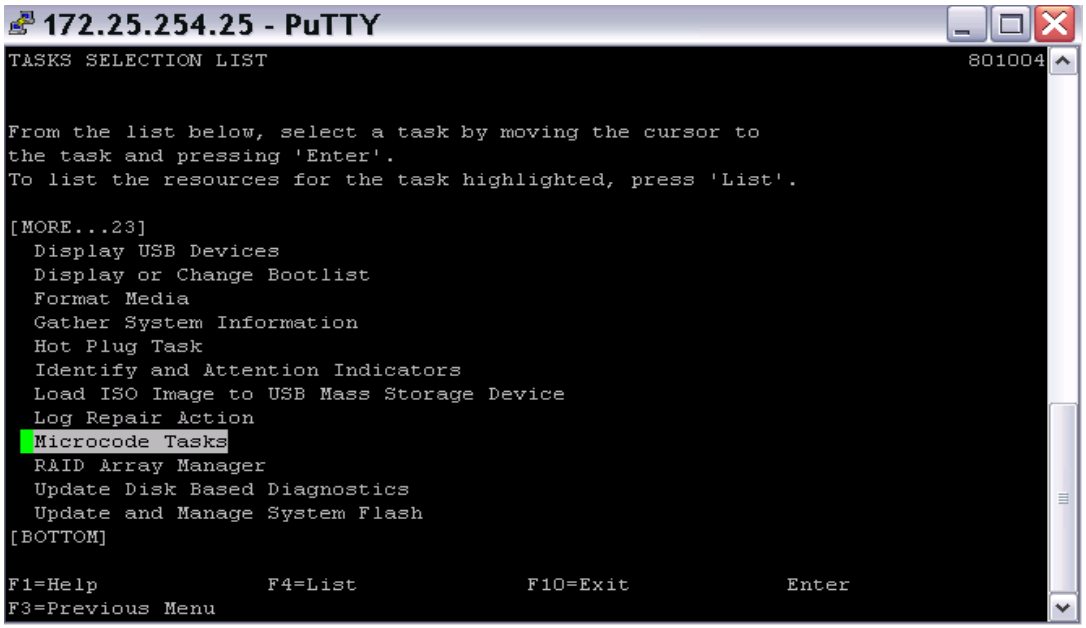
B. Firmware Updates - Adapter

Download the firmware for the adapter you are using and copy it to the /etc/microcode directory. Complete the following steps to update the adapter firmware:

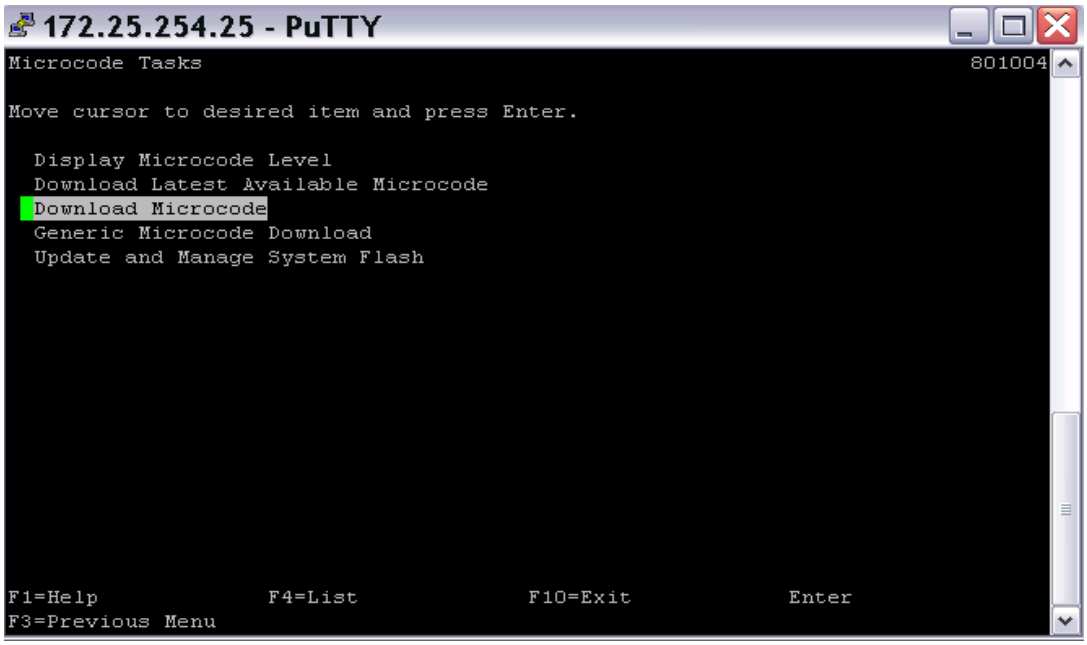
____1. To update the firmware on your adapter, type "**diag**" and select "**Enter**".
____2. Select "**Task Selection**" and press "**Enter**".



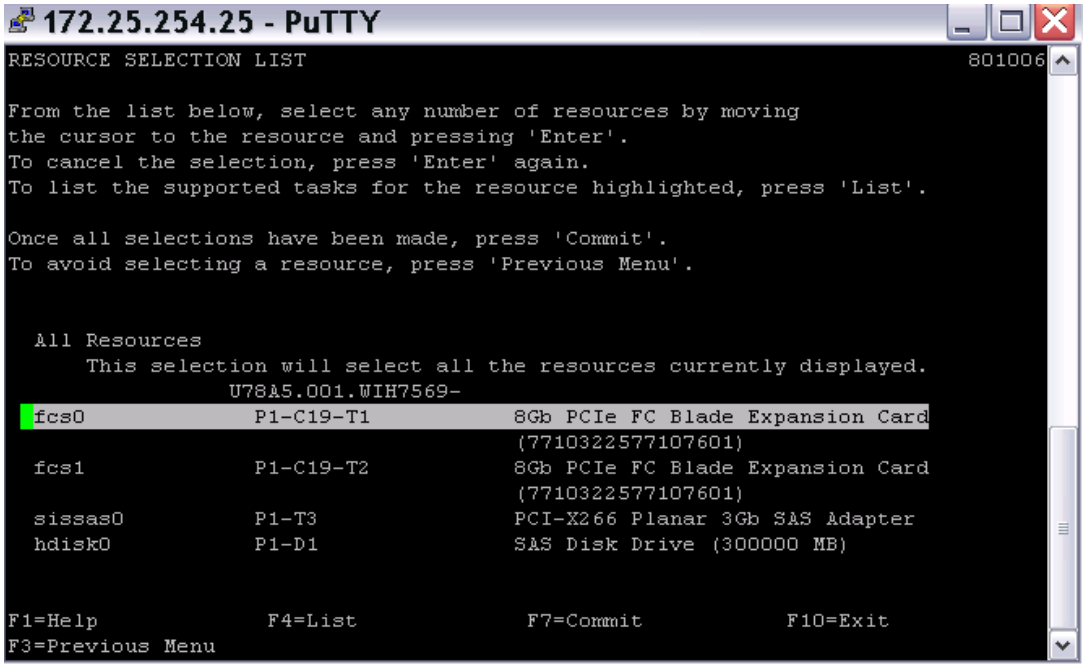
____3. Select "**Microcode Tasks**" and press "**Enter**".



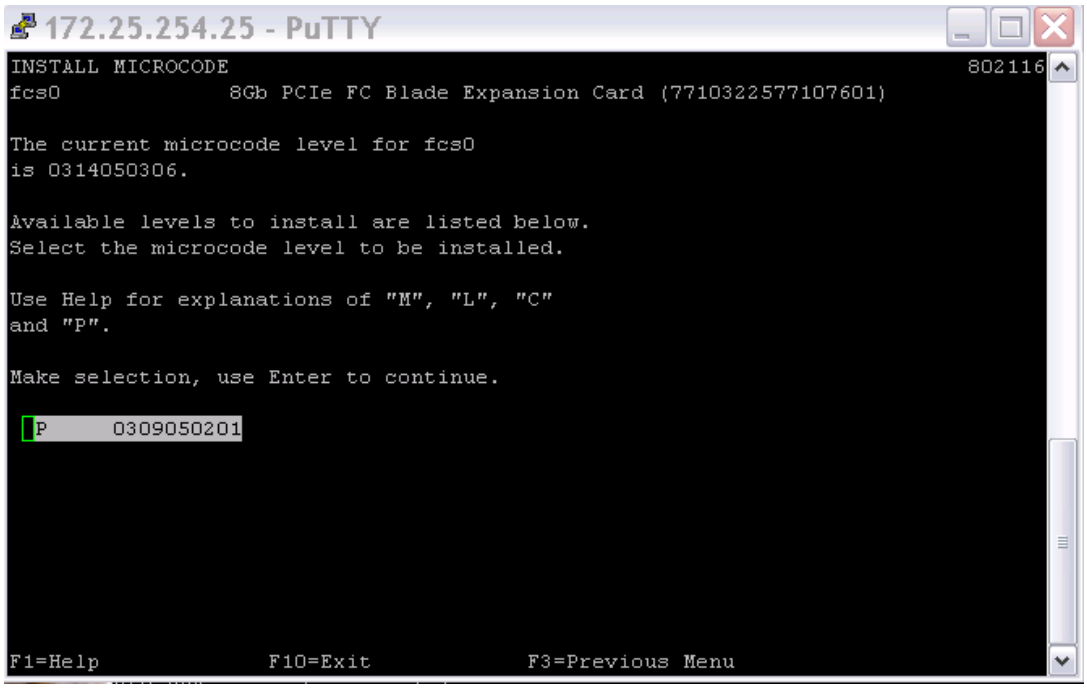
____4. Select "**Download Microcode**" and press "**Enter**".



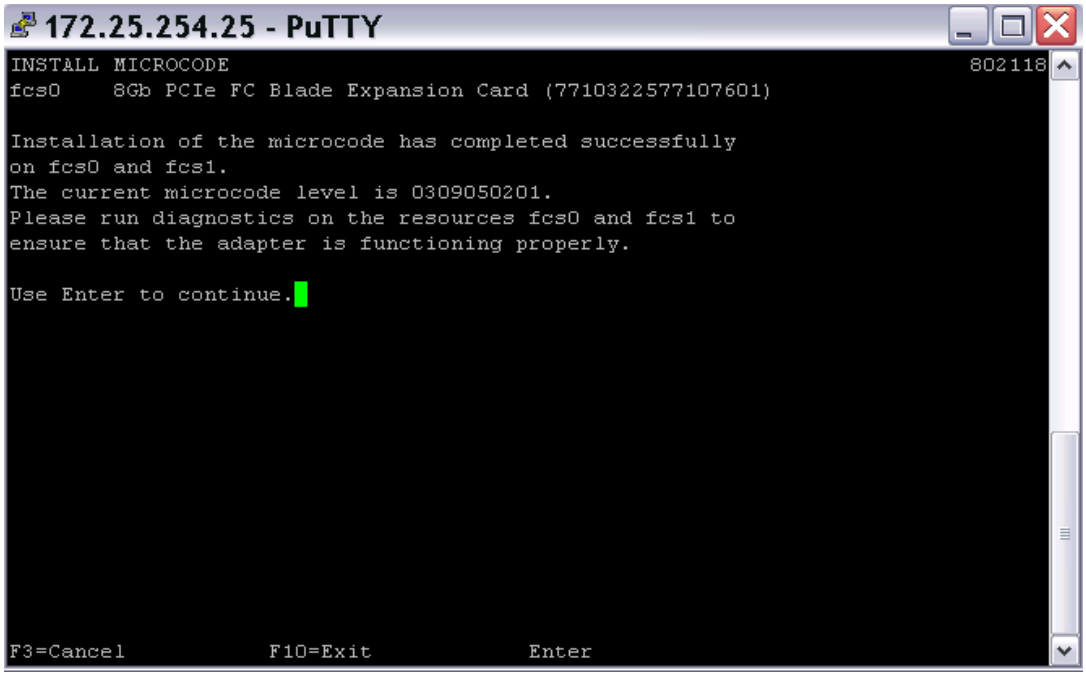
____5. Select "**Download Microcode**" and press "**Enter**". Select the appropriate resources and press "**p7=commit**".



____6. Select the appropriate firmware level and press "**Enter**" to update the firmware.



____7. A message will appear when the update is complete.



C. Troubleshooting SOL

If SOL is **not** *Ready*, carry out the following steps to troubleshoot SOL:

____1. Verify the Blade is powered on first then disable and then enable SOL. Under **Blade Tasks**, select "**Serial Over LAN**", then the "**Serial Over LAN Status**"

link, then select the correct blade. Now, select "**Disable Serial Over LAN**" and press "**Save**". Then select the correct blade, then "**Enable Serial Over LAN**" and press "**Save**".

____2. Verify SOL status. If it is still not *Ready*, restart the Blade System Management Processor (BSMP) and restart the blade server. Under **Blade Tasks** select **Power/Restart**, select the correct blade, then "**Restart Blade Systems Management Processor**". Select the same blade then "**Restart Blade**".

____3. Verify SOL status. If it is still not *Ready*, restart the Management Module. Under **MM Control**, select "**Restart MM**". Open a new browser interface and connect to the Management Module.

____4. Verify SOL Status. If it is still not *Ready*, verify the blade port is active on the Switch Module.

Note: SOL will never be *Ready* if there is not a supported I/O Module (i.e., Ethernet Switch module or an Intelligent Copper Pass-thru Module) in slot 1 of the BladeCenter chassis.