

ATS Power Systems Accelerator Clinic

Lab 2 Power Systems BladeCenter Advanced

Advanced Virtualization Topics on the POWER7 Blade Servers

November 2010



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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-alone 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-alone 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 /	LPAR Name /	LPAR IP Address /	Team
·		Purpose	Hostname	SMP	Number
1	BCH1 JS12 1	172.25.254.21	N/A	N/A	
		NIM SERVER			
2/3	BCH1 JS43 2	172.25.254.22 - IVM	BCH1 2 LP1	172.25.254.50 - AIX	
			BCH1_2_LP2	172.25.254.51 - RedHat	
			BCH1_2_LP3	172.25.254.52 - SUSE	
			BCH1_2_LP4	172.25.254.53 - IBM i	
4	BCH1_PS701_4	172.25.254.23 - IVM	BCH1_4_LP1	172.25.254.54 - AIX	1
			BCH1_4_LP2	172.25.254.55 - RedHat	
			BCH1_4_LP3	172.25.254.56 - SUSE	
			BCH1_4_LP4	172.25.254.57 - IBM i	
5	BCH1_PS700_5	172.25.254.24 - IVM	BCH1_5_LP1	172.25.254.58 - AIX	2
			BCH1_5_LP2	172.25.254.59 - RedHat	
			BCH1_5_LP3	172.25.254.60 - SUSE	
			BCH1_5_LP4	172.25.254.61 - IBM I	
6	BCH1_PS701_6	172.25.254.25 - IVM	BCH1_6_LP1	172.25.254.62 - AIX	3
			BCH1_6_LP2	172.25.254.63 - RedHat	
			BCH1_6_LP3	172.25.254.64 - SUSE	
			BCH1_6_LP4	172.25.254.65 - IBM i	
7	BCH1_PS701_7	172.25.254.26 - IVM	BCH1_7_LP1	172.25.254.66 - AIX	4
			BCH1_7_LP2	172.25.254.67 - RedHat	
			BCH1_7_LP3	172.23.254.68 - SUSE	
			BCH1_7_LP4	172.25.254.69 - IBM i	
8	BCH1_PS701_8	172.25.254.27 - IVM	BCH1_8_LP1	172.25.254.70 - AIX	5
			BCH1_8_LP2	172.25.254.71 - RedHat	
			BCH1_8_LP3	172.25.254.72 - SUSE	
			BCH1_8_LP4	172.25.254.73 - IBM i	
9/10	BCH1_PS702_9	172.25.254.28 - IVM	BCH1_9_LP1	172.25.254.74 - AIX	6
			BCH1_9_LP2	172.25.254.75 - RedHat	
			BCH1_9_LP3	172.25.254.76 - SUSE	
			BCH1_9_LP4	172.25.254.77 - IBM i	
11	BCH1_JS22_11	172.25.254.29 - IVM	BCH1_11_LP1	172.25.254.78 - AIX	
			BCH1_11_LP2	172.25.254.79 - RedHat	
			BCH1_11_LP3	172.25.254.80 - SUSE	
			BCH1_11_LP4	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 /	LPAR Name /	LPAR IP Address /	Team
-		Purpose	Hostname	SMP	Number
			BCH1_12_LP2	172.25.254.83 - RedHat	
			BCH1_12_LP3	172.25.254.84 - SUSE	
			BCH1_12_LP4	172.25.254.85 - IBM i	
13	BCH1_JS22_13	172.25.254.31 - IVM	BCH1_13_LP1	172.25.254.86 - AIX	
		DEMO	BCH1_13_LP2	172.25.254.87 - RedHat	
		_	BCH1_13_LP3	172.25.254.88 - SUSE	
			BCH1_13_LP4	172.25.254.89 - IBM i	
14	BCH1_JS22_14	172.25.254.32 - IVM	BCH1_14_LP1	172.25.254.90 - AIX	
		DEMO	BCH1_14_LP2	172.25.254.91 - RedHat	
		_	BCH1_14_LP3	172.25.254.92 - SUSE	
			BCH1 ¹⁴ LP4	172.25.254.93 - IBM i	

Power BladeCenter H Chassis 2 AMM - 172.25.254.101 (Login: PSTRAIN2/PSTRAIN2)

Bav #	Server Name	Private IP Address /	LPAR Name	LPAR IP Address /	Team
~~		Purpose		Purpose	Number
1	BCH2 PS700 1	172.25.254.33 - IVM	BCH2 1 LP1	172.25.254.94 - AIX	7
			BCH2 ¹ LP2	172.25.254.95 - RedHat	,
			BCH2 ¹ LP3	172.25.254.96 - SUSE	
			BCH2_1_LP4	172.25.254.97 - IBM i	
2	BCH2_PS700_2	172.25.254.34 - IVM	BCH2_2_LP1	172.25.254.98 - AIX	8
			BCH2_2_LP2	172.25.254.99 - RedHat	_
			BCH2_2_LP3	172.25.254.100 - SUSE	
			BCH2_2_LP4	172.25.254.120 - IBM i	
3	BCH2_PS700_3	172.25.254.35 - IVM	BCH2_3_LP1	172.25.254.121 - AIX	9
			BCH2_3_LP2	172.25.254.122 - RedHat	
			BCH2_3_LP3	172.25.254.123 - SUSE	
			BCH2_3_LP4	172.25.254.124 - IBM i	
4	BCH2_PS700_4	172.25.254.36 - IVM	BCH2_4_LP1	172.25.254.125 - AIX	10
			BCH2_4_LP2	172.25.254.126 - RedHat	
			BCH2_4_LP3	172.25.254.127 - SUSE	
			BCH2_4_LP4	172.25.254.128 - IBM i	
5	BCH2_PS701_5	172.25.254.37 - IVM	BCH2_5_LP1	172.25.254.129 - AIX	11
			BCH2_5_LP2	172.25.254.130 - RedHat	
			BCH2_5_LP3	172.25.254.131 - SUSE	
			BCH2_5_LP4	172.25.254.132 - IBM i	
6	BCH2_PS701_6	172.25.254.38 - IVM	BCH2_6_LP1	172.25.254.133 - AIX	12
			BCH2_6_LP2	172.25.254.134 - RedHat	
			BCH2_6_LP3	172.25.254.135 - SUSE	
			BCH2 6 LP4	172.25.254.136 - IBM i	

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 2 – Advanced Virtualization Topics

Introduction

In this lab, you will learn how to configure Ethernet Bridging, Shared Ethernet Adapters, Link Aggregation, NPIV, Live Partition Mobility, to create virtual adapters and LPARs. You also have the option of installing IBM i on an LPAR which may take the entire 90 minute lab period. If you are interested in installing IBM i, go to Section VI (page 65) of the lab. **Note:** Make sure the pop-up blocker is "**disabled**" on your browser.

Objectives

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

- Configure VIOS/IVM
- Create a Logical Partition
- Configure Ethernet Bridging, Shared Ethernet, Live Partition Mobility, NPIV (View Only)
- Create a Virtual Adapter, SEA and VLANs
- Install Operating System on the Logical Partition (AIX, Linux or IBM i)

Materials Required for Lab

- IBM Intranet connection and standard web browser with Java to properly access the equipment over the network
- Virtual I/O Server Version 2.2 or later
- One BladeCenter Chassis with one Ethernet Switch Module and one Power processorbased Blade
- Access to SAN Storage (already setup)
- IP Address of the NIM Server
- IP address, userid and password of the Advanced Management Module (will be provided before the lab)
- If you use SOL for console session ensure SOL is Ready on the Management Module
- Required Network Information for Installing VIOS 2.2 or later
- Required Network Information for Installing the Logical Partitions
- IVM login (will be provided before the lab)
- IP address for the blade and the Logical Partition (will be provided before the lab)

Time Required for Lab

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

I. Configuring IVM on the Blade

For your convenience, IVM has already been installed on your blade but has NOT been configured. The first time you login to IVM you will have to change the password and accept the license. For more information on doing a fresh installation, refer to the Virtual I/O Server Integrated Virtualization Manager Redpaper at

http://www.redbooks.ibm.com/abstracts/redp4061.html?Open.

A. Login to IVM's CLI

- 1. Login to IVM's CLI (using windows Telnet client or PUTTY [Windows SSH Client Program]) as user "**padmin**". You will be prompted to change the password which should be set to "**padmin**".
- 2. IVM has been installed and configured on the blade. Do not close the CLI as it will be used throughout the lab.

B. Login to IVM GUI

1. To login to the IVM GUI interface, open a web browser (Internet Explorer preferred) and type the IP address of the blade. When the login screen appears, type the IVM Userid "**padmin**" and Password "**padmin**" and click "**Log in**".

Integrated Virtualization Manager	//// IBM.
Welcome, please enter your information,	
* User ID	
*Password	
Log in	
Please note: After some time of machivity, the system will log you suit autometically and ask you to log in again.	
This product includes Eclipse technology ((http://www.eclipse.org)	
+ Required field	

2. The first time you login to IVM, the Guide Setup menu is displayed. To bypass this menu, select View/Modify Partitions from the Partition Management Menu on the left.

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The default management partition (VIOS) is displayed. This partition is automatically created when you install IVM.

Magnesi Madata Rouge Mine maneti (K) (K 1996)	45		2//// SSQ 104
SHERAC	The American Stream of Str	27.4 21.4 21.4	in interior
	C D V Labora Las Mer d'Anna Anna Anna D Labora Labora Anna A	H Balance Constant -	

_3. Open a virtual terminal window by selecting the VIO server then selecting the "**More Tasks**" drop down menu. To login to the terminal window, type "**padmin**" for the password.



- ____4. To view the VIO level, type "**ioslevel**" and press "**Enter**". Version 2.2 or later is installed on your blade.
- 5. To list the virtual devices, type "**lsdev** –**virtual**" and press "**Enter**". You should have ent2 ent5 (four virtual Ethernet adapters). If the four virtual adapters do not appear, type "**mkgencfg** –**o** init" and press "**Enter**".

\$ lsdev -virtual		
name	status	description
ent2	Available	Virtual I/O Ethernet Adapter (1-lan)
ent3	Available	Virtual I/O Ethernet Adapter (1-lan)
ent4	Available	Virtual I/O Ethernet Adapter (1-lan)
ent5	Available	Virtual I/O Ethernet Adapter (1-lan)
ibmymc0	Available	Virtual Management Channel
ysall	Available	LPAR Virtual Serial Adapter
\$		

Note: The four virtual adapters on your blade may not be labeled ent2-ent5. For example, if you are using a double wide blade or if your blade has a 10GB adapter on your blade you may see something different. Blades with 10GB adapters installed will have ent4 - ent7.

6. To list all adapters, type "**lsdev** –**type adapter**" and press "**Enter**". The physical and virtual adapters are shown. The "**ibmvmc0**" is a Virtual Management Channel used as a direct Serial Hypervisor Configuration without requiring additional network connections. The "**vsa0**" is a Virtual Serial adapter used for your vterm console.

5 lsdev	-type	adapter	
name		status	description
ati0		Available	Native Display Graphics Adapter
entØ		Available	Logical Host Ethernet Port (lp-hea)
ent1		Available	Logical Host Ethernet Port (lp-hea)
ent2		Available	Virtual I/O Ethernet Adapter (1-1an)
ent3		Available	Virtual I/O Ethernet Adapter (1-lan)
ent4		Available	Virtual I/O Ethernet Adapter (1-lan)
ent5		Available	Virtual I/O Ethernet Adapter (1-lan)
fcsØ		Available	FC Adapter
fcs1		Available	FC Adapter
ibmvmc0		Available	Virtual Management Channel
lhea0		Available	Logical Host Ethernet Adapter (1-hea)
sissasØ		Available	PCI-X266 Planar 3Gb SAS Adapter
usbhcØ		Available	USB Host Controller (33103500)
usbhc1		Available	USB Host Controller (33103500)
vhostØ		Available	Virtual SCSI Server Adapter
vsaØ		Available	LPAR Virtual Serial Adapter
uts0		Available	Virtual TTY Server Adapter
5			

II. Configuring the VIO SERVER

A. Ethernet Bridging Setup

An Ethernet Bridge allows virtual Ethernet devices to access a physical Ethernet device thereby allowing access to the external network via the physical Ethernet device. Ethernet Bridging can be enabled from the IVM GUI or from the command line interface (CLI). *Both methods are discussed in this section but only the CLI steps should be executed.*

To configure Ethernet Bridging from the CLI complete the following steps:

1. To verify Ethernet Bridging is enabled on your blade, type "**lshwres –r hea –rsubtype phys –-level port –F promisc_lpar_id**" and press "**Enter**". If Ethernet Bridging is configured on your blades you will see "1" for both ports. If it is not configured you will see "**none**" for both ports.



2. Verify the adapter_ID for the Host Ethernet Adapter by typing "Ishwres – r hea –-rsubtype phys –-level sys" and press "Enter".



3. To enable Ethernet Bridging (promiscuous mode) on IVE physical port 0 and 1, type the following:

"chhwres -r hea -o s -l 23000001 -g 1 -a promisc_lpar_id=1 --physport 0" and press "Enter".

"chhwres -r hea -o s -l 23000001 -g 1 -a promisc_lpar_id=1 --physport 1" and press "Enter".

Ethernet Bridging can also be configured from the IVM GUI. These steps are provided for your reference and should not be executed.

- 4. Open a virtual window on the VIO and type "lsdev –type adapter" and press "Enter" to view all adapters..
- 5. From the I/O Adapter Management menu in the navigation area, select "View/Modify Host Ethernet Adapters", select "ent0 (P1-T4)" then select "Properties".



6. Select the "Allow virtual Ethernet bridging" box then select "OK".

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Ink state:	Up	E 001 WIHZEEE D1	TA	
Illeur vietuel Ethernet heis		0.001.WIH/555-P1	- 1 -	
allow Virtual Ethernet brid	iging:			
Performance				
		-		
Broperty		Current	Contigured	
Figheity		Current		
Speed:		1000	Auto 🗸	
Speed: Maximum transmission u	init (MTU):	1000 Standard (1500)	Auto 💌 Standard (1500) 💌	
Speed: Maximum transmission u Duplex:	init (MTU):	1000 Standard (1500) Full	Auto 💌 Standard (1500) 🖤 Auto	

_7. Perform the same steps for the 2^{nd} port of the Host Ethernet Adapter.

B. Shared Ethernet Adapter Setup

A shared Ethernet adapter (SEA) can be used to connect a physical Ethernet network to a virtual Ethernet network. It also allows several client partitions to share one physical adapter. The SEA can be configured from the GUI and from the CLI. *Both methods are provided in this section but only the CLI steps should be executed.*

To configure Shared Ethernet Adapter from the CLI complete the following steps:

NOTE: Make sure you are connected via the "console" using SOL and using the following command: console –T blade[x] (where x is your team blade slot)

- 1. Remove any pre-existing IP interface configurations from the adapters by typing "**rmtcpip** –**all**" and press "**Enter**". Type "**y**" to continue.
- _____2. To view all adapters, type "lsdev –type adapter" and press "Enter".
- 3. Before you create the SEA, verify the physical and virtual adapters by typing "lsdev type adapter".
- 4. To create a Shared Ethernet Adapter type "**mkvdev -sea ent#** (physical) **-default ent#** (virtual) **-vadapter ent#** (virtual) **-defaultid #** (vlan ID)".

Note: The mkvdev command associates the physical network with the virtual network. For the physical adapter use the lowest physical adapter in the list. For example, if you have ent0, ent1, ent2, use ent0 for the physical adapter. Same with the virtual Ethernet adapter i.e., ent4, ent5, ent6, ent7 and use ent4 for virtual.

5. To view the attributes of the SEA, type "lsdev –dev ent# -attr" and press "Enter".

\$ lsdev -dev (ent8 -att:		
attribute	value	description	user_settable
accounting	disabled	Enable per-client accounting of network statistics	True
ctl chan		Control Channel adapter for SEA failover	True
gvrp	no	Enable GARP VLAN Registration Protocol (GVRP)	True
ha mode	disabled	High Availability Mode	True
jumbo frames	no	Enable Gigabit Ethernet Jumbo Frames	True
large receive	no	Enable receive TCP segment aggregation	True
largesend	0	Enable Hardware Transmit TCP Resegmentation	True
netaddr	0	Address to ping	True
pvid	1	PVID to use for the SEA device	True
pvid adapter	ent4	Default virtual adapter to use for non-VLAN-tagged packets	True
qos mode	disabled	N/A	True
real adapter	entO	Physical adapter associated with the SEA	True
thread	1	Thread mode enabled (1) or disabled (0)	True
virt_adapters	ent4	List of virtual adapters associated with the SEA (comma separated) $% \left({{{\left({{{\left({{{\left({{{\left({{{}}} \right)}} \right.}} \right.} \right)}_{\rm{s}}}}} \right)} \right)$	True

Note: The IP address will not be assigned to the SEA in this section, but it will be configured later in the lab.

The SEA can also be created from the IVM GUI. These steps are provided for your reference but should not be executed.

6. From the I/O Adapter Management menu in the navigation area, select "View/Modify Virtual Ethernet" and go to the "Virtual Ethernet Bridge" tab. For Virtual Ethernet ID 1, select "ent0 (P1-T4)" then select "Apply".

Webcome pectran : IKH2 PS701 2			
Partition Management	Warne/MonRity Vice	toal Libernet	Participation and an and an and an and an and an
· Mars Mughty Paritiens	Without Ethnesion	Virtual Etherson Gridge	
View Maritz System Prosectes View Maritz Stand, Menning Post I/O Adapter Management	A utrasical jostero alianeng ang part device. Furra gy is ang britged, m	ck bridge provides a specific vertical Ethernian takes an the landged vertical Ethernian to excess in vertical Ethernian, your may choose the ph offic in the antitual Ethernian is instructed to a	I access to a physical Ethernal Movies, thereby an dis account network via the physical Ethernat system adapter to which to bridge. If a virtual Etherna member partitions.
View/Muddy Just Ethemet Abortens	Virtual Ethernal	D Physical Adapter	1
 Vice Photos Witze Schemes 	1	ent0 (U78A5.001.W0H9695-P1-T4)	-
 Secondaria Horses addelers Secondaria Filine Charteri 	2	Norm	a)
Artual Storage Management	3	Nome	-
 Micadhathy Mitsel Stander 	4	Morris	2
VH Management	-	1200	
 View/Maddy User Autoratie View/Maddy TCE/07 Settings 	Apply Reset		
Contract Descap Entract Proversity Editory New			
Service Management			
Destions: Bennie Agent Service Food Fund Manage Serviceable Events	11.		

7. A message will appear indicating the operation was successful.

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Partition Management	The state of the state	Victor of Liference	
· View Negate Paritiens	Virtual Others	Without Etherpart Bridge	
 View/Maddy System Prosection View/Maddy Shared Mathematic Engli 	Direct	entile unruletet seriesafully.	
L/O Adapter Managetsent			-4
Verwittender innet Effernet Admitten Verwittender Witted Othernet Verwittender Pflorien Admitten Verwittend Filter Chartert	A president or allowing play device. For a Streament is in	twork bridge provides a specific wroat Efferne parities up the bridged virtual Effernet to acco given virtual Effectient, you may choose the p int bridged, traffic up the virtual Effectient is rest	Calcess to a physical Ethernet device, thereby ess the external network via the physical Ethernet social adapter to which to bridge. If a vertical acced to member partitions.
Virtual Storage Management	Vincusi Ethe	net 30 Physical Adapter	110
 MeadMostly, Mittal Statege 	4.	ent2 [1178A5-001.With0555-P1-74]	X
VH Management	2.	Maria	*
 View/Mattic User America 	2	Morrie	-
Sound Setup Control Setup Draw Power/VH Editory Ney	1	Morrie	2
Service Management			
	Apple He	et.	
· Destlook Service Agent			

III. Configuring Link Aggregation

In this section of the lab we configure Link Aggregation on the integrated HEA ports on the blade. Link aggregation enables several Ethernet adapters to be joined together to form a single virtual device. This helps to overcome the bandwidth limitation of a single network adapter and to avoid bottlenecks when sharing one network adapter among many client partitions. The following chart illustrates how Link Aggregation is configured on a VIO Server.



To configure Link Aggregation on the VIO Server, complete the following steps:

- 1. SOL **MUST** be used to configure NIB/LA otherwise you will lose your session. Open a console session to your blade by typing "**console –o –T blade[#]**" and press "**Enter**". The # refer to the bay number your blade is installed in.
- 2. From the VIOS shell, type "lsdev –type adapter" and press "Enter".
- 3. Before you configure NIB, view the existing IP Addresses by typing "**netstat –state –num**" and press "**Enter**". Make a note of the IP Address on the blade as it will be used again in step 12.
- 4. Remove any pre-existing IP interface configurations from the adapters by typing "**rmtcpip –all**" and press "**Enter**". Type "**y**" to continue.
- 5. To view all adapters, type "lsdev –type adapter" and press "Enter".
- 6. To remove the shared adapter created in the previous section, type the following: **rmdev –dev et#** and press "Enter" **rmdev –dev ent#** and press "Enter" **rmdev –dev en#** and press "Enter"
- 7. To view all adapters, type "lsdev –type adapter" and press "Enter".
- 8. To configure ent0 as the primary adapter and ent1 as the backup adapter on the VIO Server, type "mkvdev –Inagg ent0 –attr backup adapter=ent1" and press "Enter".

Note: When configuring Link Aggregation on a blade, you cannot mix IVE and non-IVE-adapters.

____9. Type "lsdev –dev ent# –attr" and press "Enter" to confirm the configuration of the Link Aggregation device.

			£
\$ chhwres -r he: \$ mkvdev -lnagg ent6 Available	a -o s -1 23000) ent0 -attr bac)	000 -g 1 -a promisc_lpar_id=1physport 1 kup_adapter=ent1	
en6			
et6			
\$ lsdev -dev ent	t6 -attr		
attribute	value	description	user
settable			
adapter names	entO	EtherChannel Adapters	True
alt_addr	0x0000000000000	Alternate EtherChannel Address	True
auto_recovery	yes	Enable automatic recovery after failover	True
backup_adapter	ent1	Adapter used when whole channel fails	True
hash mode	default	Determines how outgoing adapter is chosen	True
mode	standard	EtherChannel mode of operation	True
netaddr	0	Address to ping	True
noloss_failover	yes	Enable lossless failover after ping failure	True
num_retries	3	Times to retry ping before failing	True
retry_time	1	Wait time (in seconds) between pings	True
use_alt_addr	no	Enable Alternate EtherChannel Address	True
use_jumbo_frame \$ <mark> </mark>	no	Enable Gigabit Ethernet Jumbo Frames	True

10. To create the SEA using the Link Aggregation device as the physical adapter, type "mkvdev -sea [link aggr adapter] -vadapter [virtual] -default (virtual) -defaultid 1" and press "Enter".

- 11. To confirm the creation of the SEA device, type "lsdev –type adapter" and press "Enter".
- 12. To configure an IP Address on the newly created SEA, type "**mktcpip** –**hostname** (hostname) –inetaddr (IVM IP address) –interface en# –netmask 255.255.255.0 –gateway 172.25.254.6 –start" and press "Enter".
 - 13. To check the IP address on the SEA, type "netstat -num -state" and press "Enter".

For more information on setting up Network Interface Backup style EtherChannel, refer to the documentation at

http://publib.boulder.ibm.com/infocenter/pseries/index.jsp?topic=/com.ibm.aix.doc/infocenter/base/aix53.htm.

IV. Configuring Live Partition Mobility

In this section of the lab we configure LPM on the VIO, create two mobile LPARS and perform an Active and Inactive Migration. Since two blades are required for LPM you will have to work with another team to complete this section of the lab. The chart below details which teams should work together on this lab. It also details which blades share LUNs and which external disk should be used for Active Migration (AM) and Inactive Migration (IM).

Power Blac AMM – 17	deCen 2.25.2	ter H Chassis 54.40	1		
Team Num-	Bay #	Server Name	IP Address	Internal	External SAN Storage /
bers				Drives	Purpose
1 and 2	4	BCH1_PS701_4	172.25.254.23	1	Team 1: hdisk1 – 20Gb
	5	BCH1 PS700 5	172.25.254.24	2	hdisk2 – 13Gb
					Team 2: hdisk2 - 20Gb
					hdisk3 – 13Gb
3 and 4	6	BCH1 PS701 6	172.25.254.25	1	Teams 3/4: hdisk1 – 20Gb
	7	BCH1 PS701 7	172.25.254.26	1	hdisk2 – 13Gb
5 and 6	8	BCH1 PS701 8	172.25.254.27	1	Team 5: hdisk1 – 20Gb
	9/10	BCH1 PS702 9	172.25.254.28	2	hdisk2 – 13Gb
					Team 6: hdisk2 – 20Gb
					hdisk3 – 13Gb
Power Bla	deCen	ter H Chassis	2		
$\mathbf{ANINI} - \mathbf{I} / \mathbf{I}$	2.25.2	54.101			
Team Num-	Bay #	Server Name	IP Address	Internal	External SAN Storage /
bers				Drives	Purpose
7 and 8	1	BCH2_PS700_1	172.25.254.33	2	Teams 7/8: hdisk2 – 20Gb
	2	BCH2_PS700_2	172.25.254.34	2	hdisk3 – 13Gb
9 and 10	3	BCH2_PS700_3	172.25.254.35	2	Teams 9/10: hdisk2 – 20Gb
	4	BCH2_PS700_4	172.25.254.36	2	hdisk3 – 13Gb
11 and 12	5	BCH2_PS702_5	172.25.254.37	2	Teams 11/12: hdisk2 – 20Gb
	6	BCH2_PS701_6	172.25.254.38	2	hdisk3 – 13Gb

Note: Keep in mind your neighboring team may or may NOT be doing the Advanced Lab! If that is the case you can still configure LPM on your blade but you may not be able to migrate the partition.

A. Configuring the Partition Mobility environment

To configure the VIO Server, complete the following steps:

1. The LUN reserve_policy must be set to "no_reserve" on the hdisks (on the source and the destination blades) before the logical partition is created. Open a virtual terminal for the VIOS Partition (Partition 1) from the IVM GUI and type the following: \$\\$lsdev -dev hdisk# -attr reserve policy single path => needs to be changed

\$chdev -dev hdisk# -attr reserve_policy=no_reserve

To verify this attribute has been changed, type the following: **lsdev** –**dev** hdisk# -attr

Note: A virtual terminal can also be opened via telnet or SSH.

2. The "Memory Region Size" value must be the same on both IVM servers. This value will depend on the amount of memory installed on the blade. To change this value from the IVM GUI, under Partition Manager select "View/Modify System Properties" then select the "Memory Tab". Now select the appropriate value from the pull down menu then select "Apply".

Note: Please check with the appropriate team to ensure both blades have the same value. Refer to the chart on page 17 for more information on team assignments and how the blades are configured for LPM.

Integrated Witamation Manager	
Antoine Antoine Autor Autor Autor Partilian Management • Van Madia Partilian • Van Martin Science	VerwyModdy System Properties General Memory Proceeding
Vanc/Halt/, Stant, Hanner, Bail (4) Adapter Management Ven/Halt/, most Efficient Ven/Halt/, most Efficient Ven/Halt/, Most Reference Ven/Halt/, Most Reference Ven/Halt/, Noted Science Ven/Halt/, Most Science Ven/Halt/, Most Science Ven/Halt/, Most Science	General Detailed system memory: 32 00 (127/6 M0) Configurate memory: 32 03 (127/6 M0) Configurate memory available: 27 5 00 (28.05 M0) Monitory memory available: 27 5 00 (28.05 M0) Memory flamma/in memory: 512 M5 Memory flamma/in memory: 512 M5 Memory flamma/in Store Table
VH Mongersen - Nav, Madip User, Associate - Nav, Madir TCHTP Satters - Daniel Satur Enter Descrift Editor, Rev Eardie Management	Herrory inglos new sharmater: L36 MI (accomatic) Shared Memory Pool (Not defined) A shared memory Pool (Not defined) A shared memory and fellows the annualt of dated memory available on the system. Cick Define Shared Memory Pool to succify anyophies/far the shared memory pool.
	Define Shared Metrory Pool

3. From the Partition Management menu, select 'View/Modify Partition" then select the VIOS partition from under Partition Details then select "shutdown".

Note: If both blades have the same Memory Region Size then you do NOT have to shutdown your server.



4. Select "**OK**" to power off the VIOS Partition which powers off the blade.

Note: The blade must be powered off and not just rebooted otherwise this change will not take effect.

_5. Once the partition has powered off, go to the Advanced Management Module (AMM), power on the blade, and then log back into IVM.

B. Creating Logical Partitions

The mobile logical partition should be created without physical I/O or virtual optical devices. Create two mobile partitions in order to perform an Active and Inactive Migration.

To create a logical partition from the IVM GUI, complete the following steps:

- 1. From the Partition Management menu in the navigation area, select "**View/Modify Partitions**" then select "**Create Partition**" from the task bar. A pop-up window appears.
- 2. Type the new partition name. For AIX, use "**TEAM#_AIX_LPAR_**" and for Linux, use "**TEAM#_LINUX_LPAR**", depending on the Operating System you plan to install and select "**Next**".

 Name Memory Processars 	Name To create a partition complete the following information.	
Ethernet Storage Type Storage Virtual Fibre Channel Optical/Tape Summary	System name: Server-8406-70Y-5N10ACBBA Partition ID: 2 * Partition name: ADX_LPAR Environment: AIX or Linux M	
b;	*Required field	

__3. Type "1" in the Assigned memory field and select "GB" from the drop-down list then select "Next".

Bende water in dear the section of t	Production for each set of the control of t	laten Medica Medica Roberts Roberts Roberts Medica Medica Medica Roberts Rober	Memory A determine the second construction of the second construction of the second tends, the address and the tenders to be the second residence of the tenders of tender
and the second sec			Territ submitter Dente submitter Dentem methode his periode submitter Dentem methode

4. Select "**Next**" to accept the default for the virtual processors.

Create Parilling Pres	nan Bigād
line	Processors
- Enumeration Education	In shared mode, every sesigned virtual processor uses 0.5 physical processors. In dedicated mode, every assigned processor uses 5 physical processor. Specify the devine surviver of processor ward the processing mode.
Linnage Type Linnage	Potestars
Votual Filer Charvel Optimal/Tape European	Total system processes to: 4 data processes to: 4
	Processing Hode
	8 (Fouried - 38 analable vistual processors () Deducted - 3 available distanted processors
	4
-c Back, Next N Finah	Canol Two

5. Under the Virtual Ethernet Configuration section, select "ent0 P1-T4" for Adapter 1 then select "Next" to continue.

vane Memory Processors Shemet Storage Type	Specify Etheme	the de t adap t does	sired Host 6 ter, Virtual 6 not require	themet Adapter ports and spe themet requires a bridge to ac a bridge, but it does not suppr	ofy virtual Ethe coess the exter ort mobility.	emets for each virtual nal network. Host
Storage Artual Fibre Channel	Host E	them	et Adapter	Ports		
Optical/Tape Summary	Select	Type	Link State	Physical Location Code *	MAC Address	Available Connection
	10	1 G	Up	U78A5.001.WIH9656-P1-T4		0
	0	16	Up	U78A5.001.WIH9656-P1-T5		0
	Virtual	Ether	net Config	uration		
	Create	Adapt	ter			
	Adapte	er -	V	irtual Ethemet		
N)	1	1 -	ent0 (U784	45.001.WIH9656-P1-T4) 💌		
<u>K</u>	Z	No	ne	*		

____6. Select "Assign existing virtual disks and physical volumes" and click "Next".

Create Partition: Store	ign Typn Step 5 o	19
Nama Memary Processars Ethernet	Storage Type You may create a new virtual disk or assign existing virtual disks and physical volumes which are not currently assigned to a partition. You will be able to assign optical devices such as a CD-ROM regardless of which choice you make.	
** Stange Stange Virtual Fibre Channel Optical/Tage Summary	Create virtual disk. D: ® Assign existing virtual disks and physical volumes. O Name	
< Back Next > Finish	Canod	elp

_7. Select the name of the hdisk# you want to assign to the logical partition then click "Next".

Available Virtual Disks Telefor Connect Available Virtual Disks Select Internet Metable Physical Volumes Select Internet Select Internet
Select Name Standar Had Name Available Physical Volumes Available Physical Volumes Name
Aveidable Physical Volumes Select Intel Thread Location Code I Heat Thread Location Code I Heat Thread Location Code I Heat 20:00 II Heat Thread Location Code II Heat 20:00 III Heat Thread Location Code III Heat 20:00 IIII Heat 1:00 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
SHEET Lize Proceed Location Code 1 stell 273.4.08 UT645.001 WH9695-P1-02 1 stell 20.08 UT645.001 WH9656-P1-01 F3-W20090000000000000000000000000000000000

1. Configuring NPIV on the blade

(These steps are for viewing only, please do not perform on your system)

A virtual Fibre channel with physical adapters that support N_Port ID Virtualization (NPIV) ports provides the ability to give multiple logical partitions direct access to storage area devices in a storage area network (SAN). In the Worldwide Port Names table, you can add or remove a port name pair for this logical partition. You also can change the physical port assignment for a port name pair that this partition is using. When configuring NPIV on the blade, ensure you have the correct environment, i.e., an 8GB adapter and a supported switch module as listed in the BladeCenter Interoperability Guide at http://www-

947.ibm.com/support/entry/portal/docdisplay/Hardware/Systems/Hardware_options_and_upgrad es/Storage_expansion/Fibre/44X1945_-

QLogic 8 Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter?brand=50000 20&Indocid=MIGR-5073016 .

8. The next step is to configure NPIV on the blade by selecting "Add" to generate a pair of virtual WWNs.



_9. Next, select the drop down bar to select the physical adapter you want to use.

Terrar .	Victual Fline Channel	
Mession Bisonom Chernet Bisrope Trae Simon Simon Contrat/Tope Sametary	Visional case a without Plane thereine with physical pertitions direct manage to decrease a participe, you must first constrain a pair of workhold space. Why physical pairs for one workhold proof Clark Add to create a pair of new workholds port Workholds Fort Narrow table and the transposed to you from the extend. In the Workholds Fort Narrow table , you can the first DMI will generate.	adaption: first support 9, Port ID Vetaslaumor (MRVV) ports to give invaluate a stansap area network (S440). To configure without films theread for the new a port network (weight) but the new partition. Then assign the port name per to cal partition. Instrume for the new partition: An article for the partition pair is added to the initialization Manager (D99) in Quarteriorizative generated the port name and interactions to assign a physical port to the new logical partition and the port name per sense to assign a physical port to the new logical partition and the port name per-
	After you black the new petition, you can they peritten by using Partition Properties. May, you ports	pe which WW ports are assigned to the worldwide port terms part for the a contains the View Writeel Fibre Channel tests to seew datable for the WW
	After statistical therein partition, and can they perform by early Partition Properties. New, you parts.	24 which WW (so its are assigned to the workloads port terms put for the score are the Vew Metual Fibre Channel tests to save datals for the WW
	After plut handle the row partition, and can they partition by camp Partition Properties. Man, pu parts	pe which WWW (so the area assigned to the wardbodd post terms pair for the a can assiftee View Virtual Fibre Channel table to use datate for the WWW Phasical Port
	After put times the row pathway, and can they partition by carris Partition Properties. Man, put parts	pe which NFW (some are assigned to the workfunds post terms put for the a can assifte View Virtual Fibre Channel task to use datate for the NFV Physical Port
	After plut handle the more partition, see can drive partition for any Partition Properties. Man, pur partie [Add] Remove Select Worldnick Port Nerrise [] Addomaticsky generate	Provide the Very locate are assigned to the workfunds port same part for the care and the Very Mitual Fibre Channel task to see datate for the first Provide Port Note: Tos2 (07845.0F1, wiref656-P1-C11-T2) Tos3 (07845.0F1, wiref656-P1-C11-T2)
	After plut hindle the rate put they, see our they portion by using Perifican Properties. Man, put ports. Add_ Removet Add_ Removet Select Wortlevide Port Names T Addomatically generate	Product, NPV locate are assigned to the workfunds port same part for the locate of the

___10. Optical devices cannot be migrated, so make sure none of these values are selected then click "**Next**" to continue.

Note: Once the LPAR configuration is complete and the LPAR is activated the virtual WWN can be zoned. Depending on the type of BladeCenter Switch Module you use there may be additional configuration required on the switch.

	Create Partition: Name Memory Processors Ethernet Storage Type Storage ** Optical Summary	Optical Optical Select opt to a partiti Available Physical o directly to	Iptical Step / or Iptical Step / or Select optical devices from the following list of devices which are not currently assigned o a partition. Available Physical Optical Devices Available Physical Optical Devices Interview of the physical optical device on your system lirectly to a partition. Select Name ^ Description Physical Location Code										
		Select	Name ^	Description	Physical Loca	ation Code							
Deselect any virtual optical		Virtual op image) th virtual op partition.	Virtual optical devices allow you to mount and unmount media files (such as an IS image) that are in your media library. Select Create Device to add an additional virtual optical device to the partition. Deselect a device to remove it from the partition. Select the Modify link to change the mounted media.										
devices.		Select	Name ^	<u>Current Media</u>	Current Media Size	Mount Type							
		- 💌	Unknown1	None <u>Modify</u>									
ucricis.	< Back Next >	Create Du	avice			Неір							

11. A summary of the partition to be created is displayed. Select "**Finish**" completing the creation of the logical partition".

reate Partition: Sum	mary	Stop 9 of
Name	Sunnary	
Memany Processors	This is a summary of your pa	rition settings. Select Finish to create the partition. To make changes to the settings, select Back.
Ethernet	You can modify the partition	by using the partition properties task after you complete this wizard.
Stange Virtual Pibro Channel	System same: Participa ID:	Server-9406-70Y-SVIOAC88A J
Optical/Tape - Summary	Partition name:	AIX_LPAR
	Memory mode:	Dedicated
	Memory: Processors:	1 (35 (1024 MB) 1 virtual
	Virtual Ethernetsi	1
	Storage capacity:	NONE 20 GB (20490 MB) CALS
	Storage devices:	750%4
	Virtual Plone Channel porta:	U7843.001.WTH9656-P1-C11-T1
	Optical devices:	None
	Physical tape devices:	Norve
	Physical adapters:	None
	(Transf	
Back mext > Finish	Carlos	HB

12. To activate the partition you just created, select the box next to "AIX_LPAR" and select "Activate". Select "OK" to continue.

Manual Mediatric Research	
Instante coltrar (DOI)2 (STRICT)	
International Control Science 3 Particle Hannespreenti • United Hannespreeni	The second data is a first of the first of the first of the second secon
· Australia Los	-

Note: To activate the LPAR from the CLI, type the following: chsysstate –o on –r lpar –n lparname

C. Configuring Linux for LPM

Complete the following steps to enable LPM:

- 5. To enable LPM, you need to install the service and productivity tools. These are normally available for either Red Hat or SUSE at <u>http://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/home.html</u>. For the purpose of this lab, you will access the tool packages from the NIM Server used to install the OS.
- _____6. Run "mount 172.25.254.21:/export/linux /mnt"
- 7. cd /mnt/lopdiags/rhel5 or cd /mnt/lopdiags/sles11
- 8. Install the required packages using "**rpm** -i *packagename*" as shown below.

Red Hat	SUSE
rpm -i src* rpm -i rsct.core.utils* rpm -i rsct.core-2* rpm -i csm.core* rpm -i csm.client* rpm -i devices.chrp* rpm -i DynamicRM*	rpm -i librtas-32bit* rpm -i src* rpm -i rsct.core.utils* rpm -i rsct.core-2* rpm -i csm.core* rpm -i rdist* rpm -i csm.client* rpm -i devices.chrp* rpm -i DynamicRM*

Note: The librtas-32bit and rdist packages were copied off the SUSE distribution image.

```
[root@BCH1-14-2 ~]# mount 172.25.254.21:/export/linux /mnt
FS-Cache: Loaded
[root@BCH1-14-2 ~]# cd /mnt/lopdiags/rhe15
[root@BCH1-14-2 rhe15]# rpm -i rsc*
Adding srcmstr to inittab...
[root@BCH1-14-2 rhe15]# rpm -i rsct.core.utils*
[root@BCH1-14-2 rhe15]# rpm -i rsct.core-2*
0513-071 The ctcas Subsystem has been added.
0513-071 The ctrmc Subsystem has been added.
0513-059 The ctrmc Subsystem has been added.
0513-059 The ctrmc Subsystem has been started. Subsystem PID is 3116.
[root@BCH1-14-2 rhe15]# rpm -i csm.core*
[root@BCH1-14-2 rhe15]#
```

9. The LPAR is now ready to participate in LPM.

D. Active Migration Setup

Before you perform an active migration, an operating system (i.e., AIX or Linux) must be installed on your LPAR and the RMC daemon must be running, otherwise the validation process will fail. The IP Address on the logical partition must be configured before the RMC daemon will become active.

Note: The RSCT Utilities must be installed on a Linux partition for Active migration support. IBM Installation Toolkit for Linux on POWER: <u>http://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/installtools/download/home.html</u>.

To verify the RMC daemon is running on the blade, complete the following steps:

__1. From the **View/Modify Partitions** menu, select the partition you just created then select "**Properties**" from the pull down menu. The Partition Communication State must be **Active**.

General Memory Processing Ethernet Storage Optical Devices Physical Adapters General	rs
General Partition name: Test_LPAR Partition ID: 2 Environment: AIX or Linux State: Running Attention LED: Inactive ♥ Settings Boot mode: Normal ♥ Keylock position: Normal ♥ Partition workload group participant:	
Partition name: Test_LPAR Partition name: Test_LPAR Partition ID: 2 Environment: AIX or Linux State: Running Attention LED: Inactive Settings Boot mode: Normal Keylock position: Normal Partition workload group participant: Automatically start when system starts: v	
Normal Keylock position: Normal Partition workload group participant: Automatically start when system starts:	
Dynamic Logical Partitioning (DLPAP)	
Partition hostname or IP address: 9.19.50.141 Partition communication state: Active Memory DLPAR capable: Unknown Retrieve Capabilities Processing DLPAR capable: Unknown I/O adapter DLPAR capable: Unknown	

Note: To verify the RMC daemon is running from the CLI, type the following: "lssyscfg –r lpar –F lpar_id,rmc_state" and press "Enter".

If Partition Communication state is not Active, refer to the Addendum at the end of the lab to troubleshoot RMC.

2. Select the partition you want to migrate, then select "Migrate" from the "More Task" pull down menu.



_3. Enter the IP Address of the destination blade you want to migrate to and the password, then select "**Validate**". A message should appear indicating the operation completed successfully.

Integrated Virtualization Manager	IBM.
Welcome padmin (BCH2_PS700_2	Edit my profile i Helpi Log out
Partition Hanagement	Migrate Partition AIX_LPAR (2)
View/Hodily Partitions View/Hodily System Proparties View/Hodily Shared Hemory Pool	The operation completed eccessfully.
I/O Adapter Management	
View/Hodfy-Host Ethernet Adapters View/Hodfy-Virtual Ethernet view/Hodfy-Physical Adapters View-Victory Physical Adapters View-Victory Chemist	It might be possible to migrate this partition to run on another managed system. In order to migrate this partition, it must meet taritan conditions. Tar-details, consult your documantation. Specify the heatmant or IP address of the membra triagrated virtualization Hanager (I/W) that controls the target managed system, and select validate or Highte.
Virtual Storage Management	* Remote (V%) 172.25.254.33
View/Modify Virtual Storway	Remote user IDI pedmin
IVH Hanagement	Fannword:
View/Hodfy Ver Accounts View/Hodfy TCP/IP Settings Ended Seture Ended Seture Enter Power/MI Edition Key	Respired field Valdate Migrate Cancel
Service Management	and a second a second of second a
Effortunis Service Adet Services Services Adet Marcase Services Text Encode Services the Service Coste Services the Service Coste Services the Services Coste Services the Services Coste Services the Services Service Adet Service Services the Services Service Adet Service Services Service Services	

- 4. To move the partition to the destination blade, select "**Migrate**". The partition will be removed from the source blade.
 - _5. Select "**OK**" to continue the migration.
- 6. The partition has now been removed from the source blade. Login to the destination blade to see your migrated partition.

E. Inactive Migration Setup

The inactive partition migration allows you to move a logical partition that is not powered on. Before the partition is migrated it is recommended that you validate the partition before actually moving it to the destination blade. The following steps describe how to migrate the inactive partition:

- 1. Select the partition you want to migrate and choose "Shutdown" from the GUI.
- 2. Select the partition you want to migrate and choose "Migrate" from the "More Task" pull down menu.

Instant other Drive Scholar	
Furthern Management	Heater Families (co. (PARCI)
Data Modify, System Commission Data Minday, Roored Managing Paul	conditions, For balance consistent proceedings on the constraints of the balance of the balance between the part of variables and the balance balance between the balance bala
CO. Edupter Hanagement	- Second State
 Intelligity and little and interests Intelligity Annual Annual Annual 	Servery Lose 10 (pdfram)
Rithad Statup: Management	* Anapertud Fail
You Multi Installinge With an age with	Wilding Marting Canad
 Sam Mulika Sele Accessing Sam Mulika Sele Accessing Sam Parameters Sam Parameters 	
for the Management	
Christen Linner Jappil Second Facel Annue Constant Content Annue Constant Content Content Content Content Content Content Content	
Calley, CPE Internet see Sectors Destant Sectors Destant	

- _3. Enter the IP Address of the destination blade you want to migrate to and the password then select "Validate".
- 4. If there are problems with the validation process an error message will be displayed. Select "**Migrate**" to move the partition to the destination blade.

Integrated Virtualization Manager	IBM.
Wekome padmin (SCH2_PS700_2	Edit my profile i Helpi Log out
Partition Management	Pligrate Partition: AIX_LPAR (2)
View/Hodfy Partitions View/Hodfy Partitions View/Hodfy Stated History Paol View/Hodfy Shared History Paol	The operation completed excessivity.
I/O Adapter Management	
view/hodity-Host Ethernet Adapters view/hodity-sintum Ethernet view/hodity-Ethysical Adapters view/hodity-Ethysical Adapters view/hodity-Ethysical Adapters	It might be possible to migrate this partition to run on another managed system. In order to migrate this partition, it must meet cartain conditions. The details, comput your documentation. Specify the heatmant or IP atchase of the remote triagrated virtualization Hanager (IVH) that controls the target managed system, and select Validate or Highte.
Virtual Storage Hanagement	* Remote (VH) 172.25.254.33
View/Boldly Without Storwate	Remote user IDI pedmin
IVH Hanagement	Passavord
View/Modify User Accounts View/Modify TCP/IP Settings Excland Seture Enter Powers/H Edition Key	Respired field Validate (Higrate) Cancel
Service Management	
Historius Escuse Apert Secure Scal Bent Honood Escurette Suerts Secure Libbas Croste Securettile Event Ecoste Securettile Event Ecoste Securettile Event Ecoste Securettile Collect VPD Information BackgartsEcore Application Logs Honorto Tables Technese Invention	

- _4. Select "**OK**" to continue the migration process.
- 5. The partition will be removed from the source blade. Login to the destination blade and the partition you just migrated will be there.

V. Installing AIX OR Linux on the Logical Partition

In this section of the lab, we install AIX or Linux on the logical partitions. Before you start the installation, ensure your logical partition has been activated.

A. Configuring the LPAR for AIX install

Complete the following steps to install the LPAR:

1. The partition you created in the previous section should already be activated. Now you need to open a virtual terminal so you can install the partition. A virtual terminal can be opened from the GUI by selecting the LPAR and select "**Open a Virtual Terminal**" from the drop down list.

Note: A virtual terminal can also be opened from the CLI by typing "**mkvt** –**id** 2" and press "**Enter**". The '**id**' is the ID # of the logical partition you just created. To remove an existing console connection type "**rmvt** –**id** 2" or "~." and press "**Enter**".

____2. Type "1" to access the SMS menu.

1 = 8 =	SMS Menu Open Firmware	Prompt		5 = Default Boot List 6 = Stored Boot List						
Memory	Keyboard	Network	\$C\$I	Speaker						

_3. From the Main Menu, select 2 for "Setup Remote IPL (Initial Program Load)" and press "Enter".



4. From the NIC Adapters Device menu, select 1 for "Interpartition Logical LAN U8406.70Y.10ACC0A-V2-C4-T1" and press "Enter".



5. Select 4 for "IPV4 – Address Format 123.231.111.222" and press "Enter".



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



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



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



- 9. 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".
- 10. 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**".
- 11. From the Multiboot menu, select 1 "Select Install/Boot Device" and press "Enter".



- 12. From the Select Device Type menu, select 6 "Network" and press "Enter".
- 13. From the Network Service menu, select 1 "BOOTP" and press "Enter".
- 14. From the Select Device menu, select 1 "Interpartition Logical LAN" and press "Enter".
- 15. From the Select Task menu, select 2 for "Normal Mode Boot" and press "Enter".
- 16. At the next menu, select 1 for "Yes" to exit the SMS menu and install your LPAR.

For more information on installing AIX go to

http://publib.boulder.ibm.com/infocenter/pseries/v6r1/index.jsp?topic=/com.ibm.aix.install/doc/i nsgdrf/insgdrf-kickoff.htm. The installation steps are also detailed in the Basic Lab 1.

B. Preparing the LPAR for Linux Install

The following steps should be completed for RedHat install:

- 1. Telnet using PUTTY (do not use Windows' telnet client) to the IVM on your blade. Enter the userid and password provided before the lab.
- _____2. To boot the logical partition, type "**chsysstate -o on -r lpar –id** #" (where # is the partition ID for your Linux install) and press "**Enter**".
- _____3. Type "**mkvt id** #" (where # is the partition ID for your Linux install) and press "**Enter**" to open a virtual terminal to your logical partition.
- 4. Several lines will scroll up the screen. Press "8" on the keyboard when you see the word "**Keyboard**" and before the word "**Speaker**" to go to the Open Firmware Prompt.

IBM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IBM	IΒM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IΒM	IBM
		4										_	۰.		<u> </u>			
		1	= 21	15 Me	enu							5 =	Deta	ault	ROOI	C L18	sτ	
		ŏ	= Up	pen r	۱rmu	Jare	From	ηρτ				ь =	Stor	red t	Soot	List	-	
	Men	Inru		Ке	iboar	'nd	Ne	•t.unr	-k	S	SI	Ģ	Speak	er	nk			
0 >		ior g			poolar	-	110			- 00			abe on		UN			

- 5. At the 0> prompt, enter **devalias net**. If it is set to a l-lan device, continue with the next step. If not, enter ls at the prompt and find the line that has /l-lan. Then, enter **devalias net l-lan@30000004** using the actual information returned from the ls command.
- 6. At the Open Firmware prompt, enter the string "**boot net:172.25.254.21,,172.25.254.91 mpath**". The first IP address is the install server and the second IP address is for your client. Don't forget the commas between the IPs. The "mpath" after the IPs is to tell the kernel to activate multipathing support.

IBM	IBM	IBM	IBM	IBM	IBM	IΒM	IBM	IBM	IBM	IBM	IBM	IΒM	IBM	IBM	IBM	IBM	IBM	IBM
IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
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IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IΒM	IBM	IBM	IBM	IBM
IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM	IBM
ΙBΜ	IBM	IBM	IBM	IΒM	IΒM	IΒM	IBM	IBM	IΒM	IΒM	IBM	IΒM	IΒM	IBM	IΒM	IBM	IBM	IBM
		1	= St	4S Me	enu							5 =	Defa	ault	Boot	t Lis	st	
		8	= Ok	oen f	Firmu	Jare	Pro	npt				6 =	Stor	red B	Boot	List	t	
	Mer	nory		– Keş	yboai	rd	Νe	etwor	γk	SC	CSI	5	Speak	<er< td=""><td>ok</td><td></td><td></td><td></td></er<>	ok			
\circ >	deva	alias	s net	t ∕vo	devid	ce/1-	-lan0	3000	00004	1 ok								
$\circ >$	boot	t net	::172	2.25	.254	.21,	,172.	.25.2	254.5	59 mp	bath							

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

IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM	IBM IBM
		1 8	= SM = Op	4S Me Den f	enu Firmu	Jare	Pror	npt				5 = 6 =	Defa Stor	ault red B	Boot Boot	: Lis List	st t	
0	Mer deva boot	nory alias t net	s net t:172	Кец t /1ł 2.25	yboar nea@2 . 254 .	rd 23c00 .21,	N€ 0100/ ,172	etwor /ethe .25.2	rk ernet 254.9	S(t@230 91 mp	CSI ⊴0000 path	9 10 OC	Speał <	<er< td=""><td>ok</td><td></td><td></td><td></td></er<>	ok			
TFT Serv Clic Subr (1 TFT Bloc PAC	P BOO ver ent het M P Ref ck Si KET (OT IP Mask Filer tries ize. COUN	name 33	3100				72.29 72.29 55.29 ./exp	5.25 5.25 55.25 55.25	4.21 4.91 55.0 /rhe:	l∕ima	ages,	/netk	boot,	 /ppc6	54.ir	ng	

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.

- ____7. At the Choose a Language screen, scroll to the language of your choice and press "Enter".
 - 8. Select "**NFS Image**" as your Installation Method and press "**Enter**" to install from the NIM server.

Welcome to Red Hat Enterprise Linux Server	
	Installation Method
	What type of media contains the packages to be installed?
	Local CDROM Hard drive NFS image FTP HTTP
	Back
(Tab)/(Alt-Tab) betu	veen elements (Space) selects (F12) next screen

9. If you have more than one networking device, choose it from the list and press "Enter" to setup the Ethernet port used in this lab.

Velcome to Red Hat Enterprise Linux Server
Networking Device
he working bevice
You have multiple network devices on this system. Which would you like to install through?
<mark>eth0 - PORT - 1 IBM Host Ethernet Adapter</mark> eth1 - PORT - 2 IBM Host Ethernet Adapter
OK I Identify Back
<tab>/<alt-tab> between elements <space> selects <f12> next screen</f12></space></alt-tab></tab>

10. 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.
| Welcome to Red Hat Enterprise Linux Server |
|---|
| Configure TCP/IP |
| [*] Enable IPv4 support
() Dynamic IP configuration (DHCP)
(*) Manual configuration |
| [] Enable IPv6 support
(*) Automatic neighbor discovery (RFC 2461)
() Dynamic IP configuration (DHCP)
() Manual configuration |
| |
| |
| <pre><tab>/<alt-tab> between elements <space> selects <f12> next screen</f12></space></alt-tab></tab></pre> |

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



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

Welco	ome to Red Hat Enterprise Linux Server
	NFS Setup
	Please enter the following information:
	o the name or IP number of your NFS server o the directory on that server containing Red Hat Enterprise Linux Server for your architecture o optionally, parameters for the NFS mount
	NFS server name: Red Hat Enterprise Linux Server directory: /export/rhel NFS mount options (optional):
KTa	ab)/ <alt-tab> between elements <space> selects <f12> next screen</f12></space></alt-tab>

- 13. Use text mode for this lab.
- 14. Welcome to Red Hat Enterprise Linux Server! Select **OK** to continue the install.
- 15. As this is not a permanent install, select to "**Skip entering Installation Number**" and press "**Enter**".
- 16. Confirm the "Skip" and press "Enter" to continue the installation.
- 17. 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.



18. Select to "**Remove all partitions on selected drives and create default layout**" on the disk drive for this installation.



_19. Select "Yes" to acknowledge the warning and press "Enter".

Welcome to Red Ha	t Enterprise Linux Server
	Warning You have chosen to remove all partitions (ALL DATA) on the following drives: sda (IBM-ESXS ST973402SS 70002 MB) Are you sure you want to do this? No
<tab>/<alt-tab></alt-tab></tab>	between elements <space> selects <f12> next screen</f12></space>

_20. Select "**No**" and press "**Enter**" to continue. Tuning the partition layout is not part of this course.

Welcome to Red Hat Enterprise Linux Server
Review Partition Layout Free Review and modify partitioning layout?
<tab>/<alt-tab> between elements <space> selects <f12> next screen</f12></space></alt-tab></tab>

- 21. Complete the network settings with the information provided for this lab.
- 22. Verify the hostname is correct and press "Enter". Note: Linux will not allow the use of _ in the lab's hostname.

Hostname Configuration	
If your system is part of a larger network where hostnames are assigned by DHCP, select automatically via DHCP. Otherwise, select manually and enter a hostname for your system. If you do not, your system will be known as 'localhost.'	
() automatically via DHCP <mark>(*) manually</mark> BCH1-14-LP2	
Back	

- _____23. Choose the **time zone** for your location and press "Enter".
- 24. Enter a root password. Please use PSTRAIN2 for this lab.

Welcome to Red Ha	at Enterprise Linux Server
	Pick a root password. You must type it
	twice to ensure you know what it is and didn't make a mistake in typing. Remember that the root password is a critical part of system security!
	Password: ****** Password (confirm): ******
	Back

____25. For this lab, do not select additional packages, select **OK** and press "**Enter**" to continue.

Jelcome to Red Hat Enterprise Linux Server
Package selection
The default installation of Red Hat Enterprise Linux Server includes a set of software applicable for general internet usage. What additional tasks would you like your system to include support for?
[] <mark>Software Development</mark> [] Web server
[] Customize software selection
<tab>/<alt-tab> between elements <space> selects <f12> next screen</f12></space></alt-tab></tab>

_26. An install package dependency check is run. Note the log location and press "Enter" to begin the installation.

Welcome to Red Ha	t Enterprise Linux Server
	A complete log of your installation will be in /root/install.log after rebooting your system. You may want to keep this file for later reference.
(Tab)/(Alt-Tab)	between elements (Space) selects (F12) next screen

____27. The filesystems will now be formatted and the installation of the selected packages will begin. You can watch the progress of the individual package installations.

Welcome to Red Hat Enterprise Li Pa Name : libao-0.8.0 Size : 95k Summary: Cross Plata	Loome to Red Hat Enterprise Linux Server Package Installation Name : libao-0.8.6-7-ppc64 Size : 95k Summary: Cross Platform Audio Output Library.								
	100%								
Total : Completed: Remaining:	Packages 893 71 822	Bytes 788M 27M 761M	Time 0:08:37 0:00:17 0:08:19						
	3%								
<tab>/<alt-tab> between elemen</alt-tab></tab>	nts <space></space>	selects	<f12> next so</f12>	creen					

_28. Once the installation completes, press "Enter" to reboot the server.



____29. You will need to press 1 and enter the SMS menus to select to boot from the disk. If you miss it, it will eventually come around again.



_30. For this lab, just select "Exit" and press "Enter".

	Setup Agent
	Select the item that you wish to modify
	Authentication Firewall configuration Keyboard configuration Network configuration System services Timezone configuration RHN Register
	Run Tool
<tab>/<alt-tak< th=""><th>o> between elements <space> selects <f12> next screen</f12></space></th></alt-tak<></tab>	o> between elements <space> selects <f12> next screen</f12></space>

__31. This completes the installation of the OS. Reboot the system and login as root to continue the setup at **Configuring Linux for LPM** in this lab document. Your password should have been set to PSTRAIN2 previously.



The following steps should be completed for SUSE install:

- 1. Telnet using PUTTY (do not use Windows' telnet client) to the IVM on your blade. Enter the userid and password provided before the lab.
- 2. To boot the logical partition, type "**chsysstate -o on -r lpar –id** #" (where # is the partition ID for your Linux install) and press "**Enter**" or use the web GUI interface.
- 3. Type "**mkvt -id** #" (where # is the partition ID for your Linux install) and press "**En-ter**" to open a virtual terminal to your logical partition.
- 4. 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.

												IBMM IBMM IBMM IBMM IBMM IBMM IBMM IBMM	AMA AND AND AND AND AND AND AND AND AND AN		AMA AND AND AND AND AND AND AND AND AND AN	MAMAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	
	8	- 31 - 01	pen l	firm.	lare	Pror	npt				5 - 6 =	Stor	ed l	Boot	List	; ;	
Men	nory		Key	yboaı	۰d	Ne	etwoı	۰k	SC	CS I	S	Speal	ker				

- 5. From the Main Menu, select 2 for "Setup Remote IPL <Initial Program Load>" and press "Enter".
 - _6. From the NIC Adapters menu, select 1 for "**Port 1 IBM Host Ethernet Ada**" and press "**Enter**".

Version EA350_053 SMS 1.7 (c) Copyright IBM Corp. 200	0,2008 All rights reserve	d.
NIC Adapters Device	Location Code	Hardware
1. PORT - 1 IBM Host Ethernet Ada 2. PORT - 2 IBM Host Ethernet Ada	U78A5.001.WIH0182-P1-T6 U78A5.001.WIH0182-P1-T7	001a64441ade 001a64441adf
Navigation keys:		
ESC key = return to previous screen	X = eXit System	Management Services
Type menu item number and press Ent	er or select Navigation k	ey:

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

- _____7. From the Select Internet Protocol menu, select 1 for "IPv4" and press "Enter".
- 8. From the Select 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, enter the Client IP Address, Server IP Address, Gateway IP Address, and the Subnet Mask.

Version EA350_053 SMS 1.7 (c) Copyright IBM Corp. 2000,2008 All rights reserved.
IP Parameters PORT - 1 IBM Host Ethernet Adapter: U78A5.001.WIH0182-P1-T6 1. Client IP Address [172.25.254.91] 2. Server IP Address [172.25.254.21] 3. Gateway IP Address [172.25.254.21] 4. Subnet Mask [255.255.255.0]
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:

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

Version EA350_053 SMS 1.7 (c) Copyright IBM Corp. 2000,2008 All rights reserved.
Multiboot 1. Select Install/Boot Device 2. Configure Boot Device Order 3. Multiboot Startup (OFF)
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:

- 14. From the Select Device Type menu, select 6 "Network" and press "Enter".
 - 15. From the Select 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.WIH0182-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 the OS on your blade.



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.

```
Loading basic drivers... ok

Starting hardware detection... ok

(If a driver is not working for you, try booting with brokenmodules=driver_name.

)

IBM PCI-X DDR 3Gb SAS Adapter (572A/572C)

drivers: ipr*

QLogic ISP2422-based 4Gb Fibre Channel to PCI-X HBA

drivers: qla2400, qla2xxx*

QLogic ISP2422-based 4Gb Fibre Channel to PCI-X HBA

drivers: qla2400, qla2xxx*

Activating usb devices... ok

IBM Host Ethernet Adapter Port 0

drivers: ehea*

IBM Host Ethernet Adapter Port 1

drivers: ehea*

Reading driver update: disk:/?device=*usb*

Make sure that CD number 1 is in your drive.

1) OK

2) 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. If prompted, select 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 and the installation will begin. 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.



- 34. Select **OK** and press **Enter** to activate any device drivers installed on the system.
 - 35. Select New Installation and Next, then press Enter.



____36. 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.

YaST2 - installation	0 172.25.254.92		
Clock and Time Zone			
1Regionqqqqqqqqqqq	aaaaaaaaaaaaaaak	1Time Zoneqqqqqqqqqqqqqqqqqqqq	Idddddk
xAustralia		xAlaska (Anchorage)	ω
xBrazil		xAleutian (Adak)	
xCanada		xArizona (Phoenix)	
×Central and South	America X	xBoise	
×Etc	ω	×Central (Chicago)	
xEurope		×Eastern (New York)	
×Global		×East Indiana (Indianapolis)	
×Indian Ocean		×Hawaii (Honolulu)	
×Mexico		×Indiana (Marengo)	
xPacific		×Indiana (Petersburg)	
xRussia		×Indiana Starke (Knox)	
×USA		×Indiana (Tell City)	
mqqqqqqqqqqqqqqqqqqq	qqqqqqqqqqqqqqqqj	mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq	Iqqqqqj
		1Date and Timeqqqqqqqqqqqqqqq	qqqqqk
		× 2010-10-08 - 15:04:29	
		× LChange	••••• ×
		maaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	iqq <u>qqqj</u>
[Help]	[Back]	[Abort]	[Next]
F1 Help F8 Back F9	Abort F10 Next		

_37. At the **Installation Settings** menu, you need to tab to the **Change...** option and press "**Enter**". Scroll down the list that appears, select **Partitioning...** and press "**Enter**".

YaST2 - installation @ 172.25.254.60	
Installation Settings Click any headline to make changes or use the "Change" menu below. 10verviewqqExpertqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq	iqqk iqk×
xxKeyboard Layout xx xx * English (US) xx xxPartitioning	WX XX XX VX
<pre>xx * Delete partition /dev/sda1 (7.81 MB) xx * Delete partition /dev/sda3 (16.88 GB) xx * Create partition /dev/sda1 (203.95 MB) with id=41 xx * Create extended partition /dev/sda3 (16.68 GB) xx * Create root partition /dev/sda3 (16.68 GB) xx * Create root partition /dev</pre>	×× ×× ×× ×× ×× ××
xx * Use /dev/sda4 as swap xKeyboard Layoutx xmqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq	×× qj× qqj 1]
F1 Help F8 Back F9 Abort F10 Install	

- _38. Select Custom Partitioning (for experts), Next and press "Enter".
- _39. Tab to the System View area, scroll down to Hard Disks and press "Enter".

YaST2 - installation 0	172.25.254.60		
Expert Partitioner			
Expert rartitioner			
l <mark>System View</mark> qqqqqqq	qkHard Disks		
xqwq172.25.254.60	×lqqqqqqqqqqqqqq	aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	qqqqqqqqqqqqqqqk
x t+qHard Disks	xxDevice x	SizexFxEncxType	xFS TypexLx
× tqqRAID	xx/dev/sda x 20	O.OO GB× × − ×AĪX−VDAS	D x ^T x x
🚽 🗙 tqqVolume Manageme	enxx/dev/sda1x 👘	7.81 MBx x xPPC PReP	Bootx x x
x tqqCrypt Files	xx/dev/sda2x10	1.97 MBx x – xLinux LV	M xExt3 x/x
x tqqDevice Mapper	xx/dev/sda3x 1	6.88 GBx x - xLinux na	tive xExt3 🛛 🗙 🔧
× tqqNFS	xx/dev/sda4x	3.00 GBx x – xLinux sw	ар хЅмар х х
x mqqUnused Devices	××		
xqqqSettings	××		
×	××		
×	××		
×	××		
×	××		
×	×mtqqqqqqqqqqqqq	gaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	qqqqqqqqqqqqqqqj
mtqqqqqqqqqqqqqqqqqqq	ıqj[Rescan Disks]	[Configure]
[Help]	[Back]	[Abort]	[Accept]
F1 Help F6 Rescan Dis	sks F7 Configure	e F8 <mark>Back F9 Abor</mark>	t F10 Accept

- 40. Tab to **Configure...** under the list of disks an press "**Enter**". Select **Configure Multipath...** and press "**Enter**".
- _41. Select **Yes** and press"**Enter**" to activate multipath.



42. The disks are rescanned and new mapper devices will appear in the Hard Disks list.

YaST2 - installation @	172.25.254.60		
Furnit Brutition			
Expert Partitioner			
l <mark>System View</mark> gggggggg	gkHard Disks		
×qwq172.25.254.60	×lqqqqqqqqqqqqqqqq	qqqqqqqqqqqqqqqqqqqqqq	iqqqqqqqqqqqqk
× t+qHard Disks	xxDevice		
× tqqRAID	xx/dev/mapper/360	0a0b80001138380000d8c	a4cae1d28 ×
👘 🗙 tqqVolume_Manageme	nxx/dev/mapper/360	0a0b80001138380000d8c	:a4cae1d28_parx
x tqqCrypt Files	xx/dev/mapper/360	0a0b80001138380000d8c	:a4cae1d28_parx
x tqqDevice Mapper	xx/dev/mapper/360	0a0b80001138380000d8c	a4cae1d28_parx
× tqqNFS	xx/dev/mapper/360	UaUb80001138380000d8c	a4cae1d28_parx
x mqqunused Devices	xx/dev/sda		
xqqqsettings	- XX		
X	- XX		
×			
<u></u>	- 00		
Ŷ			
mtqqqqqqquqqqqqqqqqqq	qj[Rescan Disks]	[Configure]
[Help]	[Back]	[Abort]	[Accept]
F1 Help F6 Rescan Dis	ks F7 Configure	. F8 Back F9 Abort	F10 Accept

- _43. Since the condition of the disks is unknown at this point, it is safest to simply delete all existing partitions and rebuild a simple environment. Tab to the Device section, scroll to the individual partition entry and press "Enter" to select it, tab to Delete, and so on until you've removed all partitions.
- _44. Now you must build the minimum partitions needed for this lab. Select the Add... function under the list of disks, and create the following primary partitions on the screens that appear.

Туре	Format?	Size	Mount?
PPC PReP Boot	No	9 MB	No
Swap	Yes	1 GB	Yes - swap
Linux	Yes	Remainder of disk	Yes - /

YaST2 - installati	ion @ 172.25.254.60	
Add Partition on	/dev/mapper/3600a0b80001138380000d8ca4cae1d28 IFormatting Optionsqqqqqqqqqqq × () Format partition × × File system × × Ext3aaaaaaaaaaaaaaaaaaaaa × [Options] ×	
	x (x) Do not format partition x x File system ID: x x Inconconconconconcervation x	
	x [x0x83 Linux x x x x qqqqqj mqqqx0x82 Linux swap x qqqqqj	
	x (xx0xFD Linux RAID x x x 0x00 FAT16 Boot x x	
	× x0x0C Win95 FAT32 × aaa. x × x0x07 NTFS ×] × × (x0xA0 Hibernation × ion ×	
	mqqq <mark>x0x41 PPC PReP Bootx</mark> qqqqqj mqqqqqqqqqqqqqqq	
[Help]	[Bac bort]	[Finish]
F1 Help F8 Back	F9 Abort F10 Finish	

- 45. When finished with the partitioning, tab to Accept and press "Enter".
- 46. Tab to **Install** and press "Enter" to continue.



- ____47. Agree to the License Agreement for the Agfa font package and press Enter.
- ____48. Confirm you're ready to begin the **Install** and press **Enter**.

YaST2 - insta	llation @ 172.25.254.92	
Installatilg	aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	aak
Click any x	1qqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq	< x w.
lOverviewqx	×Confirm Installation	× × qqqqqqqqk
×lqqqqqqqqx	× ·	x x <mark>qqqqqqq</mark> kx -
xxKeyboard <mark>x</mark>	xAll information required for the base installation	x x wx
XX X	x <mark>is now complete.</mark>	x x X
xx * Engl <mark>x</mark>	×	x x x
XX X	xlf you continue now, existing partitions on your	x x vx
XXPartitioX	xhard disk will be deleted or formatted (erasing	x x X
XX * Dolo	xany existing data in those partitions) according	
× * Delex	vdialoge	
× × Remov	valai0gs.	
xx * Delex	xGo back and check the settings if you are unsure.	
xx * Delex	x	
×× * Dele <mark>x</mark>	maaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	i x 🛛 🛛 🗙
xmqqqqqqqq		× qqqqqqqjx
mqqqqqqqqqqx	[Install] [Back]	×qqqqqqqqj
mq	qqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq	qqj
[Help]		[nstall]
ні нетрі на в	ack F9 Abort F10 Install	

_49. The disks will be partitioned and formatted and the selected packages will then be installed.

YaST2 - installation @ 172.25.254.92
Perform Installation lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq
<pre>mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq</pre>
Installing gstreamer-0_10-plugins-base-lang-0.10.25-1.1.133.ppc64.rpm (ins 51%
Installing Packages (Remaining: 2.33 GB) 15%
F1 Help F9 Abort

- 50. Once the installation is complete, the system will automatically reboot.
 - _51. If you system stops at the SMS menu, select the disk as the boot device. Once the system has completed booting, enter and confirm a password (**PSTRAIN2**) for the root user, tab to **Next** and press **Enter**.



- _52. Press Enter to Continue with the Network Card detection.
- ____53. 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**.

YaST2 - installation	@ linux		
Hostname and Domain	Name		
	lHostname and Domain Nameqo ×Hostname Domain Nam ×BCH1-14-LP3aaaa siteaaaaaa ×[] Change Hostname via DH ×[] Assign Hostname to Loc mqqqqqqqqqqqqqqqqqqqqqqq	qqqqqqqqk ne x aaaaaaaaax 4CP x ppback IPx qqqqqqqqj	
[Help]	[Back] [A	Abort]	[Next]

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



55. Select No to skip the Internet connection test, tab to Next and press Enter.



- 56. Select **Next** and press **Enter** to configure the Certificate Authority.
 - 57. Select Local authentication, tab to Next and press Enter.
- ____58. Create a local user ID (pstrain2) and password (pstrain2), tab to Next and press Enter.
- ____59. Your configuration choices will then be written to disk and appropriate processes and daemons started. You may review the Release Notes, then tab to **Next** and press **Enter** to continue.



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

YaST2 - installation @ linux	
Hardware Configuration () Skip Configuration (x) Use Following Configuration	
lqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq	
× maaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	
[Change] [Help] [Back] [Abort] [Next]	
F1 Help F8 Back F9 Abort	

____61. Uncheck the Clone This System for AutoYaST box as you won't be needing it here. Tab to Finish and press Enter.

YaST2 - installation @ linux
Installation Completed
lagagagagagagagagagagagagagagagagagagag
×Please visit us at http://www.novell.com/linux/. × × ×
× × × × mqqqqqqqqqqqqqqqqqqqqqqqqqqqqqq
[x] Clone This System for AutoYaST
[Help] [Back] [Abort] [Finish]
F1 Help F8 Back F9 Abort F10 Finish

__62. The system will complete the boot process and you will be able to login. This completes the OS installation. Reboot the system and login as root to continue the setup with the **Configuring Linux for LPM** section of this lab. Your password should have been set to PSTRAIN2 previously.

VI. Installing IBM i on a Power7 Blade

Introduction

In this section of the lab, you will use IVM to complete the necessary VIOS setup for installing IBM i on the blade. You will also create a LAN console connection on your workstation. You will then activate the IBM i partition and install the Licensed Internal Code (LIC). See Section B: Creating a Logical Partition (specify IBM i as your environment and see screen shots below for any updates). NOTE: Some of the settings below may already be setup depending on what other parts of the labs have been completed.

Lab Tasks

- 1. Enable virtual Ethernet bridging on the first embedded Ethernet port.
- 2. Verify IBM i is on VLAN1.
- 3. Bridge the first embedded Ethernet port to virtual Ethernet LAN (VLAN) 1.
- 4. Verify the IBM i install images are available in the media library.
- 5. Mount the LIC image on the virtual optical device in the IBM i partition.
- 6. Create and start a LAN console connection on your workstation.
- 7. Activate the IBM i partition and install LIC.

Detailed Instructions

- 1.
 Enable virtual Ethernet bridging on the first embedded Ethernet port.

 In IVM, click View/Modify Host Ethernet Adapters.
 - Select the first embedded Ethernet port (T6) and click Properties.
 - Click the checkbox after Allow virtual Ethernet bridging, then click OK.
 - 2. Verify IBM i is on VLAN1.
 - _ Click View/Modify Virtual Ethernet.
 - Verify that the IBM i partition has a checkmark under Virtual Ethernet 1.
- 3. Bridge the first embedded Ethernet port to virtual Ethernet LAN (VLAN) 1. Click the Virtual Ethernet Bridge tab.
 - In the row for virtual Ethernet 1, use the drop-down menu to select the first embedded Ethernet port (T6). Click Apply.

Create Partition Wi	izard - Windo	ws Internet Explorer	
https://172.25.254	.31/ptn_create	faces	
Create Partition:	Ethernet		Step 4 of 8
Name Memory Processors ••• Ethernet Storage Type Storage Optical/Tape Summary	Ethernet Specify the configure an Virtual Eth Create Ad	desired virtual Ethernet for each of this partition's adapter, then select a virtual Ethernet of none. ernet Configuration apter	virtual Ethernet adapters. If you do not wish to
	Adapter	Virtual Ethernet	
	1	1 - ent0 (U78A5.001.WIH00E1-P1-T6) 👻	
	2	None 👻	
< Back Next >	Finish Can	cel	Help
Done		😜 Internet	Protected Mode: On 🋛 🖓 👻 🔩 100% 👻

- _4. Verify the IBM i install images are present in the media library. __Click View/Modify Virtual Storage.
 - ____ Click the **Optical Devices** tab.
 - Verify that the IBM i install images per are present under Virtual Optical Media.

5. **Mount the LIC image on the virtual optical device in the IBM i partition.** Select the LIC virtual optical image and click **Modify partition assignment**.

Click the checkbox for your IBM i partition and then click **OK**. The IBM i partition should now appear as the **Assigned Partition** for that image.

https://1/2.25	1254.41 grin, proparto	in the in		
artifion Proj	perties: 18Pt i (3)	ak and a second s		1
General N	fernory Process	ang Ohernet Storage Ontscal/To	ape Devices	
• Physical (Optical Devices ()	No devices)		
		00110100-001		
* Virtual Op	abical Devices			
You can use	virtual optical devi	ces to mount and unmount media files, such a	is an ISO image, that are in your media libr	ary for use by the current
pertition, Se	latted rows in the \	Artual Optical Devices table represent those d	levices with easignments to the current part	tion and unselected rows
represent de	svices that do not h	ave an assignment to any partition. To remove	e a device assignment for the ourrent partit	ion, clear the selection for
represent de that device i specific optic	svices that do not h n the table. To assi tal device.	ave an assignment to any partition. To remov gn a device to the current partition, select the	e a device assignment for the current partil t device in the table. Click Modify to change	ion, clear the selection for the mounted media for a
represent de that device i specific optic Select	svices that do not h n the table. To anni tal device.	ave an assignment to any partition. To remov gn a device to the current partition, select the <u>Current Media</u>	e a device assignment for the current partil t device in the table. Click Modify to change <u>Current Media Size</u>	ion, clear the selection for the mounted media for a
represent de that device i specific optix Belect	svices that do not h n the table. To any sal device, Biette *	ave an essignment to any pertition. To remov gn a device to the current pertition, select the <u>Current Hoto</u> SLIC_N_VTRL.es <u>Hoto</u> fy	e a device assignment for the current part) it device in the table. Click Modify to change <u>Current Media Soc</u> 837 MB	ion, dear the selection for the mounted media for a <u>Hourt Type</u> Read/Write
represent dr that davice i specific optx Belect	excess that do not h in the table. To anni al device. Banna * stopt0	ave an assignment to any pertition. To remov gn a device to the current pertition, select the <u>Current Hodio</u> SLIC_N_VIRI.cos <u>Mashr</u>	e a device assignment for the oursent part) a device in the table. Click Modify to change <u>Clurrent Media Soc</u> 637 MB	ion, dear the selection for the mounted media for a <u>Hourt True</u> Read/Write
represent de that device i specific optx Belect I2 Dreate Devic	svices that do not b n the table. To again tal device, Name * stoptd	ave an essignment to any pertition. To remov gn a device to the current pretition, select the <u>Current Hotes</u> SLIC_N_VTRL as <u>Months</u>	e a device assignment for the current part) a device in the table. Click Modify to change <u>Clurent Media Sas</u> 637 MB	ion, dear the selection for the mounted media for a <u>Hourt Type</u> Read/Write
represent de that device i specific optiv Belect [2] Create Devic	svoes that do not h n the table. To apprivation to the table of the table of table of the table of the table stapped	ave an essignment to any partition. To remov gn a device to the current partition, select the <u>Current Motio</u> SLIC_N_VTRL as <u>Multiv</u>	e a device assignment for the oursent parti i device in the lable. Cick Modify to change Clarent Media Size	ion, dear the selection for the mounted media for a <u>Hourt Type</u> Read/Write
represent dr that device i specific optix Select [2] Create Device Physical 1	s-ces that do not h n the lable. To asso al device. Name * scopid Fape Devices (No	ave an essignment to any partition. To remov gn a device to the current partition, select the <u>Current Hotop</u> SUIC_N_VTRL as <u>Mushy</u> devices)	e a device assignment for the oursent part) it device in the fable. Click Modify to change Cliencet Modia Size 637 MB	non, dear the selection for the mounted media for a <u>Hourt Type</u> Read/Write
represent dr that davian i specific optiv Select [2] Create Davie * Physical 1	s-ces that do not h n the lable. To asso al device. Name * scopid a Tape Devices (No	ave an essignment to any partition. To remov gn a device to the current partition, select the <u>Current Hotop</u> SUIC_N_VTRL as <u>Hostin</u> devices)	e a device sosignment for the oursent part) it device in the fable. Click Modify to change Clinned Modia Sos 637 MB	non, dear the selection for the mounted media for a <u>Houst Tugs</u> Read/Write

NOTE: In this part of the lab we will use the internal SAS disk on the blade to install IBM i (Don't create larger than 25GB or it will take even longer to format !!)

Create Partition Wizard - Windows Internet E	xplorer
https://172.25.254.31/ptn_create.faces	
Create Partition: Storage	Step 6 of 8
Name Storage Memory The virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be through the Add to stor and assign additional virtual disk will be the Add to stor and assign addit	created in the storage pool with the size specified. You may increase the storage pool sizes age pool task in the Physical Volumes tab in the View/Modify Devices page. You may create Frual disks once the partition has been created.
Optical/Tape Summary Storage pool name:	lp3vd1 rootvg (28.62 GB Available) ▼ Refresh
* Virtual disk size:	25 GB •
< Back Next > Finish Cancel	Help
Done	🕘 Internet Protected Mode: On 🦓 🔻 🍕 100% 🔻

6. Create and start a LAN console connection on your workstation.

NOTE: if you don't have IBM i Access for Windows installed on your workstation, we will help you get this code on your workstation via a DVD installation.

- ____On your workstation's desktop, open **Operations Console**.
- ____Click the New button.
- ___ Click Next.
- _____ Verify that Local console on a network (LAN) is selected, then click Next.
- ____ Enter the IBM i partition hostname from your token for **Service host name**.
- ____ Enter the IBM i partition IP address from your token for Service TCP/IP Address.
- Click **Next**. This IP address will be assigned to IBM i when the LAN console connection is first established.
- ___ Enter the IBM i subnet mask and gateway from your team info above.
- Do not click Next yet.
- ____ In IVM, click View/Modify System Properties and record the blade's serial number.
- Back in Operations Console, enter the blade's serial number.
- Enter 2 for Target partition, then click Next.
- Leave QCONSOLE as the service tools device ID and click Next.
- Click Finish.
- Right-click the new console connection and select **Connect**. The connection status will remain **Connecting...** until the IBM i partition has started and attempted to establish a LAN console connection.

📲 IBM i Operations Conse	ble		
Connection View Options	Help		
Connection	Status	Configuration	Partition
	Connecting	QCONSOLE V7R1M0 7998-61X A 3	100134A-3
Console	Connecting	172.25.254.89 / 255.255.255.0 / 172.25.254.6	100134A-3
•			

Service Tools Sign-on	172.25.254.89		<u>?</u> ×
Service tools user: Password:			
	OK	Cancel	Help

_____7. Activate the IBM i partition and install LIC.

- ___ In IVM, click View/Modify Partitions.
- Select the IBM i partition and click Activate. Click OK to confirm.
- When the LAN console connection has been established, a sign-on dialog box will appear on your workstation. Use 11111111 for both userid and password.
- Once the IBM i installation starts, press Enter enough times to reach the Install Licensed Internal Code screen.
- ___ Choose option 1, Install Licensed Internal Code.



On the Work with Optical Devices Screen, enter 1 next to OPT01 (it should be the only device listed) and press Enter.

____On the Select Load Source Device screen, enter 1 next to the first virtual disk listed.

Session A	- 172.25.254.89.ws - [24 x	80]								
File Edit Vie	ew Communication Actions	Window Help								
) 🜆 🖬 🔳 🔳	i 🔈 🛃 🛃 🛃	! 🔌 🔗							
	Host: 127.0.0.1	Port: 4	9251	W	orkstation ID:		D	isconnect		
		Sele	ct Load	Sourc	e Devi	ce				
Type	1 to select,	press Ent	er.							
0pt 9	Serial Number Y7D7S6JBHHWF	r Type 6822	Model 050	Sys Bus 255	Sys Card 2	I/O Adapter 0	I/O Bus O	Ctl 1	Dev ©	
F3=Ex	it	F5=Refres	h		F12=C	ancel				
M <u>A</u>	A								(977003
(iii) "Connected	to remote server/host 127.0.	0.1 using port 49251								11.

Press **F10** to confirm.

On the Install Licensed Internal Code (LIC) screen, choose option 2, Install Licensed Internal Code and Initialize System.

□ Session A - 172.25.254.89.ws - [24 x 80]	
File Edit View Communication Actions Window Help	
Host: 127.0.0.1 Port: 49251 Workstation ID: Disconnect	
Install Licensed Internal Code (LIC)	
Disk selected to write the Licensed Internal Code to: Serial Number Type Model I/O Bus Controller Device Y7D7S6JBHHWF 6B22 050 0 1 0	
Select one of the following:	
1. Restore Licensed Internal Code 2. Install Licensed Internal Code and Initialize system 3. Install Licensed Internal Code and Recover Configuration 4. Install Licensed Internal Code and Restore Disk Unit Data 5. Install Licensed Internal Code and Upgrade Load Source	
Selection 2	
F3=Exit F12=Cancel	
M <u>A</u> A 21/	007
ල් Connected to remote server/host 127.0.0.1 using port 49251	

Press **F10** to confirm.

Note: This can take over an hour depending on the size of your load source object.



©]Session A - 172.25.254.89.ws - [24 x 80]		
<u>Elle</u> Edit <u>View Communication Actions Window H</u> elp		
Host: 127.0.0.1 Port: 49261 Workstation ID:	Disconnect	
IPL or Install the System		
Select one of the following:	System:	C100134A
1. Perform an IPL 2. Install the operating system 3. Use Dedicated Service Tools (DST) 4. Perform automatic installation of the operating sy 5. Save Licensed Internal Code	stem	
Selection		
-		
Licensed Internal Code - Property of IBM 5770-999 Licensed Internal Code (c) Copyright IBM Corp. 1980, 2010. All rights reserved. US Government Users Restricted Rights - Use duplication or disclosure restricted by GSA ADP schedu Contract with IBM Corp.	le	
MA		16/007
		107001

Once LIC is installed, the IBM i partition will reboot. This lab will not install the operating system. As you have probably noticed, once the LAN console connection is established, installing IBM i on the blade is very similar to installing it on any other system that supports it.

If you really want to install IBM i OS the BOSS images are in the VIOS Virtual Library and can be used.

Addendum

"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. Configuring NIB/LA in AIX

The following steps will configure NIB/LA on the POWER blade:

1. This step should only be performed if the adapter interfaces are configured. To remove any pre-existing IP interface configurations type the following commands:

Type "ifconfig en0 detach" and press "Enter" Type "armdey, dl en0" and press "Enter"

Type "rmdev –dl en0" and press "Enter"

Type "**ifconfig en1 detach**" and press "**Enter**" Type "**rmdev –dl en1**" and press "**Enter**"

Type "**ifconfig et0 detach**" and press "**Enter**" Type "**rmdev –dl et0**" and press "**Enter**"

Type "**ifconfig et1 detach**" and press "**Enter**" Type "**rmdev –dl et1**" and press "**Enter**"

Note: The above commands can also be executed in smit from the fast path "smitty tcpip".

- Verify the network interfaces have been removed: Type "netstat -in" and press "Enter" (You should only see the loopback interface)
- 3. Create the ent2 pseudo-device:
 - a. Type the fast path "smitty etherchannel" and press "Enter"
 - b. Select "Add an EtherChannel / Link Aggregation" and press "Enter"
 - c. Select "ent0" as the primary adapter and "ent1" as the backup adapter
 - d. The **Perform Lossless Failover After Ping Failure** defaults to **yes** but should be changed to **no** depending on the switch configuration. For more information refer to <u>http://publib.boulder.ibm.com/infocenter/pseries/v5r3/index.jsp?topic=/com.ibm.aix.com</u> <u>madmn/doc/commadmndita/lossless_failovr.htm</u>.
 - e. Enter the default gateway as the "Internet Address to Ping"
| | Add an EtherCh | annel / Link Aggr | egation | |
|--|------------------|-------------------|----------------|----|
| Type or select valu | es in entry fiel | ds. | | |
| Press Enter AFTER m | aking all desire | d changes. | | |
| | | | [Entry Fields] | |
| EtherChannel / Li | nk Aggregation A | dapters | ent0 | + |
| Enable Alternate Address | | | no | + |
| Alternate Address | | | [] | + |
| Enable Gigabit Ethernet Jumbo Frames | | | no | + |
| Mode | | | standard | + |
| IEEE 802.3ad Interval | | | long | + |
| Hash Mode | | | default | + |
| Backup Adapter | | | | + |
| Automatically Recover to Main Channel | | | yes | + |
| Perform Lossless Failover After Ping Failure | | | yes | + |
| Internet Address | [] | | | |
| Number of Retries | | | [] | +# |
| Retry Timeout (se | c) | | [] | +# |
| Fl=Help | F2=Refresh | F3=Cancel | F4=List | |
| Esc+5=Reset | F6=Command | F7=Edit | F8=Image | |
| F9=Shell | FlO=Exit | Enter=Do | | |

Note: The *Automatically Recover to Main Channel* feature is ignored if failover has occurred due to ping test. If the BladeCenter is configured in a dual core architecture (two external core switches) the *Lossless Failover After Ping Failure* feature should be turned off.

- 4. Configure the IP Address for the pseudo-device ent2:
 - a. Type the fast path "smitty chinet" and press "Enter"
 - b. Select "en2" interface and press "Enter"

	Change / Show a St	andard Ethernet	Interface	
Type or select valu Press Enter AFTER (ues in entry field making all desired	ls. I changes.		
Network Interfact INTERNET ADDRESS Network MASK (he: <u>Current STATE</u> Use Address Reso BROADCAST ADDRESS Interface Specif ('NULL' will u	e Name 〈dotted decimal〉 xadecimal or dotte lution Protocol 〈f S 〈dotted decimal〉 ic Network Options nset the ontion〉	ed decimal>)RP>? e[17C[]	[Entry Fields] en2 [172.25.254.64] [255.255.255.0] Ly yes	+ +
rfc1323 tcp_mssdflt tcp_nodelay tcp_recvspace tcp_sendspace Apply change to 1	DATABASE only		[] [] [] [] [] no	+
Esc+1=Help Esc+5=Reset F9=Shell	Esc+2=Refresh F6=Command F10=Exit	Esc+3=Cancel F7=Edit Enter=Do	Esc+4=List F8=Image	

5. Enter the "IP/Address, Network Mask", change the "Current STATE" to "up" and press "Enter"

Adapter failover can also be configured in Linux. For more information on configuring this EtherChannel Bonding from Red Hat go to <u>http://www.redhat.com/docs/en-</u> <u>US/Red_Hat_Enterprise_Linux/5/html/Deployment_Guide/s2-networkscripts-interfaces-</u> <u>chan.html</u> and to configure from SLES go to <u>http://www.novell.com/support/php/search.do?cmd=displayKC&docType=ex&bbid=TSEBB_122270747</u> <u>9531&url=&stateId=0 0</u> <u>34017274&dialogID=34013800&docTypeID=DT_TID_1_1&externalId=3929220&sliceId=2&rfId=</u>

B. Testing Adapter Failover from AIX

To Test Adapter Failover from AIX do the following:

- 1. Type the fast path "smitty etherchannel" and press "Enter".
- 2. Select "Force a Failover In An EtherChannel / Link Aggregation" and press "Enter".



- 3. Select "ent2" adapter and press "Enter".
- 4. Press "Enter" on the pop-up menu confirming your action.
- 5. To determine which adapter is active type: "netstat -v | grep Active" and press "Enter".

To verify adapter failover check the error report for an error message (ECH_PING_FAIL_PRMRY) indicating the primary EtherChannel failed and the backup adapter has taken over.

ECH_PING_FAIL_PRMRY 9F7BØFA6 LABEL: IDENTIFIER: Fri Jan 30 19:05:08 EST 2009 47 0000354AD400 Date/Time: Sequence Number: Machine Id: Node Id: Class: nfsclient H INFO Class: Type: Resource Name: Resource Class: Resource Type: ent6 adapter ibm_ech Location: Description PING TO REMOTE HOST FAILED Probable Causes CABLE SWITCH ADAPTER Failure Causes CABLES AND CONNECTIONS Recommended Actions CHECK CABLE AND ITS CONNECTIONS IF ERROR PERSISTS, REPLACE ADAPTER CARD. Detail Data FAILING ADAPTER PRIMARY SWITCHING TO ADAPTER enti Upabl Unable to reach remote host through primary adapter: switching over to backup apter

If you repeat the above steps and check the error report again, an error message (ECH_PING_FAIL_BCKUP) indicates the primary adapter has been recovered.

```
ECH_PING_FAIL_BCKP
5FC2DD4B
LABEL:
IDENTIFIER:
Date/Time:
                            Fri Jan 30 19:01:44 EST 2009
Sequence Number:
Machine Id:
Node Id:
Class:
Type:
Passuussa Name:
                           46
0000354AD400
                            nfsclient
                           H
INFO
Resource Name:
Resource Class:
Resource Type:
                           ent6
adapter
ibm_ech
Location:
Description
PING TO REMOTE HOST FAILED
Probable Causes
CABLE
SWITCH
ADAPTER
Failure Causes
CABLES AND CONNECTIONS
             Recommended Actions
CHECK CABLE AND ITS CONNECTIONS
IF ERROR PERSISTS, REPLACE ADAPTER CARD.
Detail Data
FAILING ADAPTER
ent1
SWITCHING TO ADAPTER
PRIMARY
Unable to reach remote host through backup adapter: switching over to primary ad
apter
```

To determine whether the Primary or the backup adapter is active from the AIX command type "netstat –v | grep Active" and press "Enter".

Note: Regardless of which adapter is active, ent0 will always be the primary and ent1 will always be the backup adapter.

C. Troubleshooting the RMC Daemon

If the "**Partition communication state**" under the DLPAR section shows "**Not configured**" then the RMC daemon is not active which will cause the validation and the migration process to fail.

Partition Properties: Test LPAR (2)				
General Memory Processin	g Ethernet Storage Optical Devices Physical Adapters			
General				
Partition name: Test_LPAR				
Partition ID: 2				
Environment: AIX or Linux				
State: Running				
Attention LED: Inactive 💙				
Settings				
Boot mode:	Normal			
Keylock position:	Normal 💌			
Partition workload group participant:				
Automatically start when system starts: 🔽				
Dynamic Logical Partitioning (DLPAR)				
Partition hostname or IP address:				
Partition communication state: N	ot configured			
Memory DLPAR capable: N	0			
Processing DLPAR capable: N	0			
I/O adapter DLPAR capable: N	0			
OK Cancel				

The Partition communication state field indicates whether there is an active RMC connection between this logical partition and the management partition. You can change the resource amounts on a logical partition only if there is an active RMC connection between the logical partition and the management partition. Possible values are Active, Inactive, and Not configured.

If this field contains "Not configured" or "Inactive", check the following:

- Ensure that the logical partition is activated.
- Verify that the logical partition can ping or access the Virtual I/O Server management partition over a TCP connection.
- Ensure that there is no firewall blocking port 657 on the logical partition.
- If the logical partition has Linux installed, verify that the logical partition has the Dynamic Reconfiguration Tools package installed. To download this package, access the

Service and productivity tools website: https://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/home.html

• Ensure that the partition communication IP address is set correctly on the General tab of the View / Modify TCP/IP Settings page. Unless more than one network interface is configured on the management partition, use the default partition communication IP address.

For more information on configuring the RMC daemon on an AIX or Linux refer to the following:

Diagnosing Problems with RMC

http://publib.boulder.ibm.com/infocenter/pseries/v5r3/index.jsp?topic=/com.ibm.help.csm.doc/csm_book s/csm_admin/am7ad130147.html

Understanding RMC

http://publib.boulder.ibm.com/infocenter/pseries/v5r3/index.jsp?topic=/com.ibm.help.rsct.doc/rsct_books/ rsct_admin_guide/bl5adm1138.html

RSCT for Linux Technical Reference

http://publib.boulder.ibm.com/infocenter/clresctr/vxrx/index.jsp?topic=/com.ibm.cluster.rsct.doc/rsct_linu x151/bl5trl1028.html