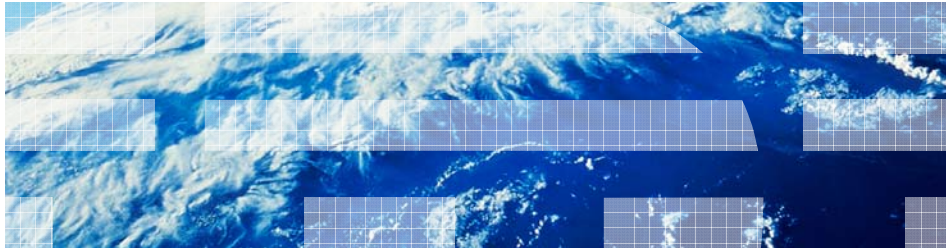


PowerVM Virtual I/O Server Configuration Cookbook



This set of charts is the second in a series of cookbooks that discuss the configuration and test of PowerVM technologies.

Before you start

▪ **Assumptions:**

- Hardware Management Console (HMC) and Power System are in the rack and correctly cabled
- HMC has already been installed and configured
- These charts address walking through a generic set of steps with no errors.
- Everything in this set of charts is considered basic and addresses one way to do an operation
 - There are multiple ways to configure
 - Nothing is advanced

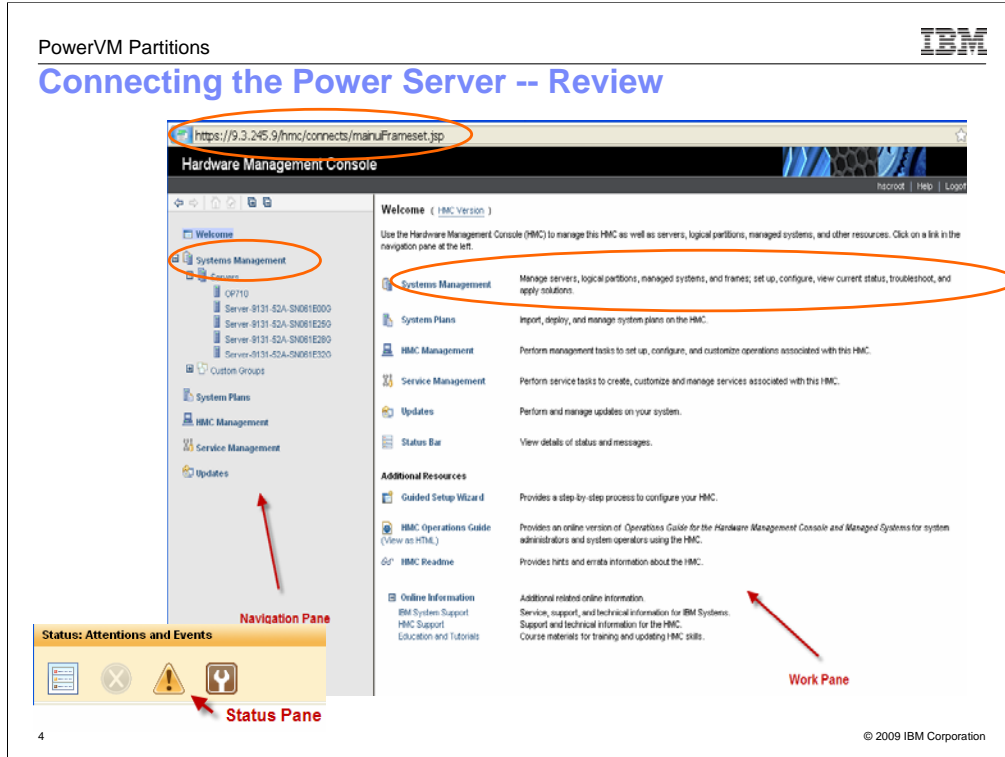
▪ **Have the following ahead of time:**

- Ethernet addresses
 - Virtual IO Server (VIOS)

VIOS Configuration Topics

- Bring the Power Server into the HMC
- Configure Virtual I/O Server (VIOS)
- Partition

- **At the end of this section you will be able to:**
 - Configure and install the VIOS



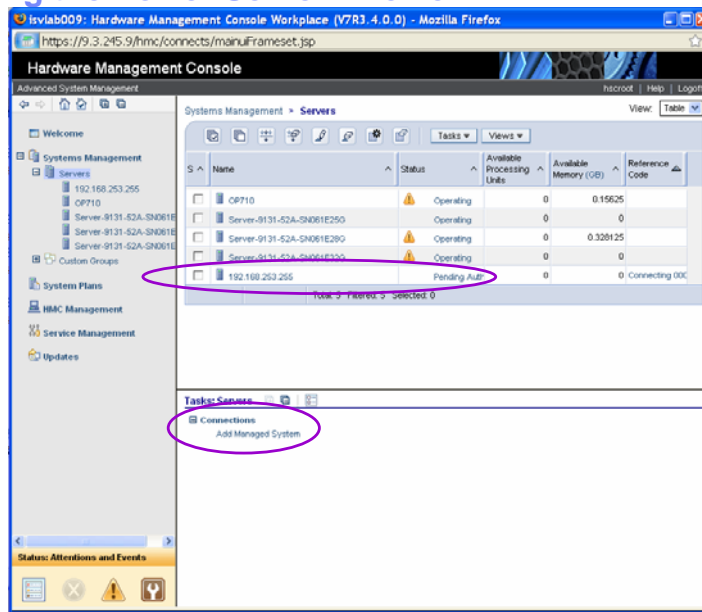
Before you start this set of charts, login to the HMC.

Notice the https at the top of the browser window. It's critical

To configure the power server, select the Systems Management link in the Navigation Pane or in the Work Pane.

Plug in the Power system. Assuming everything is connected correctly, a few minutes after applying power to the Power system, it should appear on the list of systems in the HMC.

Connecting the Power Server - Review



5

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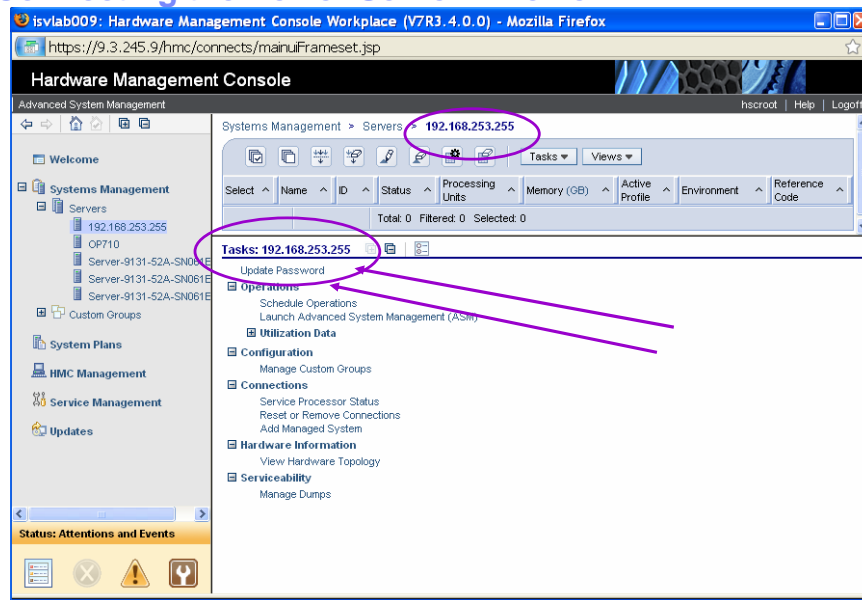
The new system should appear as a new IP address on the list of servers a few minutes after you connect power to the system.

Notice that the system appears in the server list, is identified by its ipaddress and shows its status as Pending Auth.

Select this system. Then part way down the page, you'll see a field that says **Tasks:Servers**.

If the new system doesn't appear, you can choose Add Managed System to add it manually.

Connecting the Power Server – Review



6

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Select the IP address of the new system from the list of servers.

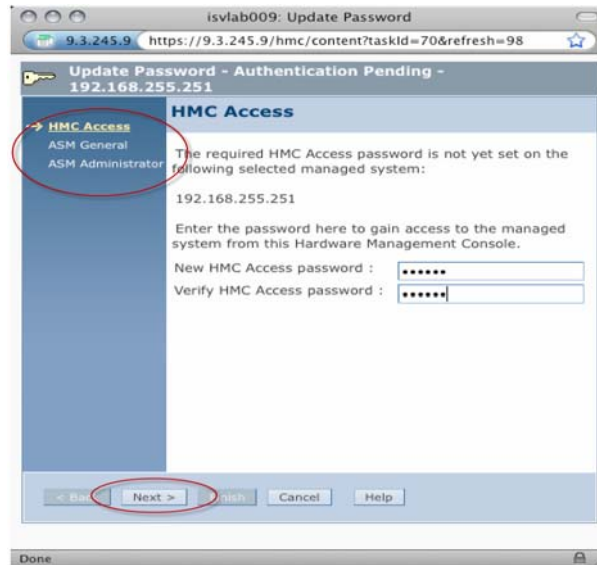
When the new system has been selected, you see its Ethernet address in the task bar and work pane

Notice in the task pane at the bottom, it shows the new server's identification and a list of tasks.

Select Update password

- Note: If the server has ever been configured before, you will need to know hmc access password for the service processor.

Connecting the Power Server -- Review



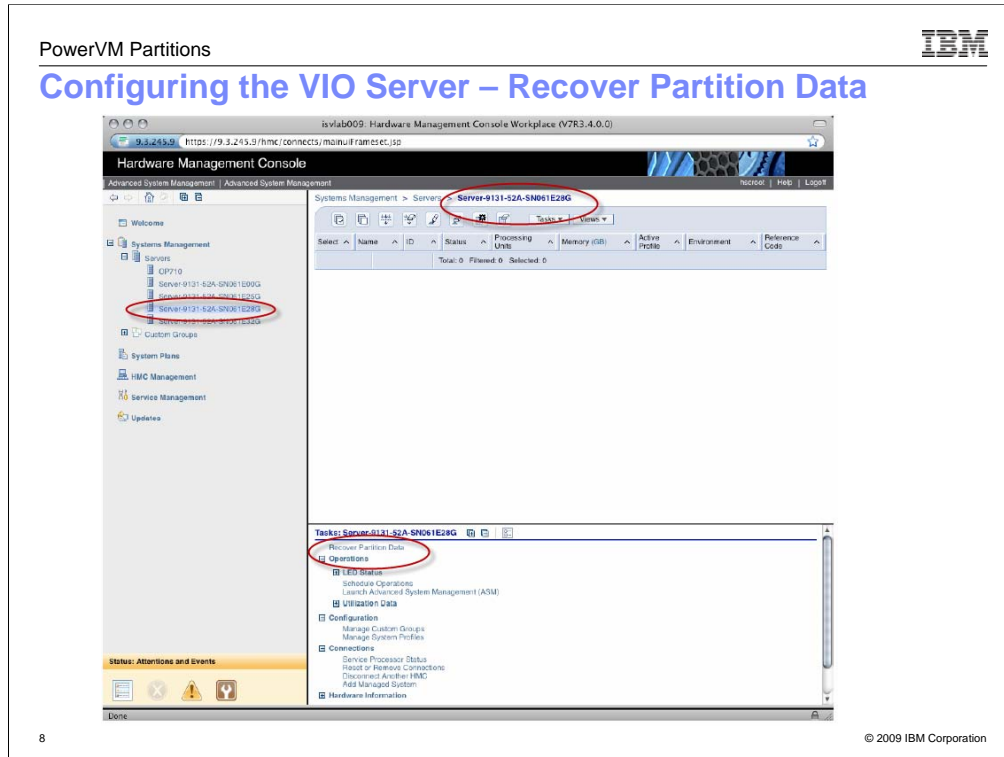
7

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If the server has NEVER been configured before, then set new passwords for:

- HMCaccess –does not have a default. This chart shows the interface if no HMC access password has been set. If one has been previously set, you will need to know.
- Admin – default password is admin
- General – default password is general

Configuring the VIO Server – Recover Partition Data



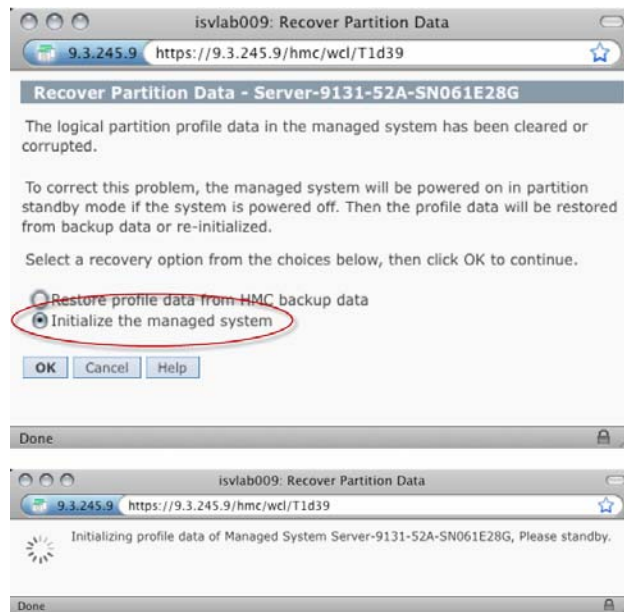
Once the passwords have been set, the server is identified by its serial number rather than its IP address so the name you see here is different than the other slides.

If you select a server in server list (which is not shown here) or in the list in the left hand title bar, you see the name of the server in top panel and a list of operations in the bottom pane.

If this is the first time that you are accessing this machine, you have the opportunity to recover the partition data or reconfigure the system.

You won't see Recover Partition Data unless it's an available option. This example assumes that you are going to totally reinitialize the system.

Initializing the managed system



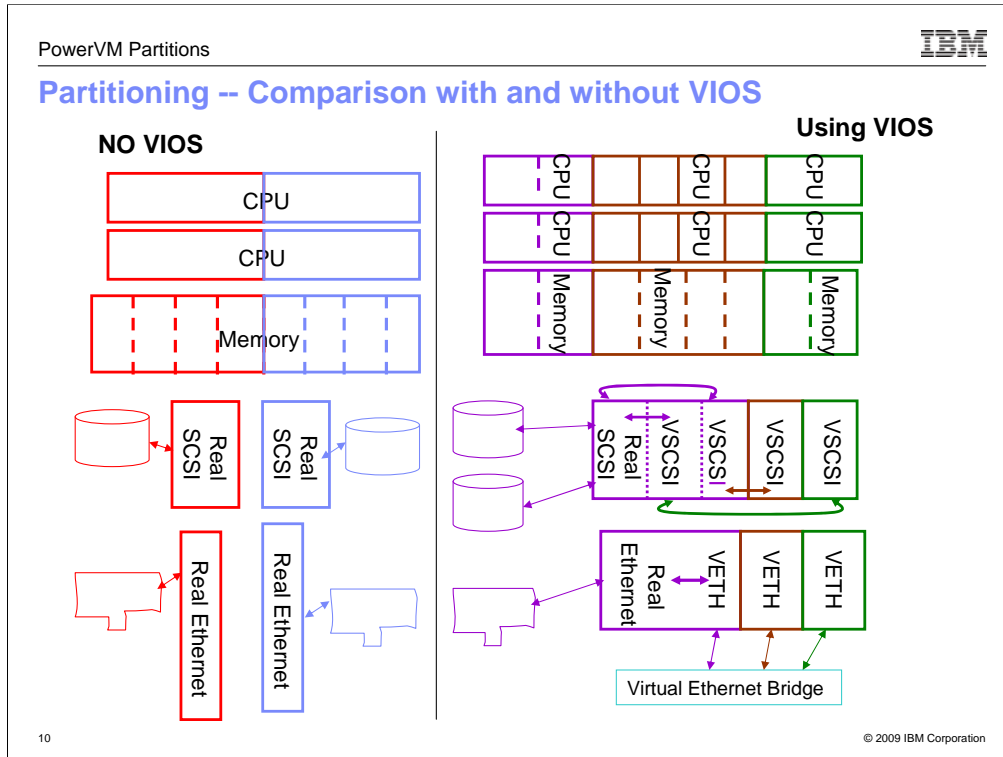
9

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Once you select recover data , you have the option of restoring the system from existing profile data or reinitializing the system.

Note: We'll discuss profiles in the advanced section

This slide shows that we will reinitialize the system (aka wipe the system clean).



What Is Logical Partitioning? *Logical partitioning* is the ability to make a server run as if it were two or more independent servers. When you logically partition a server, you divide the resources on the server into subsets called logical partitions. Each logical partition (LPAR) has a partition ID, which is a whole number used by the system to identify the partition.

You can install software, including an operating system, on a logical partition. The logical partition then runs as an independent logical server with the resources that you have allocated to the logical partition. You can assign resources such as processors, memory, and input/output adapters to a logical partition.

The logical partitions and the server firmware on a server managed by a Hardware Management Console (HMC) are required to manage the system.

Server firmware is code that is stored in system flash memory on the server. It directly controls the resource allocations on the server and the communications between logical partitions on the server.

Before we discuss the mechanics of partitioning, let's discuss an LPAR and a Virtual I/O Server partition. Virtual I/O is a broad term that refers to a set of storage and network virtualization features:

- virtual Ethernet
- shared Ethernet adapter (SEA)
- virtual storage.

Virtual Ethernet. Without requiring additional hardware or external cables, a virtual

Partitioning -- Creating the logical partition

The screenshot shows the IBM Hardware Management Console (HMC) interface. The browser title is 'isvlab009: Hardware Management Console Workplace (V7R3.4.0.0) - Mozilla Firefox'. The URL is 'https://9.3.245.9/hmc/connects/mainuiFrameset.jsp'. The main heading is 'Hardware Management Console'. The left sidebar shows a navigation tree with 'Systems Management' expanded to 'Servers', where 'OP710' is selected. The main content area shows a table of servers with columns 'Select', 'Name', 'ID', 'Status', and 'Processing Units'. The table contains one entry: 'RHEL' with ID '2' and Status 'Not Activated'. Below the table, the 'Tasks: OP710' menu is open, and the 'Create Logical Partition' option is circled in purple. A purple arrow points from the text 'Server name' to the 'OP710' label in the breadcrumb navigation.

Select	Name	ID	Status	Processing Units
<input type="checkbox"/>	RHEL	2	Not Activated	0.9

Tasks: OP710

- Properties
- Operations
- Configuration
 - Create Logical Partition**
 - AIX or Linux
 - VIO Server
 - System Plans
 - View Workload Management Groups
 - Manage Custom Groups
 - Manage Partition Data
 - Manage System Profiles
- Connections
- Hardware Information
- Updates
- Serviceability
- Capacity On Demand (CoD)

Select a server

Select **Create Logical Partition**

Subcategories of the Create Logical Partition button are AIX/Linux and VIO Server. If your system is a system built after fall of 2008, you will also see i/os in this list.

If VIO doesn't show up on list, then the machine is not activated for PowerVM. You need the required code to activate.

You can check if your system is PowerVM enabled here: <http://www-912.ibm.com/pod/pod>. Just enter the machine type and serial number and if a VET code is returned then the system can be used for PowerVM. It still may be necessary to install the code in the system.

Partitioning -- Creating the partition

Configuration Steps

Create Lpar Wizard : Server-9131-52A-SN061E00G
 https://9.3.245.9/hmc/content?taskId=146&refresh=209

Create Partition
 Partition Profile
 Processors
 Processing Settings
 Memory Settings
 I/O
 Virtual Adapters
 Optional Settings
 Profile Summary

This wizard helps you create a new logical partition and a default profile for it. You can use the partition properties or profile properties to make changes after you complete this wizard.

To create a partition, complete the following information:

System name : Server-9131-52A-SN061E00G
 Partition ID : 1
 Partition name : vios-isvlab73

< Back Next > Finish Cancel Help

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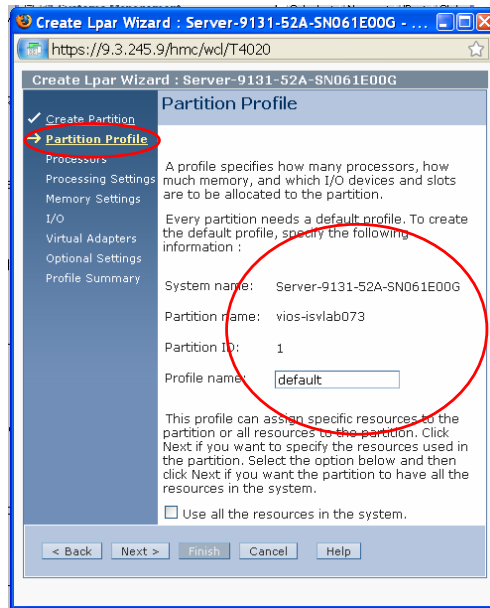
You are shown this popup when you select EITHER

- **AIX or Linux**
- **VIOS**

The pane on the left contains a list of the steps that you will walk through to configure the VIO server

A word about partition names – in our lab we use the scheme of **systemName-OSNAME** as a partition name plus we use the scheme of **isvlab[number]** where number is the last digits of the systems ipaddress. It makes identifying easy. You can create any scheme that you desire.

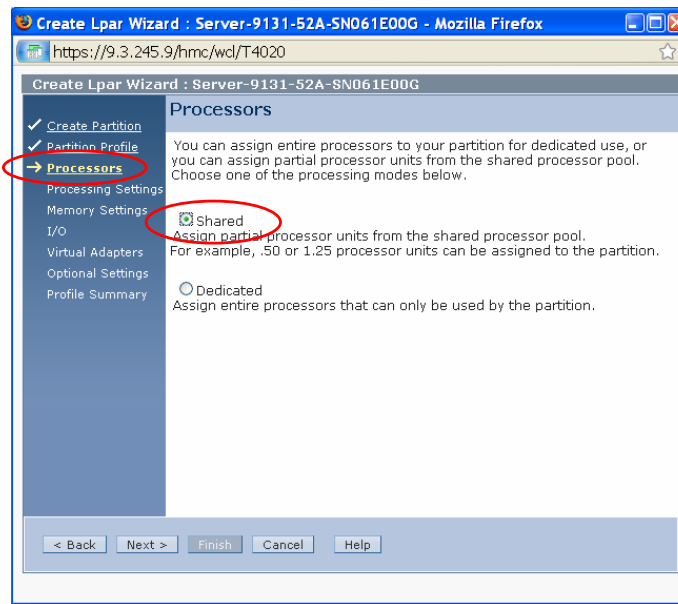
Partitioning - Initializing the partition profile



This chart requires you to enter a profile name. Something meaningful is always appropriate.

Notice that the system name and partition name are already filled in.

Partitioning -- Specifying the processors



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This popup is asking if you want to create static LPARs or micro-partitioned LPARS. For static LPARs you will select Dedicated. To change a static LPAR you will have to reboot the LPAR.

For Dynamic LPARS (DLPARs) and Micro partitioning, you will select shared. Shared gives you more flexibility. Use shared if you plan to use macro partitioning in the future.

This set of charts only illustrates shared processors. There are more charts in a subsequent class that provide explanation about micro partitioning concepts.

You can assign processors to LPARs in 1/10 of a CPU. Thus you can get more LPARs out of relatively limited number of CPUS

The Austin lab chose .2, . 2, .2 and 2,2,2 as it is the smallest number we could select and still get time slices on both processors of the VIOS. This mean that we have requested 2/10 of a CPU. By selecting 2 for the Virtual Processor value, the process gets 1/10 of a process across 2 processors and facilitates threading.

Remember that

1. 1 shared processor == 1 VP
2. >1.0 Shared Processor && <=2.0 shared processor == 2 VP

Partitioning -- Selecting the processing settings

15

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In this popup, you will need to select minimum, desired and maximum for partitioning units and virtual processors. The number of virtual processors gives you time slices on multiple processors. The uncapped field allows you to go above you maximum processing units.

The Austin lab chose .2, . 2, .2 and 2,2,2 as it is the smallest number we could select and still get time slices on both processors of the VIOS. This mean that we have requested 2/10 of a CPU. By selecting 2 for the Virtual Processor value, the process gets 1/10 of a process across 2 processors and facilitates threading.

Minimum, Desired and Maximum values are explained in a subsequent class about micro partitioning.

Partitioning -- Selecting the memory settings

The screenshot shows the 'Create Lpar Wizard' interface for server 'Server-9131-52A-SN061E00G'. The 'Memory Settings' section is highlighted with a red circle. The settings are as follows:

Setting	Value	Unit
Physical Memory	4096	MB
Installed Memory	4000	MB
Current memory available for Partition usage (MB)	4000	MB
Minimum Memory	0	GB
	512	MB
Desired Memory	0	GB
	512	MB
Maximum Memory	0	GB
	512	MB

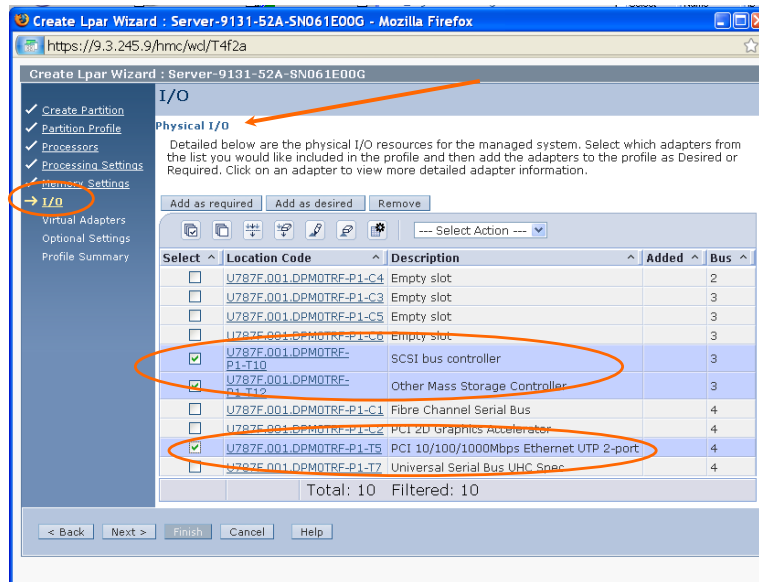
16

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The default value for minimum, desired and maximum is 128. 512 Minimum required for VIOS.

Note: This chart requires you to select GB + MB of storage. The demo chart specifies that .5 GB of storage is required for this VIOS. If you want 1.5, you would enter 1 in the column on the left and 512 in the column on the right.

Partitioning -- Specifying I/O



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The next several charts illustrate how to set up the I/O for the VIOS.

The **Physical I/O popup** lists what's in your system. Notice there are a number of empty slots on this system.

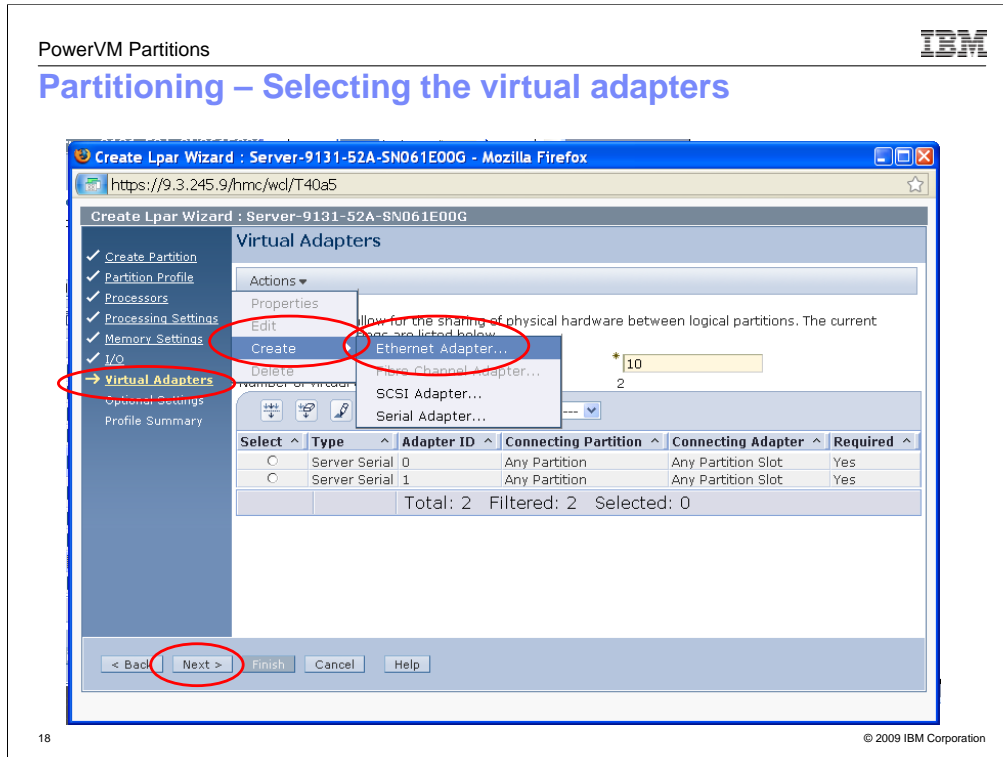
The next several steps configure the SCSI, other Mass Storage Controller and Ethernet Adapter.

The "Other Mass Storage Controller" will be used to map the DVD or CDrom to the various partitions for installation.

Select the desired adapters and then "Add as Required"

No additional popups or menus are used.

Partitioning – Selecting the virtual adapters



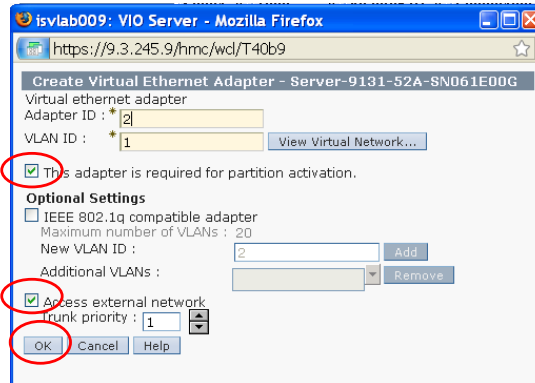
Once you have configured the physical adapters, you need to create the virtual adapters. You need to create 1 virtual Ethernet adapter and 1 virtual SCSI adapter for each LPAR you plan to create.

This set of “cookbook” classes will create one AIX and one Linux partition. So we will create 1 virtual Ethernet and 2 Virtual SCSI (one for each partition). You only need one virtual Ethernet as the virtual Ethernet on the LPARs and the single virtual Ethernet in the VIOS will talk to an Ethernet bridge.

For Ethernet, select *Actions->Create->Ethernet Adapter*.

Note: It's best to give some thought about your requirements here. While the VIOS is reconfigurable, once it's installed, you have to reboot to reconfigure that means that all LPARs attached to it will have to reboot resulting in possibly unexpected down time.

Partitioning – Creating a virtual Ethernet adapter

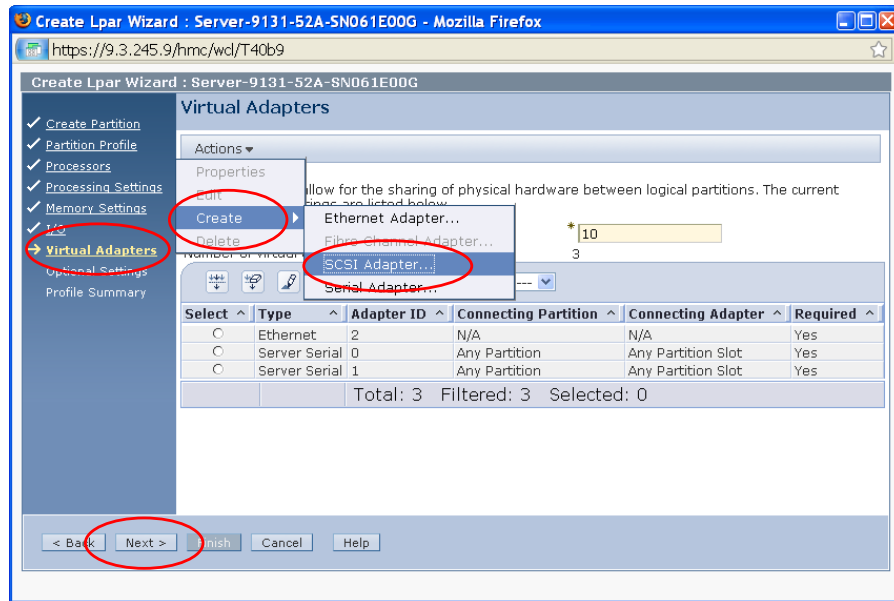


This is the popup to configure the virtual Ethernet adapter. Be sure to select

- The “*This adapter is required for partition activation*” field.
- “Access external network” field as this adapter will actually access the outside network. This will not be checked for other operating system LPARs

Select “OK” to finish with this popup.

Partitioning – Creating a virtual SCSI adapter



20

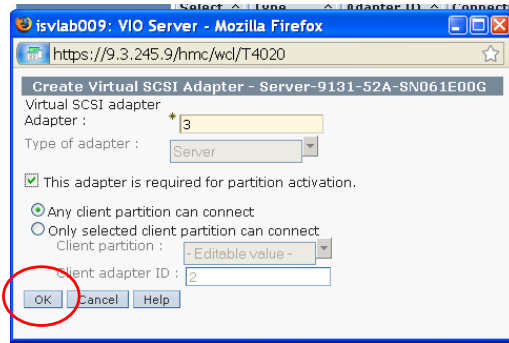
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You will have to enter this menu as many times as want virtual SCSI devices.

If you have one LPAR plus the VIOS, it will be 2. The charts for this class will install a VIOS, AIX and Linux LPAR so we will create 3.

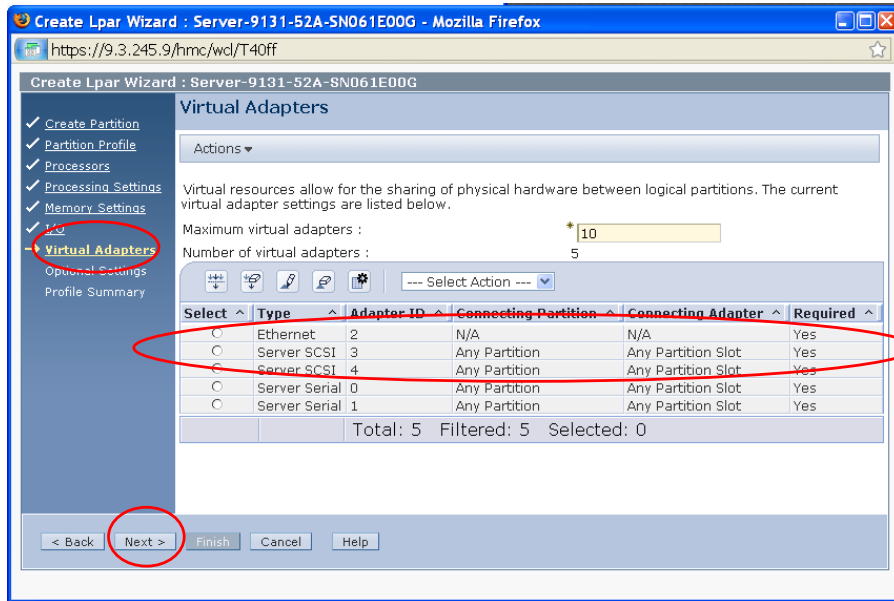
Select *Actions->Create->SCSI adapter*, and then select *Next*.

Partitioning – VIOS -- Creating a virtual SCSI adapter



Take the defaults here. Be sure that “*This adapter is required for partition activation*”. Then select OK.

Partitioning –Creating virtual adapters



Virtual resources allow for the sharing of physical hardware between logical partitions. The current virtual adapter settings are listed below.

Maximum virtual adapters :

Number of virtual adapters :

Select	Type	Adapter ID	Connecting Partition	Connecting Adapter	Required
<input type="radio"/>	Ethernet	2	N/A	N/A	Yes
<input type="radio"/>	Server SCSI	3	Any Partition	Any Partition Slot	Yes
<input type="radio"/>	Server SCSI	4	Any Partition	Any Partition Slot	Yes
<input type="radio"/>	Server Serial	0	Any Partition	Any Partition Slot	Yes
<input type="radio"/>	Server Serial	1	Any Partition	Any Partition Slot	Yes

Total: 5 Filtered: 5 Selected: 0

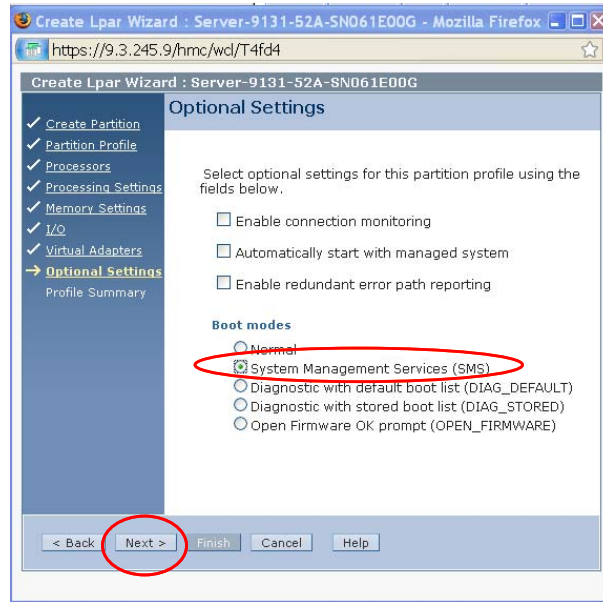
< Back **Next >** Finish Cancel Help

22

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When you come back to this window, you see that an Ethernet and 2 SCSI devices have been added. Select **Next**.

Partitioning – Selecting optional settings



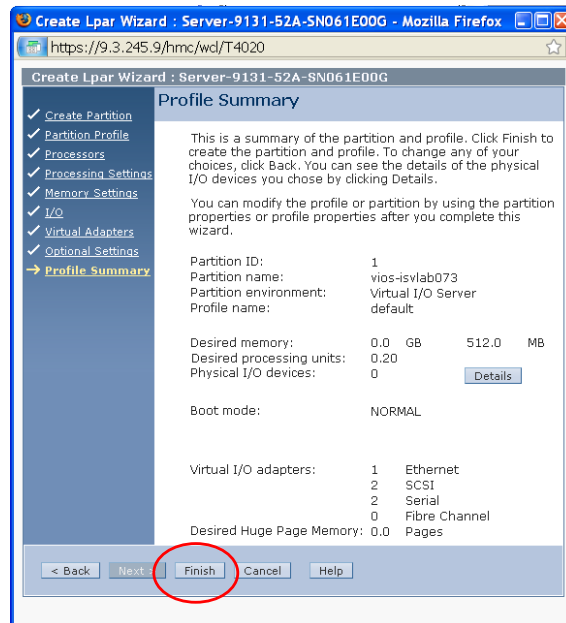
23

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This menu allows you select any optional settings.

Select boot from SMS so it boots from the CD to allow the VIOS to be installed from the CD.

Partitioning – Reviewing the profile summary



This chart provides a summary of your choices. Review it carefully and then select ***Finish***

Partitioning – Install VIO Server

The screenshot displays the IBM Hardware Management Console (HMC) interface within a Mozilla Firefox browser window. The browser title is "isvlab009: Hardware Management Console Workplace (V7R3.4.0.0) - Mozilla Firefox" and the address bar shows "https://9.3.245.9/hmc/connects/mainUIFrameset.jsp". The HMC interface is titled "Hardware Management Console" and includes a navigation pane on the left with sections like "Systems Management", "System Plans", "HMC Management", "Service Management", and "Updates". The main content area shows "Systems Management > Servers > Server-9131-52A-SN061E00G". Below this is a table of servers:

Select	Name	ID	Status	Processing Units	Memory (GB)	Active Profile	Environment	Reference Code
<input checked="" type="checkbox"/>	vios-isvlab	1	Not	0.2	0.5	default	Virtual I/O Server	00000000

Below the table, the "Tasks: vios-isvlab073" menu is expanded, showing options like "Properties", "Change Default Profile", "Operations", "Configuration", "Hardware Information", "Adapters", "Console Window", and "Serviceability". The "Operations" menu is further expanded, and the "Activate" option is circled in red.

At the bottom left of the HMC interface, there is a "Status: Attentions and Events" section with icons for a document, a close button, a warning triangle, and a wrench.

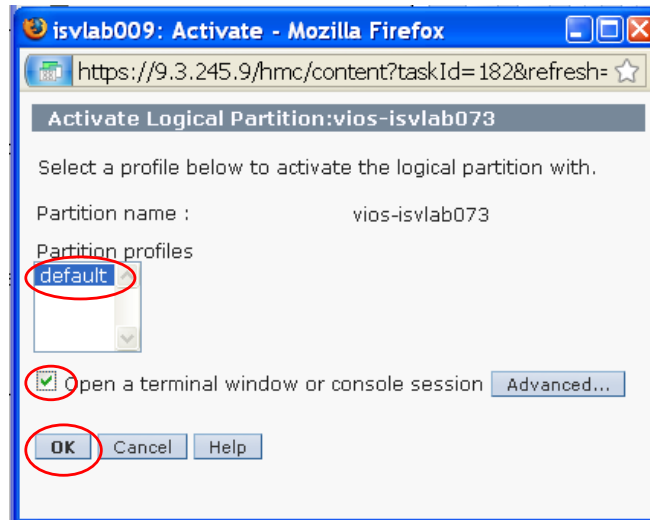
25

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When you arrive back at this menu, select **Activate**.

The next series of slides walk you through the steps of booting the system into the CD and installing VIOS from the CDROM.

Partitioning – Specify the profile



For this example, select default. Note it is the name of the profile we created several slides earlier. You may have a different name here.

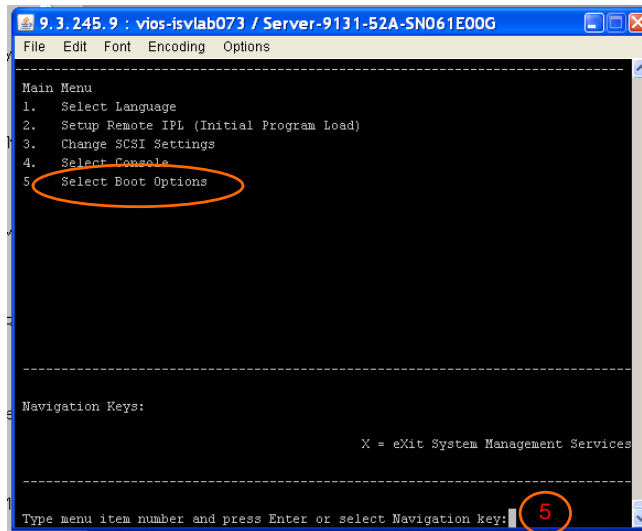
Note the check box for "Open a terminal window or console session" is selected. This will be important in installing the VIOS server software.

Partitioning – Security warning(s)



Accept all the security warnings. There may be multiple.

Partitioning – Select Boot Options

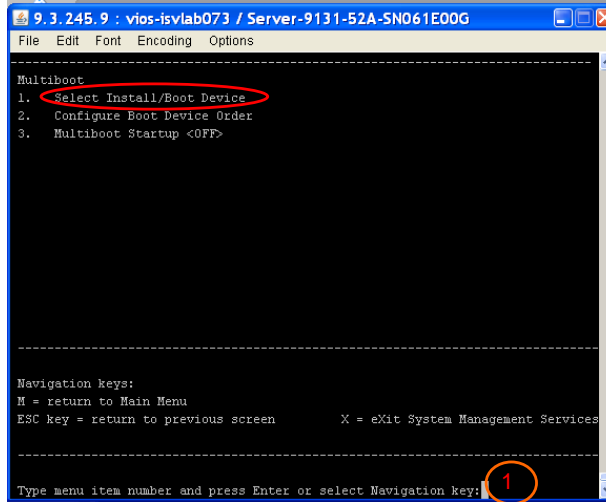


```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options
-----
Main Menu
1. Select Language
2. Setup Remote IPL (Initial Program Load)
3. Change SCSI Settings
4. Select Console
5. Select Boot Options
-----
Navigation Keys:
X = eXit System Management Services
-----
Type menu item number and press Enter or select Navigation key: 5
```

This is the terminal window that you specified several slides back. This starts the process of installing from CDROM.

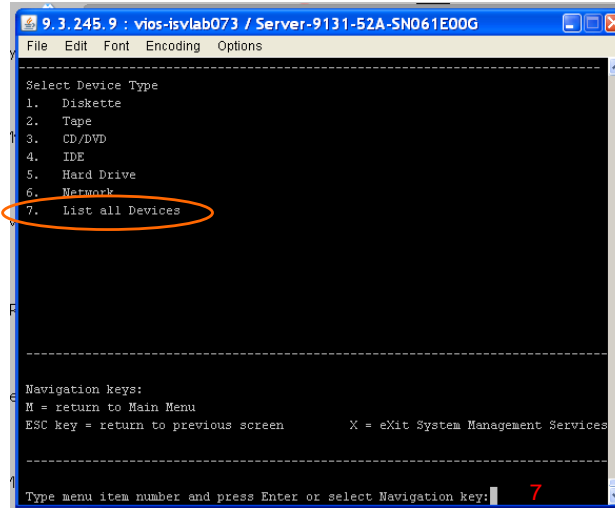
Choose “*Select Boot Options*” so that the HMC boots from CD and the HMC software can be installed. The next several slides illustrate this scenario of events.

Partitioning – Select Boot Device



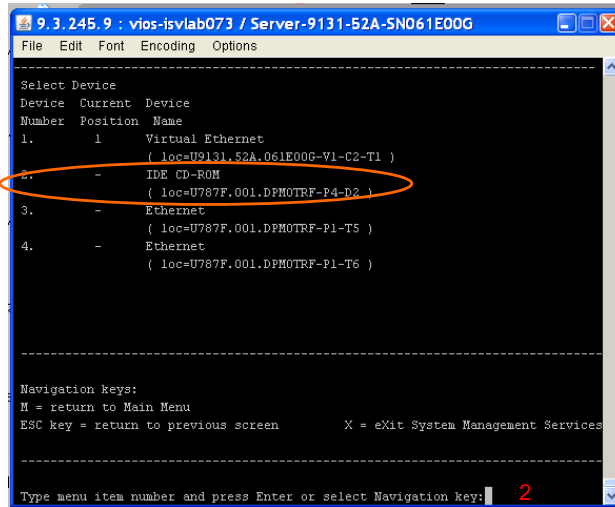
Select Install/Boot Device

Partitioning – List all Devices



List all devices

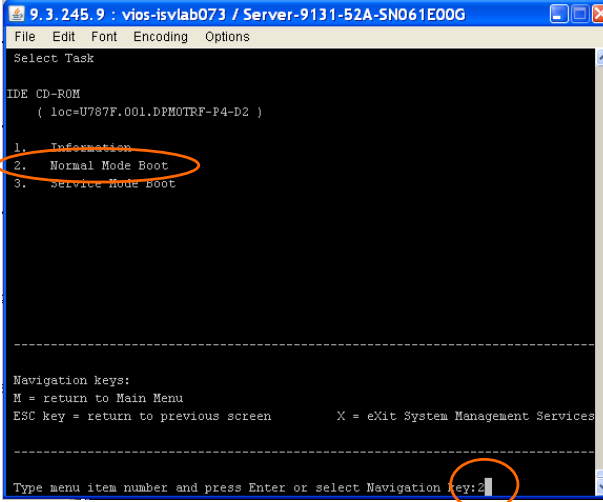
Partitioning – Select CD-ROM



```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options
-----
Select Device
Device Current Device
Number Position Name
1. 1 Virtual Ethernet
   ( loc=U9131.52A.061E00G-V1-C2-T1 )
2. - IDE CD-ROM
   ( loc=U787F.001.DPHOTRF-P4-D2 )
3. - Ethernet
   ( loc=U787F.001.DPHOTRF-P1-T5 )
4. - Ethernet
   ( loc=U787F.001.DPHOTRF-P1-T6 )
-----
Navigation keys:
M = return to Main Menu
ESC key = return to previous screen      X = eXit System Management Services
-----
Type menu item number and press Enter or select Navigation key: 2
```

Choose the CDROM. It may be different device number on your system.
On this system, it is number 2.
It may be a SCSI, USB or IDE – depends on the system.

Partitioning – Normal Boot Mode



The screenshot shows a terminal window titled "9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G". The menu displays the following options:

```
Select Task  
IDE CD-ROM  
( loc=U787F.001.DPMOTRF-P4-D2 )  
1. Information  
2. Normal Mode Boot  
3. Service Mode Boot
```

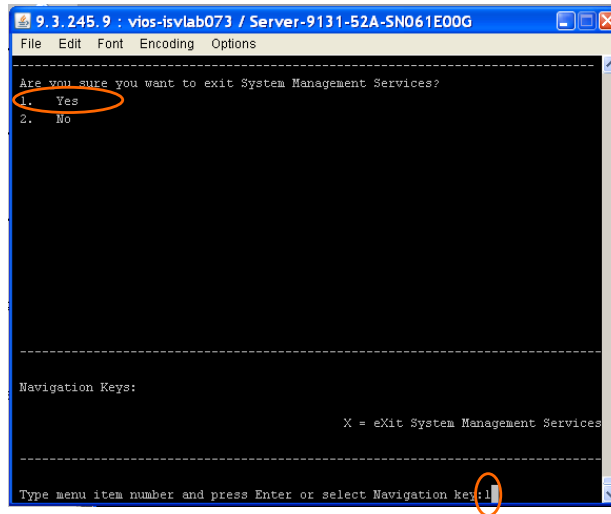
Below the menu, navigation keys are listed:

```
-----  
Navigation keys:  
M = return to Main Menu  
ESC key = return to previous screen      X = eXit System Management Services  
-----
```

At the bottom, the prompt reads "Type menu item number and press Enter or select Navigation key: 2", with the number "2" circled in red.

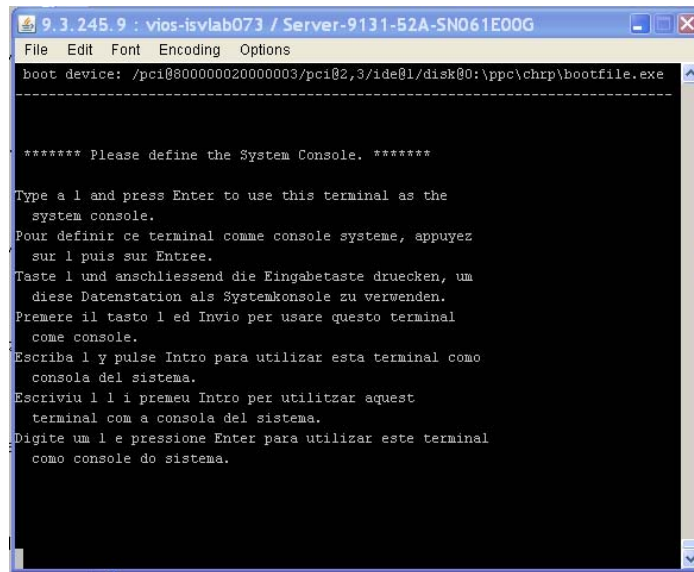
When presented with this menu, select Normal Boot Mode. For this system, it is number 2.

Partitioning – Obligatory confirmation



Here's the obligatory confirmation message. Be sure to select **“yes”** or number 1

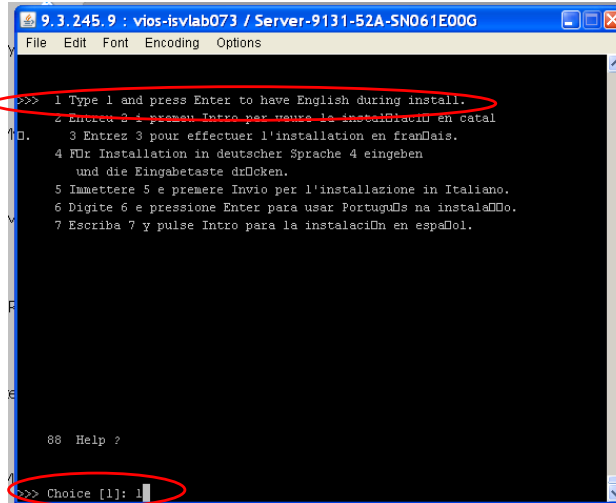
Partitioning – Select the Console

A screenshot of a terminal window titled "9.3.245.9 : vios-isylab073 / Server-9131-52A-SNO61E00G". The terminal displays a menu for selecting the system console. The menu text is as follows:

```
boot device: /pci@800000020000003/pci@2,3/ide@1/disk@0:\ppc\chrp\bootfile.exe  
-----  
***** Please define the System Console. *****  
  
Type a 1 and press Enter to use this terminal as the  
system console.  
Pour definir ce terminal comme console systeme, appuyez  
sur 1 puis sur Entree.  
Taste 1 und anschliessend die Eingabetaste druecken, um  
diese Datenstation als Systemkonsole zu verwenden.  
Premere il tasto 1 ed Invio per usare questo terminal  
come console.  
Escriba 1 y pulse Intro para utilizar esta terminal como  
consola del sistema.  
Escriviu 1 i premeu Intro per utilitzar aquest  
terminal com a consola del sistema.  
Digite um 1 e pressione Enter para utilizar este terminal  
como console do sistema.
```

This menu is used to select the console.
Type 1 and press the Enter key.

Partitioning – Select the language



```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-5N061E00G
File Edit Font Encoding Options
>>> 1 Type 1 and press Enter to have English during install.
    2 Entreu 2 i premeu Intro per veure la instal·lació en catal
    3 Entrez 3 pour effectuer l'installation en franDais.
    4 RDr Installation in deutscher Sprache 4 eingeben
      und die Eingabetaste drücken.
    5 Immettere 5 e premere Invio per l'installazione in Italiano.
    6 Digite 6 e pressione Enter para usar Português na instalaDdo.
    7 Escriba 7 y pulse Intro para la instalaciDn en espaDol.

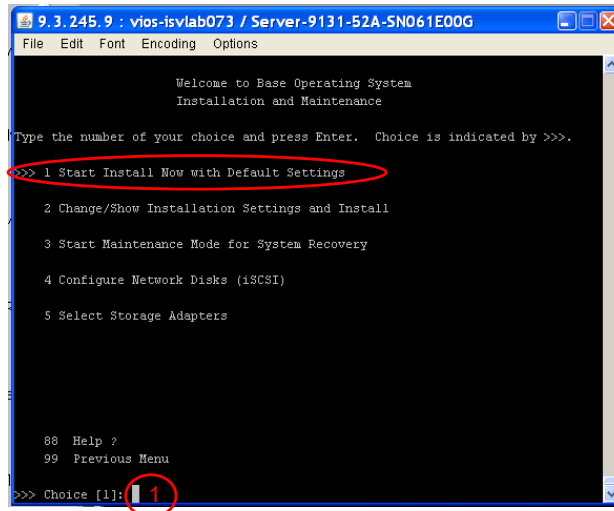
88 Help ?

>>> Choice [1]:
```

This menu is used to select the language for install.

You may go through several wait windows before you arrive here.

Partitioning – Select Start Install



```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options

Welcome to Base Operating System
Installation and Maintenance

Type the number of your choice and press Enter. Choice is indicated by >>>.

>>> 1 Start Install Now with Default Settings
    2 Change/Show Installation Settings and Install
    3 Start Maintenance Mode for System Recovery
    4 Configure Network Disks (iSCSI)
    5 Select Storage Adapters

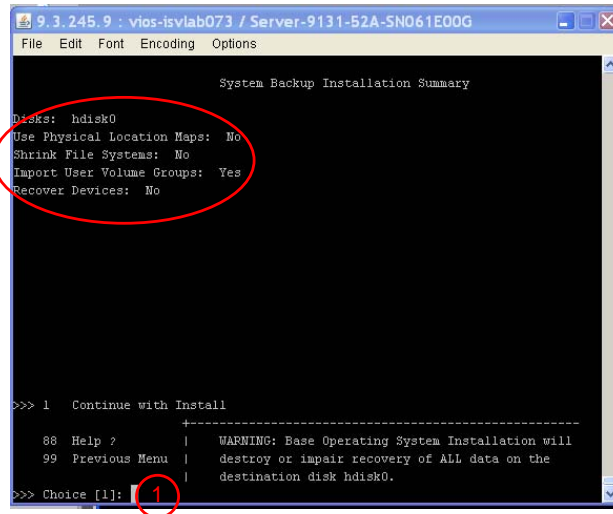
88 Help ?
99 Previous Menu

>>> Choice [1]: 1
```

Now you get to **REALLY** start the install.

You can select 1 to install with default settings or 2 to verify that they settings are what you want.

Partitioning – Select Continue with Install



```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options

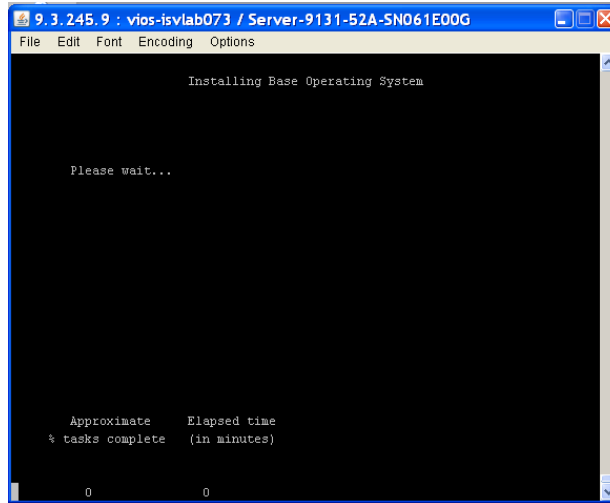
System Backup Installation Summary
Disks: hdisk0
Use Physical Location Maps: No
Shrink File Systems: No
Import User Volume Groups: Yes
Recover Devices: No

>>> 1 Continue with Install
-----
88 Help ? | WARNING: Base Operating System Installation will
99 Previous Menu | destroy or impair recovery of ALL data on the
                | destination disk hdisk0.
>>> Choice [1]: 1
```

This is your last chance to verify the configuration. Once you're certain of your configuration, select "1" for "Continue with the Install".

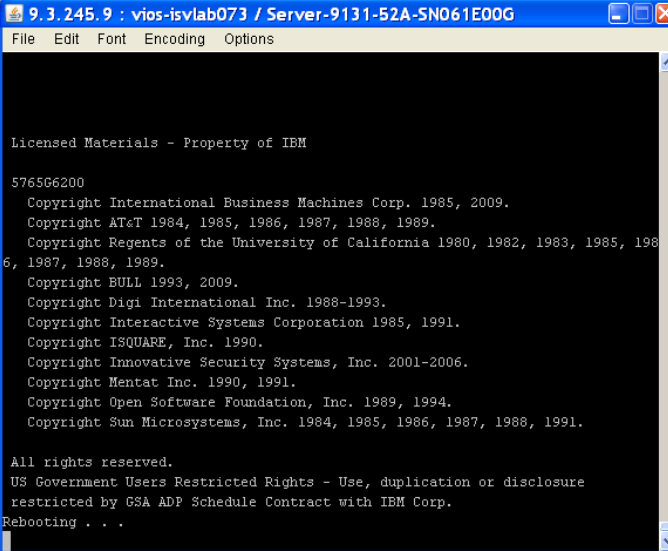
You can also select "99" to back up and change any values.

Partitioning – Wait menu



Now wait

Partitioning – Rebooting Menu



The screenshot shows a terminal window with a blue title bar containing the text "9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G". Below the title bar is a menu bar with "File", "Edit", "Font", "Encoding", and "Options". The main area of the terminal is black with white text. The text includes a copyright notice for IBM, a list of various companies and their copyright years, and a "Rebooting . . ." message at the bottom.

```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options

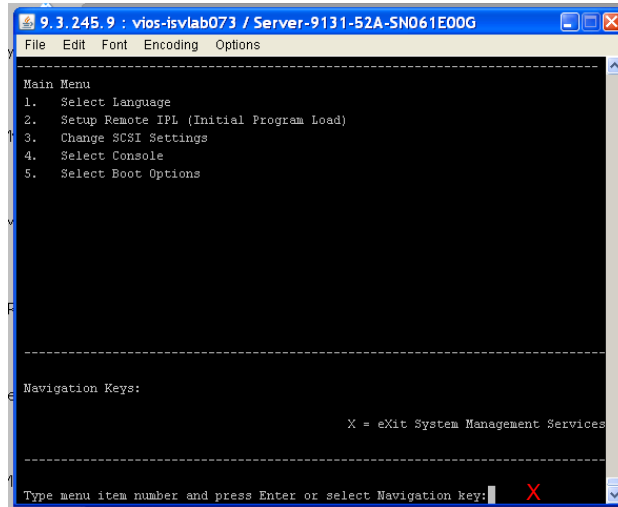
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Rebooting . . .
```

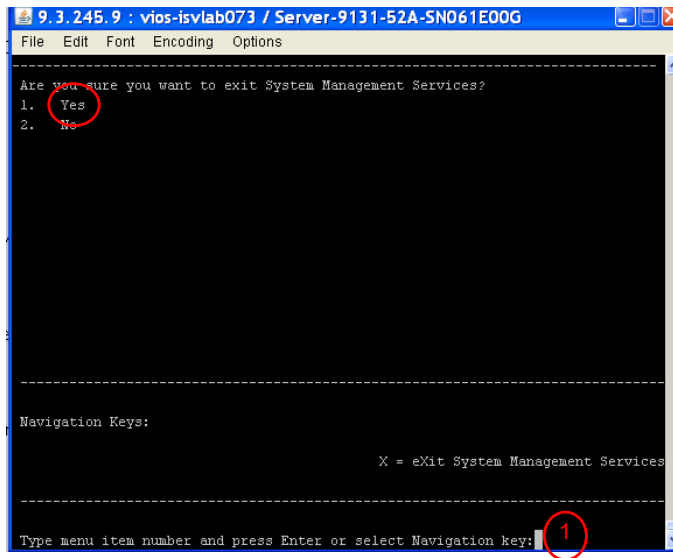
Eventually you get to the rebooting menu.

Partitioning – Rebooting after install



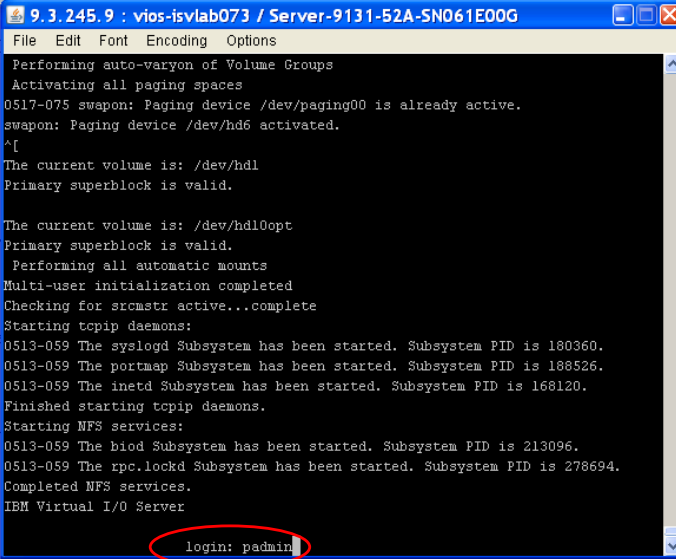
When you reach this menu, select “**X**” for exit System Management Services

Partitioning – Confirmation menu



Obligatory confirmation menu.

Partitioning – Login with administrator id

A screenshot of a terminal window titled "9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G". The terminal displays various system boot messages, including volume group activation, paging device status, and the starting of several daemons (syslogd, portmap, inetd, biod, rpc.lockd). At the bottom of the terminal, the text "login: padmin" is displayed, with "padmin" circled in red. The terminal window has a menu bar with "File", "Edit", "Font", "Encoding", and "Options".

```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options
Performing auto-varvon of Volume Groups
Activating all paging spaces
0517-075 swapon: Paging device /dev/paging00 is already active.
swapon: Paging device /dev/hd6 activated.
^[
The current volume is: /dev/hdl
Primary superblock is valid.

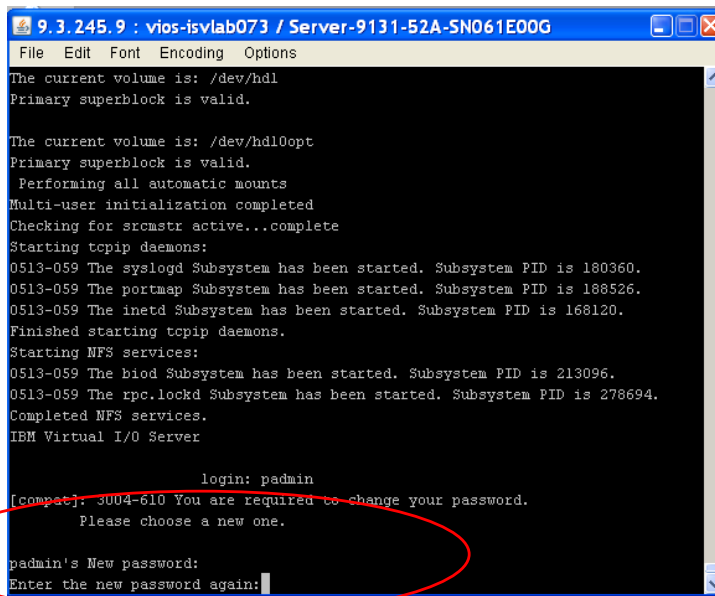
The current volume is: /dev/hdl0opt
Primary superblock is valid.
Performing all automatic mounts
Multi-user initialization completed
Checking for srcmstr active...complete
Starting tcpip daemons:
0513-059 The syslogd Subsystem has been started. Subsystem PID is 180360.
0513-059 The portmap Subsystem has been started. Subsystem PID is 188526.
0513-059 The inetd Subsystem has been started. Subsystem PID is 168120.
Finished starting tcpip daemons.
Starting NFS services:
0513-059 The biod Subsystem has been started. Subsystem PID is 213096.
0513-059 The rpc.lockd Subsystem has been started. Subsystem PID is 278694.
Completed NFS services.
IBM Virtual I/O Server

login: padmin
```

When you reach the login window, use the *padmin* id. This is the default administrator id.

You may have changed it or may want to change it.

Partitioning – Set Password



```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options
The current volume is: /dev/hdl
Primary superblock is valid.

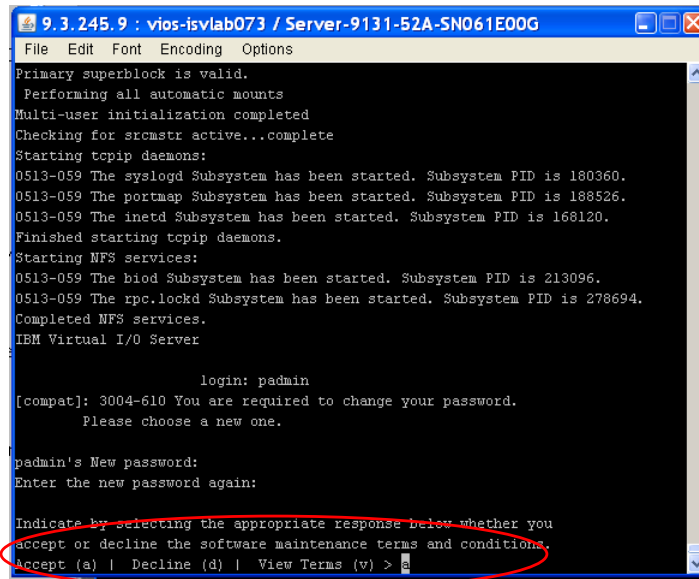
The current volume is: /dev/hdl0opt
Primary superblock is valid.
Performing all automatic mounts
Multi-user initialization completed
Checking for srcmstr active...complete
Starting tcpip daemons:
0513-059 The syslogd Subsystem has been started. Subsystem PID is 180360.
0513-059 The portmap Subsystem has been started. Subsystem PID is 188526.
0513-059 The inetd Subsystem has been started. Subsystem PID is 168120.
Finished starting tcpip daemons.
Starting NFS services:
0513-059 The biod Subsystem has been started. Subsystem PID is 213096.
0513-059 The rpc.lockd Subsystem has been started. Subsystem PID is 278694.
Completed NFS services.
IBM Virtual I/O Server

login: padmin
[compt]: 3004-610 You are required to change your password.
Please choose a new one.

padmin's New password:
Enter the new password again: 
```

Here you are forced to set the *padmin* (administrator) password.

Partitioning – Accept the license

A terminal window titled "9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G" with a menu bar (File, Edit, Font, Encoding, Options). The terminal output shows system boot logs: "Primary superblock is valid.", "Performing all automatic mounts", "Multi-user initialization completed", "Checking for srcmstr active...complete", "Starting tcpip daemons:", "0513-059 The syslogd Subsystem has been started. Subsystem PID is 180360.", "0513-059 The portmap Subsystem has been started. Subsystem PID is 188526.", "0513-059 The inetd Subsystem has been started. Subsystem PID is 168120.", "Finished starting tcpip daemons.", "Starting NFS services:", "0513-059 The biod Subsystem has been started. Subsystem PID is 213096.", "0513-059 The rpc.lockd Subsystem has been started. Subsystem PID is 278694.", "Completed NFS services.", "IBM Virtual I/O Server", "login: padmin", "[compat]: 3004-610 You are required to change your password. Please choose a new one.", "padmin's New password:", "Enter the new password again:", "Indicate by selecting the appropriate response below whether you accept or decline the software maintenance terms and conditions.", "Accept (a) | Decline (d) | View Terms (v) > a" (The last line is circled in red).

```
9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options
Primary superblock is valid.
Performing all automatic mounts
Multi-user initialization completed
Checking for srcmstr active...complete
Starting tcpip daemons:
0513-059 The syslogd Subsystem has been started. Subsystem PID is 180360.
0513-059 The portmap Subsystem has been started. Subsystem PID is 188526.
0513-059 The inetd Subsystem has been started. Subsystem PID is 168120.
Finished starting tcpip daemons.
Starting NFS services:
0513-059 The biod Subsystem has been started. Subsystem PID is 213096.
0513-059 The rpc.lockd Subsystem has been started. Subsystem PID is 278694.
Completed NFS services.
IBM Virtual I/O Server

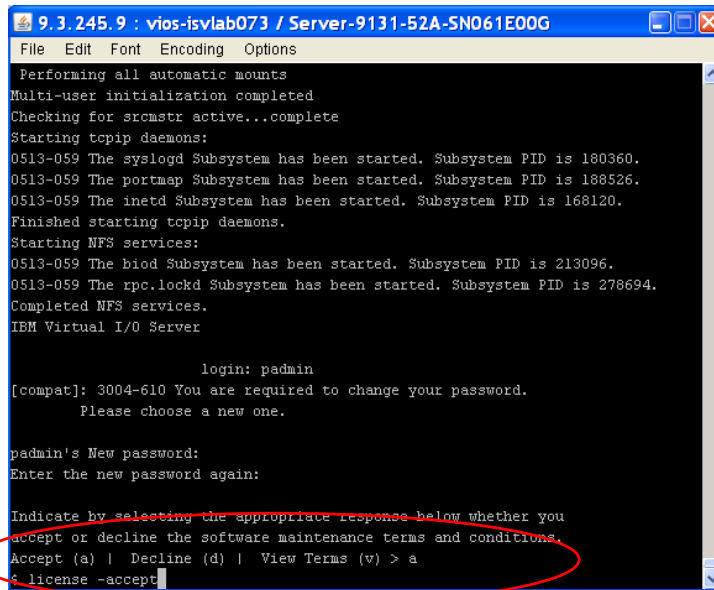
login: padmin
[compat]: 3004-610 You are required to change your password.
Please choose a new one.

padmin's New password:
Enter the new password again:

Indicate by selecting the appropriate response below whether you
accept or decline the software maintenance terms and conditions.
Accept (a) | Decline (d) | View Terms (v) > a
```

Accept the license

Partitioning – Accept the license -- again

A terminal window titled "9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G" displays the following text:

```
File Edit Font Encoding Options
Performing all automatic mounts
Multi-user initialization completed
Checking for srcmstr active...complete
Starting tcpip daemons:
0513-059 The syslogd Subsystem has been started. Subsystem PID is 180360.
0513-059 The portmap Subsystem has been started. Subsystem PID is 188526.
0513-059 The inetd Subsystem has been started. Subsystem PID is 168120.
Finished starting tcpip daemons.
Starting NFS services:
0513-059 The biod Subsystem has been started. Subsystem PID is 213096.
0513-059 The rpc.lockd Subsystem has been started. Subsystem PID is 278694.
Completed NFS services.
IBM Virtual I/O Server

login: padmin
[compat]: 3004-610 You are required to change your password.
Please choose a new one.

padmin's New password:
Enter the new password again:

Indicate by selecting the appropriate response below whether you
accept or decline the software maintenance terms and conditions.
Accept (a) | Decline (d) | View Terms (v) > a
# license -accept
```

Accept the license again.

This time you have to type *"license -accept"*

Partitioning – Configure Ethernet network setup

```

9.3.245.9 : vios-isvlab073 / Server-9131-52A-SN061E00G
File Edit Font Encoding Options
$ lsdev -virtual
name      status      description
ent2      Available   Virtual I/O Ethernet Adapter (1-lan)
vhost0    Available   Virtual SCSI Server Adapter
vhost1    Available   Virtual SCSI Server Adapter
vsa0      Available   LPAR Virtual Serial Adapter
$ mkvdev -sea ent0 -vadapter ent2 -default ent2 -defaultid 1
ent3 Available
ent3
ent3
$

```

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After license accepted, you come up in a shell.

Run *lsdev -virtual*

This command lists all the virtual devices.

Documentation for *lsdev* command is here:

<http://publib.boulder.ibm.com/infocenter/pseries/v5r3/index.jsp?topic=/com.ibm.aix.ccmds/doc/aixcmds3/lsdev.htm>

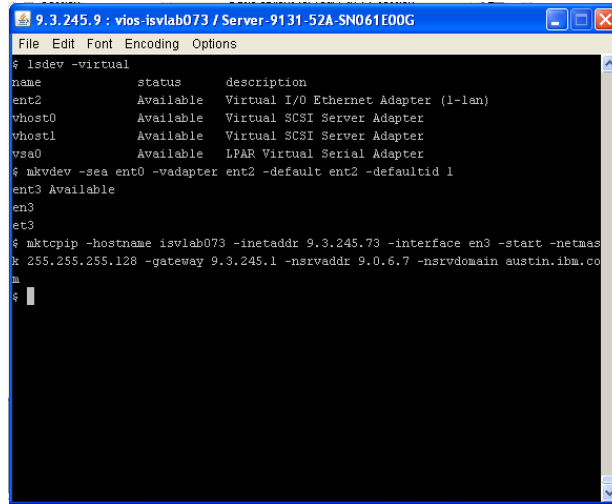
Run the **mkvdev** command to make a shared Ethernet adapter. The example command in the screen shot uses *ent0* because first physical Ethernet and *ent2* because it was the first virtual Ethernet. The result of this command is a virtual adapter called *ent3*. The manual page for **mkvdev** is here:

<http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/index.jsp?topic=/iphcg/mkvdev.htm>

Mkvdev connect the *ent2* virtual adapter to communicate with the Ethernet bridge.

Partitioning – mktcpip

```
mktcpip -hostname myhost -inetaddr xxx.xxx.xxx.xxx -interface en0 -start -netmask  
xxx.xxx.xxx.xxx -gateway xxx.xxx.xxx.xxx -nsrvaddr xxx.xxx.xxx.xxx -nsrvdomain xxx.xxx.com
```

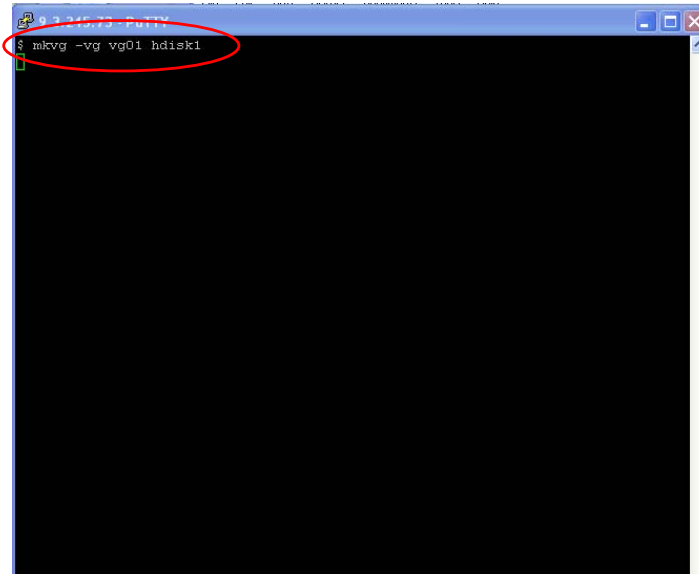


```
9.3.245.9 : vios-isyab073 / Server-9131-52A-SN061E00G  
File Edit Font Encoding Options  
$ lsdev -virtual  
name          status      description  
ent2          Available  Virtual I/O Ethernet Adapter (1-lan)  
vhost0        Available  Virtual SCSI Server Adapter  
vhost1        Available  Virtual SCSI Server Adapter  
vsa0          Available  LPAR Virtual Serial Adapter  
$ mktdev -sea ent0 -vadapter ent2 -default ent2 -defaultid 1  
ent3 Available  
ent3  
ent3  
$ mktcpip -hostname isyab073 -inetaddr 9.3.245.73 -interface en3 -start -netmas  
k 255.255.255.128 -gateway 9.3.245.1 -nsrvaddr 9.0.6.7 -nsrvdomain austin.ibm.co  
m  
$
```

mktcpip sets up the network for the vios to access the outside world from the public network.

This is where you'll enter the ip address and other network settings you want the VIOS to use. The `-interface` flag is set to use the new virtual adapter we just created.

Partitioning – VIOS -- Make a volume group

A terminal window titled "s.p.21573 - PTTY" is shown. The command "\$ mkvg -vg vg01 hdisk1" is entered and highlighted with a red oval. The rest of the terminal window is black.

```
$ mkvg -vg vg01 hdisk1
```

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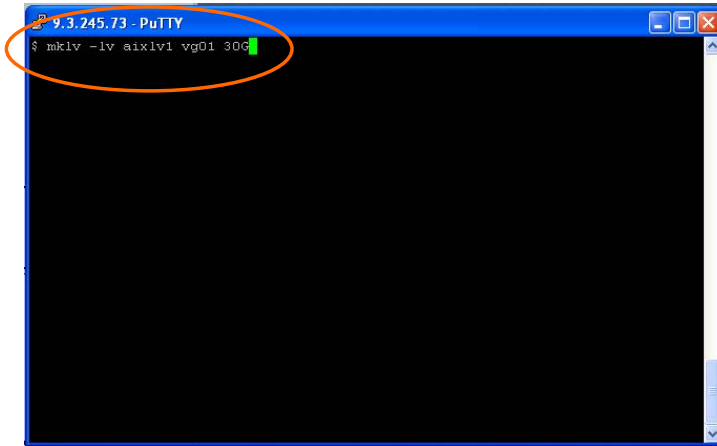
Each of the LPARS will have its own logical disk partition. To create a logical partition, you must first make a physical partition.

First you must make a volume group as the create a logical volume command requires a volume group. One or more disks can be included I the volume group.

The **mkvg** command creates a new volume group using the physical volumes represented by the *PhysicalVolume* parameter. After creating the volume group, the **mkvg** command automatically activates the new volume group using the **activatevg** command.

The command on this slide creates a volume group named vg01 on hdisk1.

Partitioning -- Making logical volumes backing devices for virtual disks



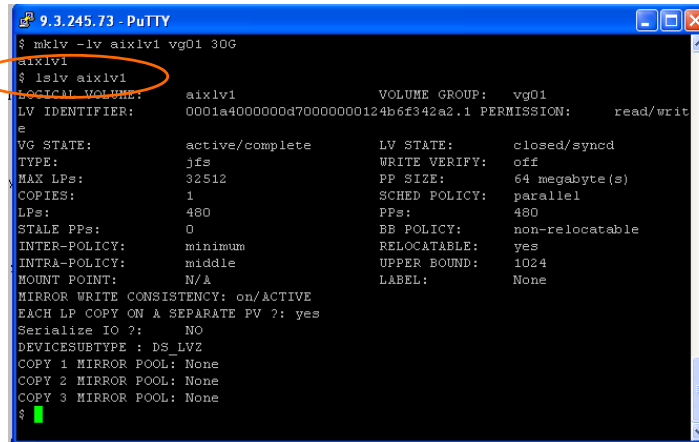
```
9.3.245.73 - PuTTY
$ mkiv -lv aixlv1 vg01 30G
```

Now you must create a logical volume.
You can specify the size in MB or GB.

This command makes a logical volume named aixlv1 (logical volume 1) in volume group vg01

The **mkiv** command creates a new logical volume within the *VolumeGroup*. If you specify one or more physical volumes with the *PhysicalVolume* parameter, only those physical volumes are available for allocating physical partitions; otherwise, all the physical volumes within the volume group are available.

Partitioning – Verify the newly created logical device



```

9.3.245.73 - PuTTY
$ mklv -lv aixlv1 vg01 30G
aixlv1
$ lslv aixlv1
LOGICAL_VOLUME:      aixlv1          VOLUME GROUP:      vg01
LV IDENTIFIER:      0001a4000000d70000000124b6f342a2.1  PERMISSION:      read/writ
e
VG STATE:           active/complete    LV STATE:          closed/syncd
TYPE:               jfs                WRITE VERIFY:      off
MAX LPs:            32512                PP SIZE:           64 megabyte(s)
COPIES:             1                  SCHED POLICY:      parallel
LPs:                480                  PPs:               480
STALE PPs:          0                  BB POLICY:         non-relocatable
INTRA-POLICY:       minimum             RELOCATABLE:       yes
INTRA-POLICY:       middle              UPPER BOUND:       1024
MOUNT POINT:        N/A                  LABEL:             None
MIRROR WRITE CONSISTENCY: on/ACTIVE
EACH LP COPY ON A SEPARATE PV?: yes
Serialize IO?:      NO
DEVICESUBTYPE :    DS_LVZ
COPY 1 MIRROR POOL: None
COPY 2 MIRROR POOL: None
COPY 3 MIRROR POOL: None
$

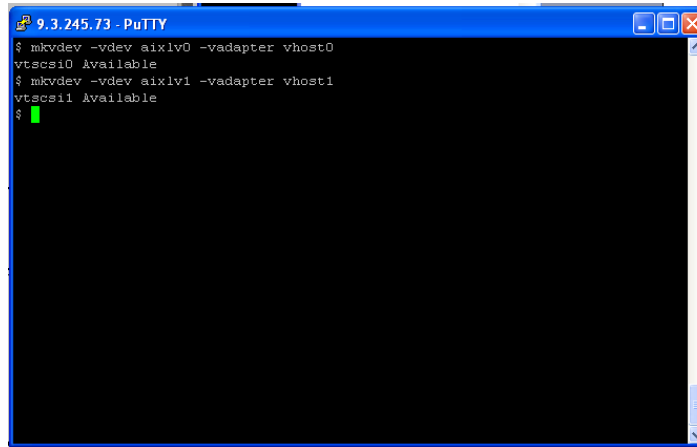
```

Finally list information about the newly create logical volume

The **lslv** command displays the characteristics and status of the *LogicalVolume* or lists the logical volume allocation map for the physical partitions on the *PhysicalVolume* in which the logical volume is located. The logical volume can be a name or identifier.

We will need 2 logical volumes – one for vhost0- and one for vhost 1—that is – the AIX partition and the Linux partition to be discussed in subsequent cookbook classes.

Make our virtual SCSI mappings – mkvdev --



```
9.3.245.73 - PuTTY
$ mkvdev -vdev aixlv0 -vadapter vhost0
vtscsi0 Available
$ mkvdev -vdev aixlv1 -vadapter vhost1
vtscsi1 Available
$
```

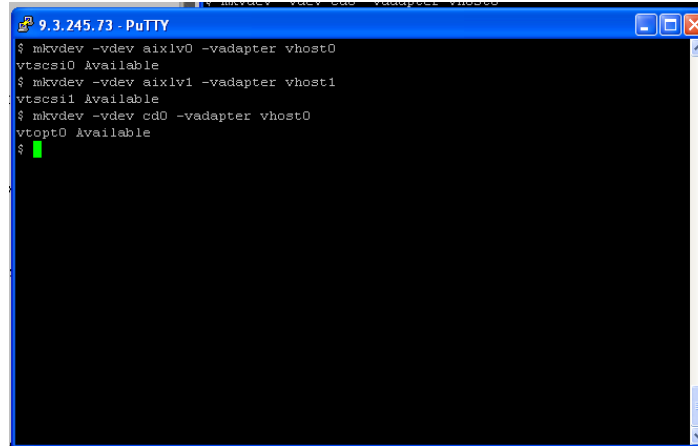
Mkvdev -vdev (name of the logical volume –vadapter (virtual adapter to attach to) vhost0

Then returns vtscsi0 – making virtual target device

This procedure will be repeated to create vtscsi1

Then, run "*mkvdev -vdev cd0 -vadapter vhost1*" to map the CD to vhost1 as well. Eventually we will run this again to map it to the other vhost to install the other LPAR

Make our virtual SCSI mappings – mkvdev --



```
9.3.245.73 - PuTTY
$ mkvdev -vdev aixlv0 -vadapter vhost0
vtscsi0 Available
$ mkvdev -vdev aixlv1 -vadapter vhost1
vtscsi1 Available
$ mkvdev -vdev cd0 -vadapter vhost0
vtopt0 Available
$
```

Arbitrarily attaching to one of the virtual scsi adapters.

Vhost 0 has virtual scsi AND cdrom

Now we can return to the HMC and create some operating system LPARs.

References

- Virtual I/O Server
<http://www14.software.ibm.com/webapp/set2/sas/f/vios/documentation/home.html>
- Advanced Power Virtualization (PowerVM) Best Practices
<http://www.redbooks.ibm.com/abstracts/redp4194.html>
- http://www-05.ibm.com/cz/events/power6/pdf/Milan_Mondek_POWER6-virtualization.pdf

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