

NETWARE SERVER MIGRATION PHYSICAL TO VIRTUAL (P2V) USING VMWARE AND PORTLOCK BOOT ENVIRONMENT

Firstly there are a few things you are going to need.

1. **Portlock NetWare Boot CD version 4.02.**
2. Vmware Tools for Novell 4.11.
3. Custom NetwareISO image. I can supply.
4. Esx Server Setup with you're a VM ready For Novell 5.(Will explain Later)
5. TCPIP Infrastructure, DHCP Running on the TCPIP Network
6. And Time.

First Step. – Virtual Server

Prepare the New VM with the Following Settings.

- 1GB Ram
- 1 VCPU
- 1 Nic Flexible
- Scsi Controller Will be set automatically When you select Novell 5.1 as your Guest OS
- The HDD size must be Slightly Larger than the Physical Servers Volumes.
 - Plan the size of the virtual disk. It must be at least as large as the size of the DOS partition, SYS pool and any other pools you plan to migrate from the source server. I'm not referring to actual "used" space on the source server, but rather the capacity of the pools.
- Finish the VM Creation.
- Edit the VM Settings and add the Portlock CD as the DVD/CD Device.

Next Step. – Physical Server

- You must make sure you have a Physical Copy of the Portlock boot CD.
- This must be placed in the DVD/CD rom of the Novell Server you want to convert.
- It would be a good idea to clean the server up, old files and purge before using the Portlock CD.
- Boot the Server with the DVD/CD and select DISK IMAGE
 - Here are the screen shots:

Enter on the Portlock Storage Manager...

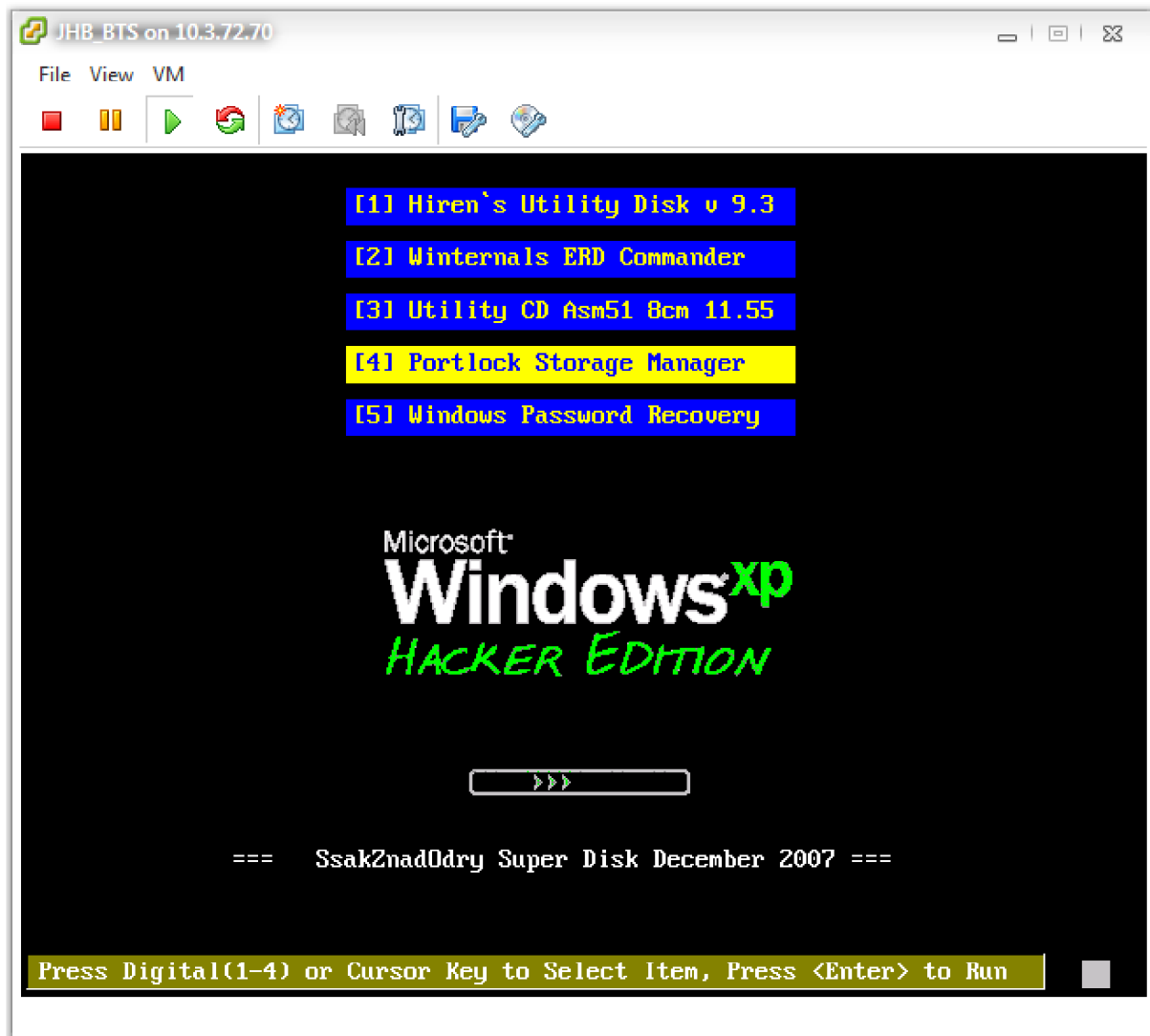


Fig: 1

Enter on TCP/IP.

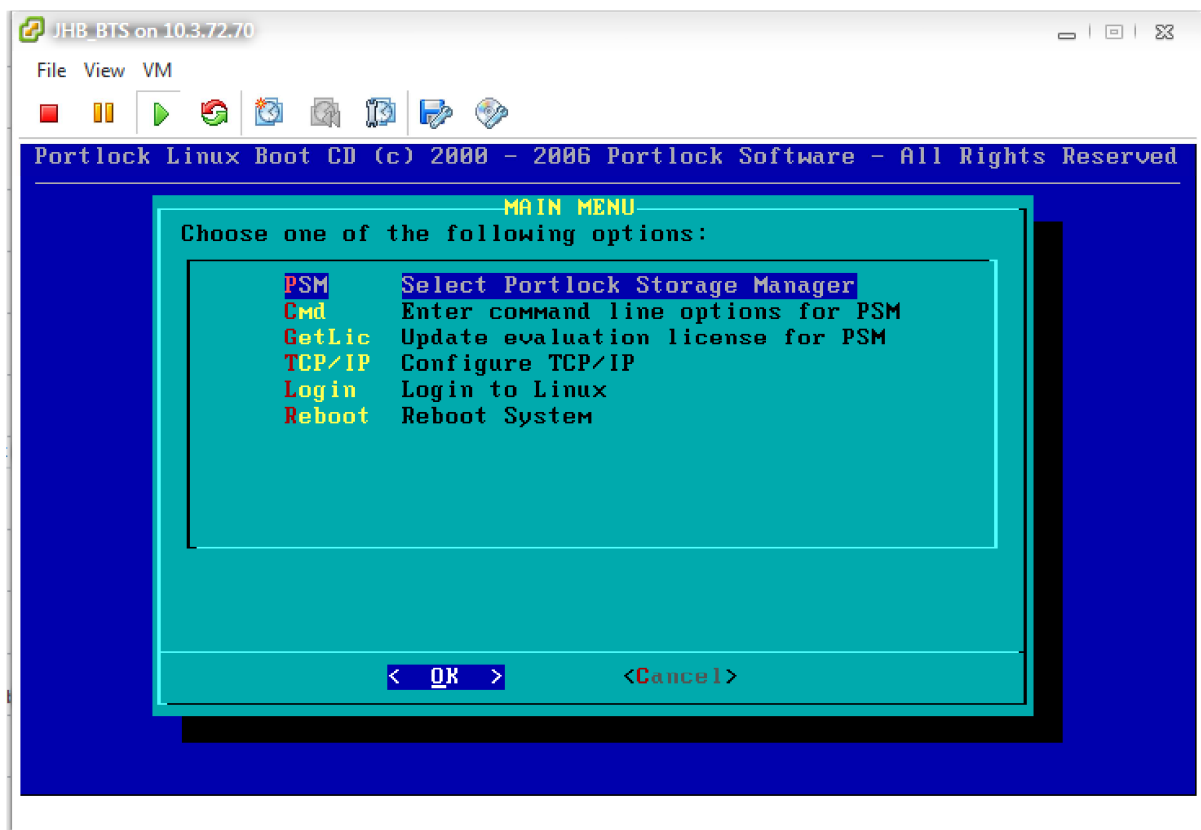
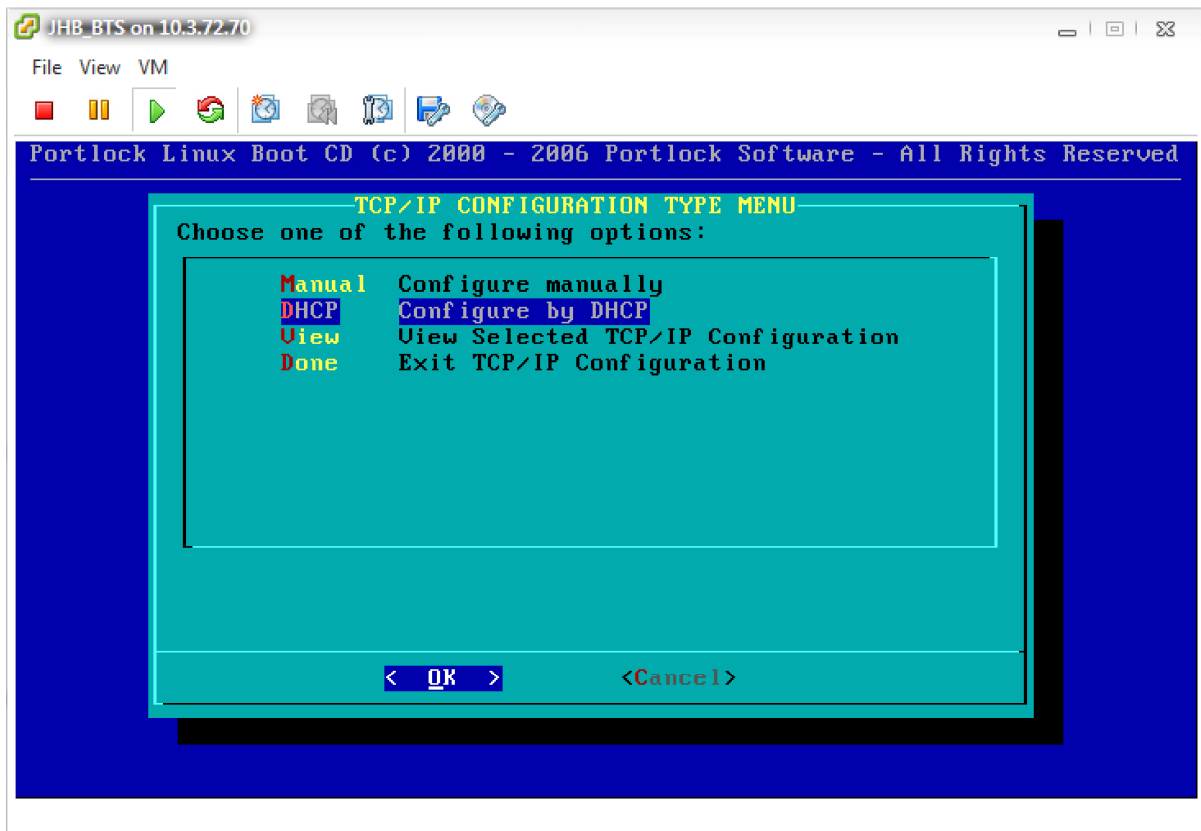
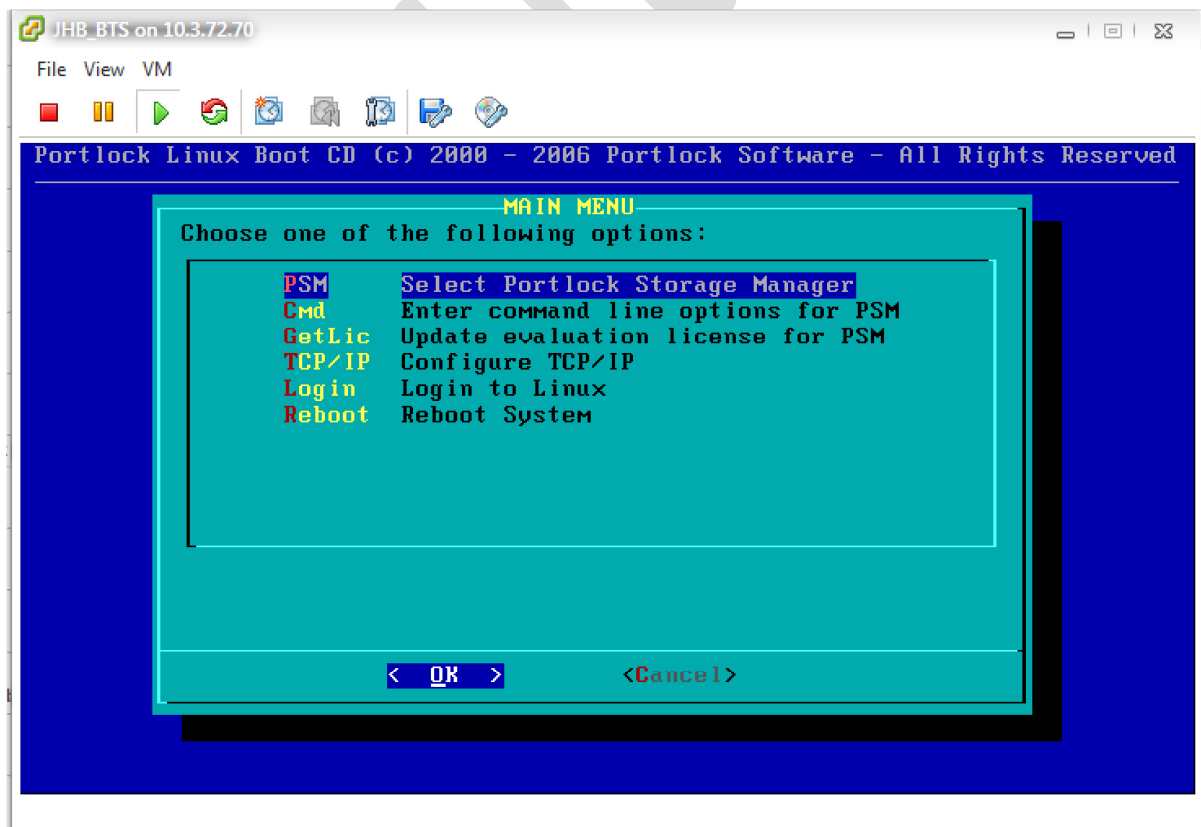


Fig: 2

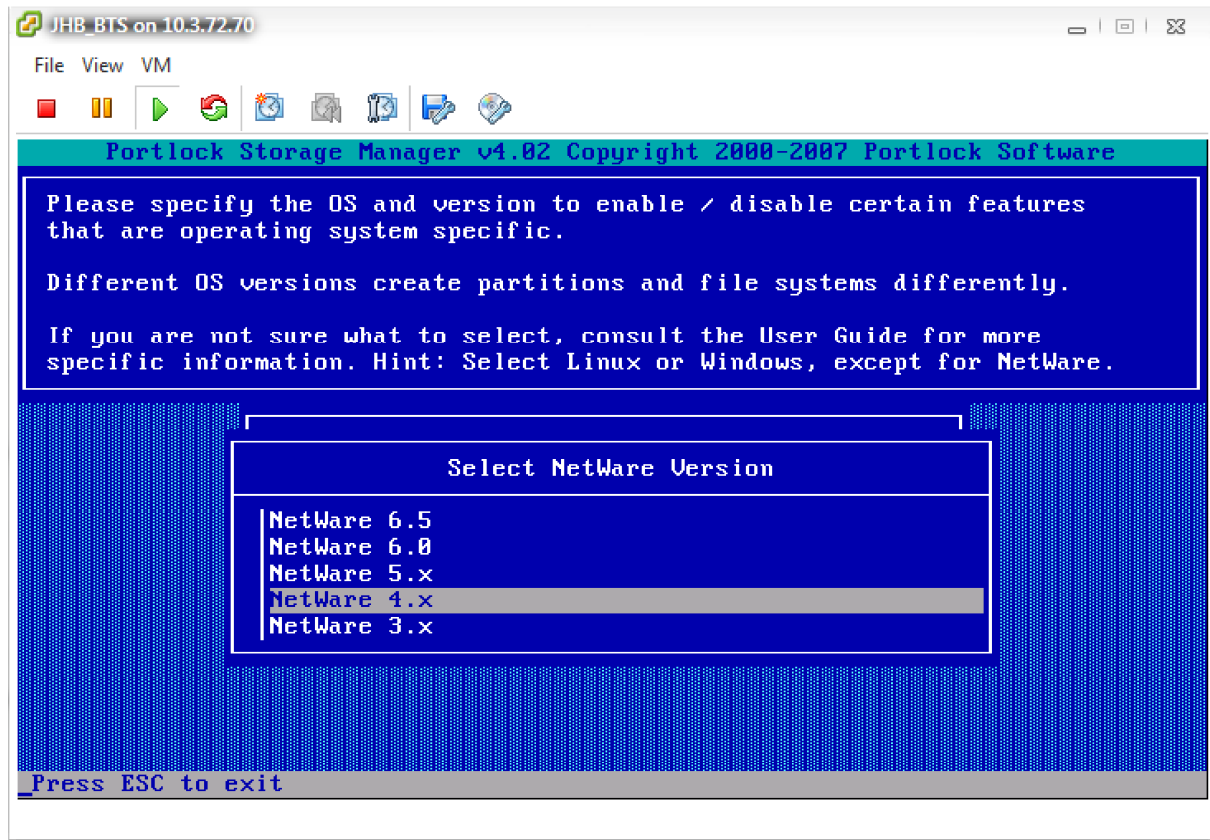
Enter on DHCP. Then get and ip and ESC



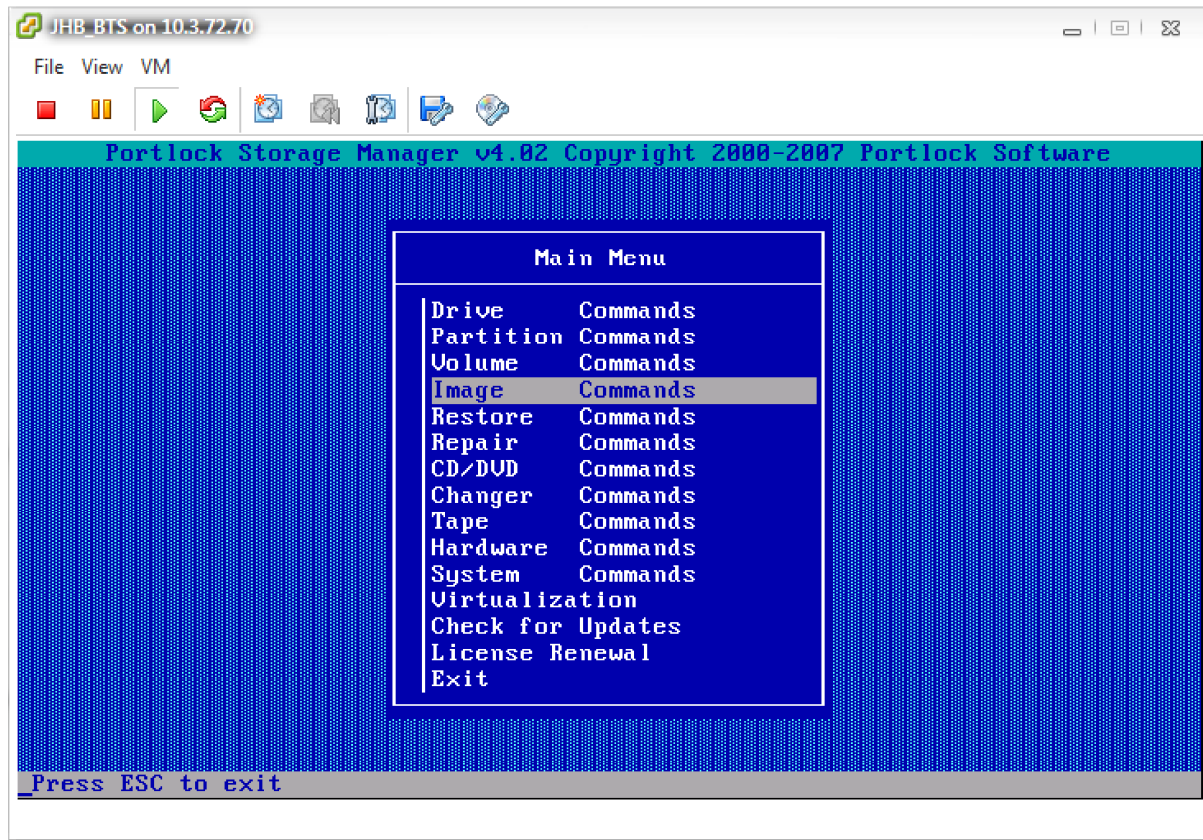
Then Select Portlock Storage Manager.



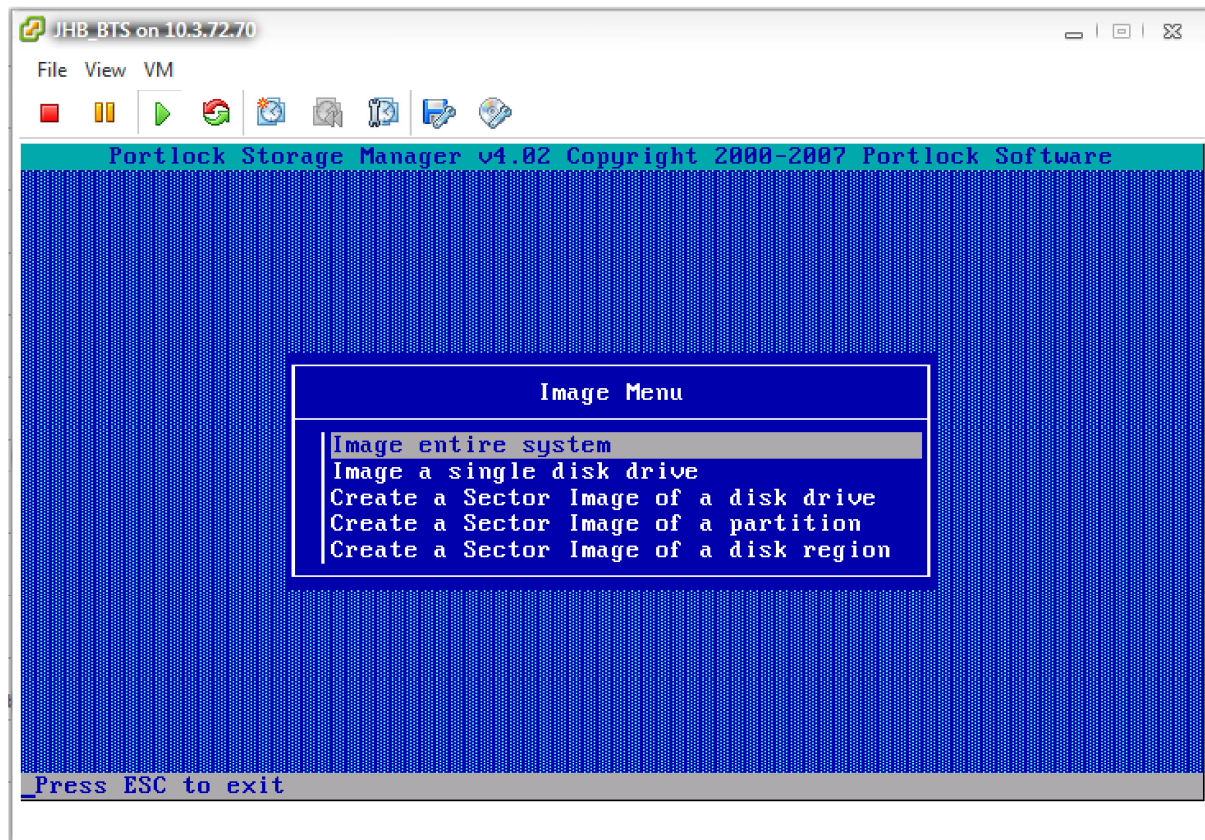
Select the OS Netware and then the Version.



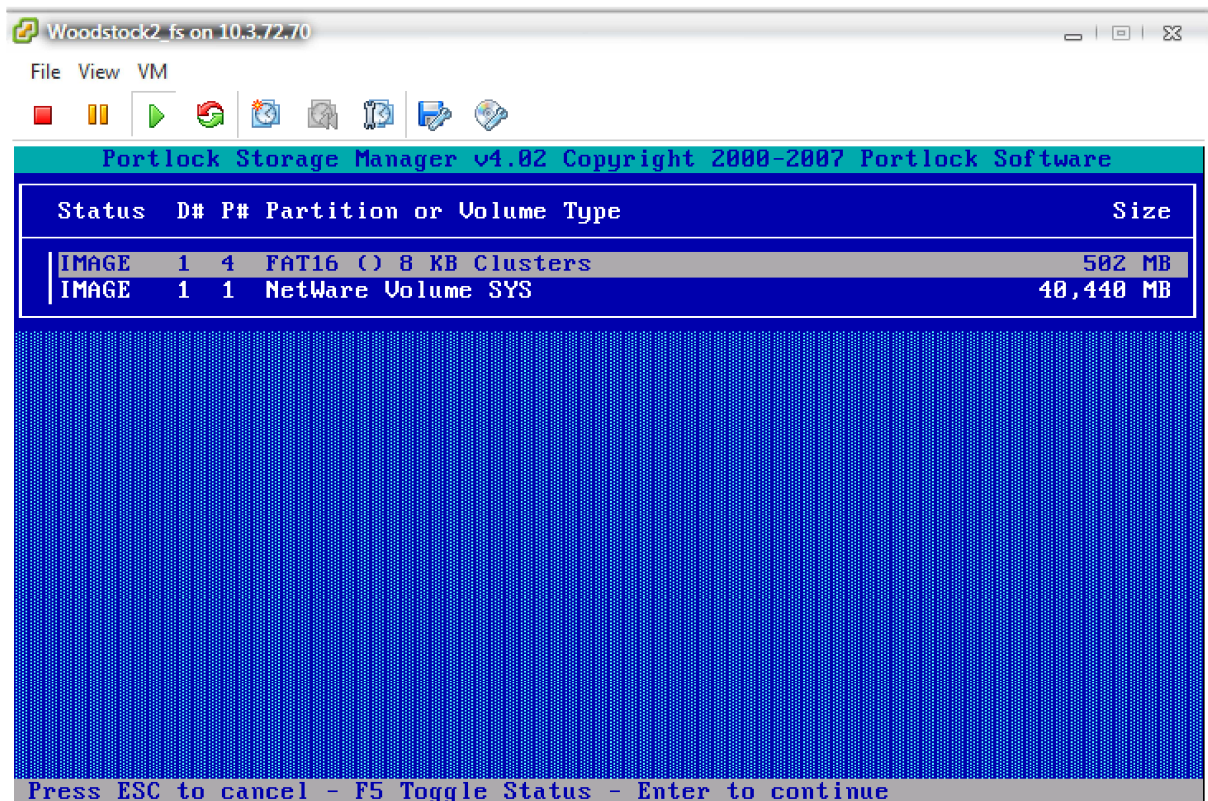
Select Image from the Selections.



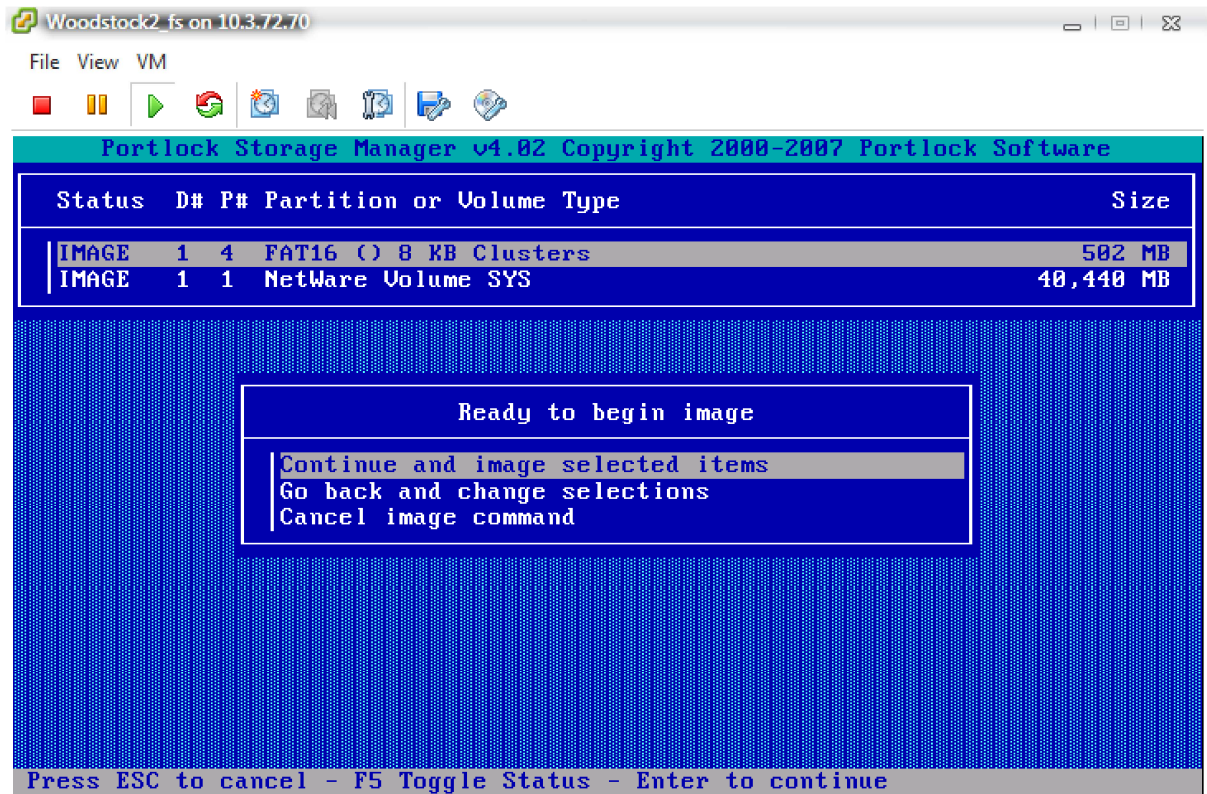
Select the IMAGE Entire System: this will image the all the Volumes including DOS



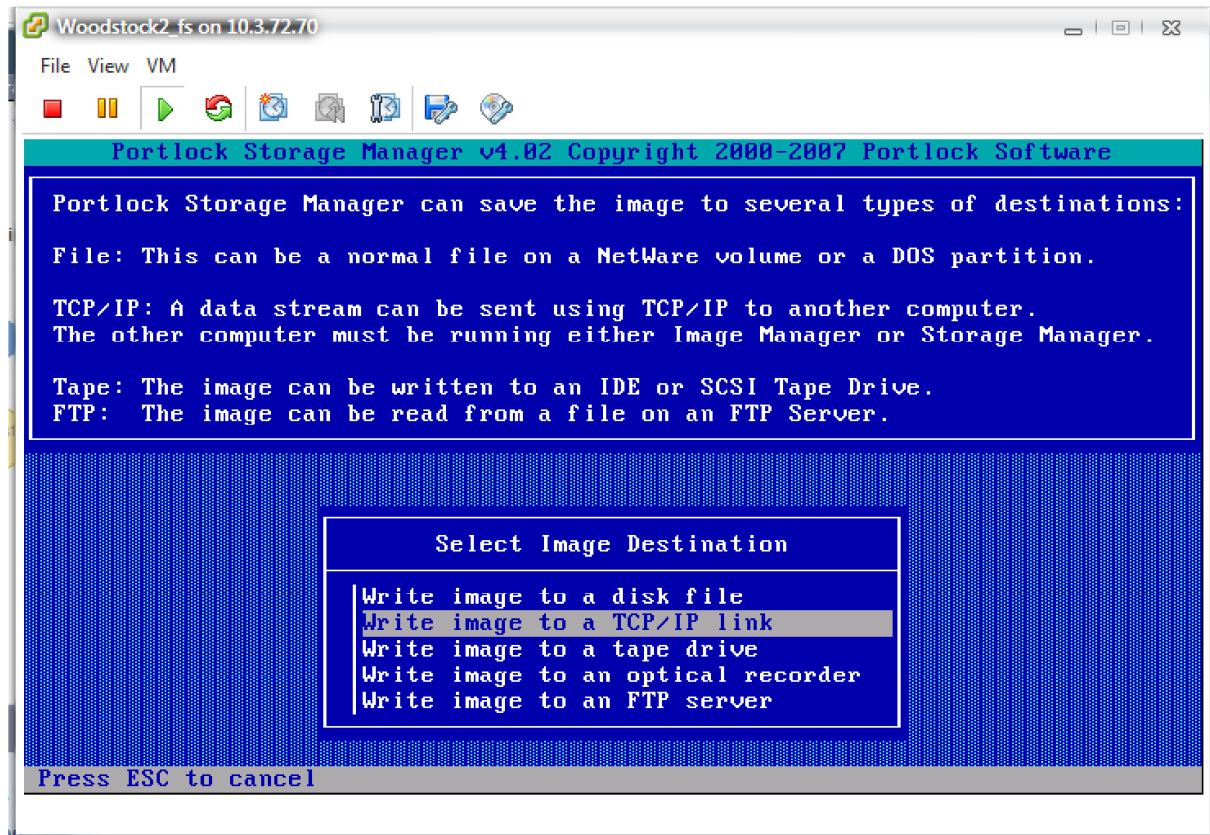
As you can see in this Example there are 2 Images, Fat16 and a NetWare volume. Just press enter



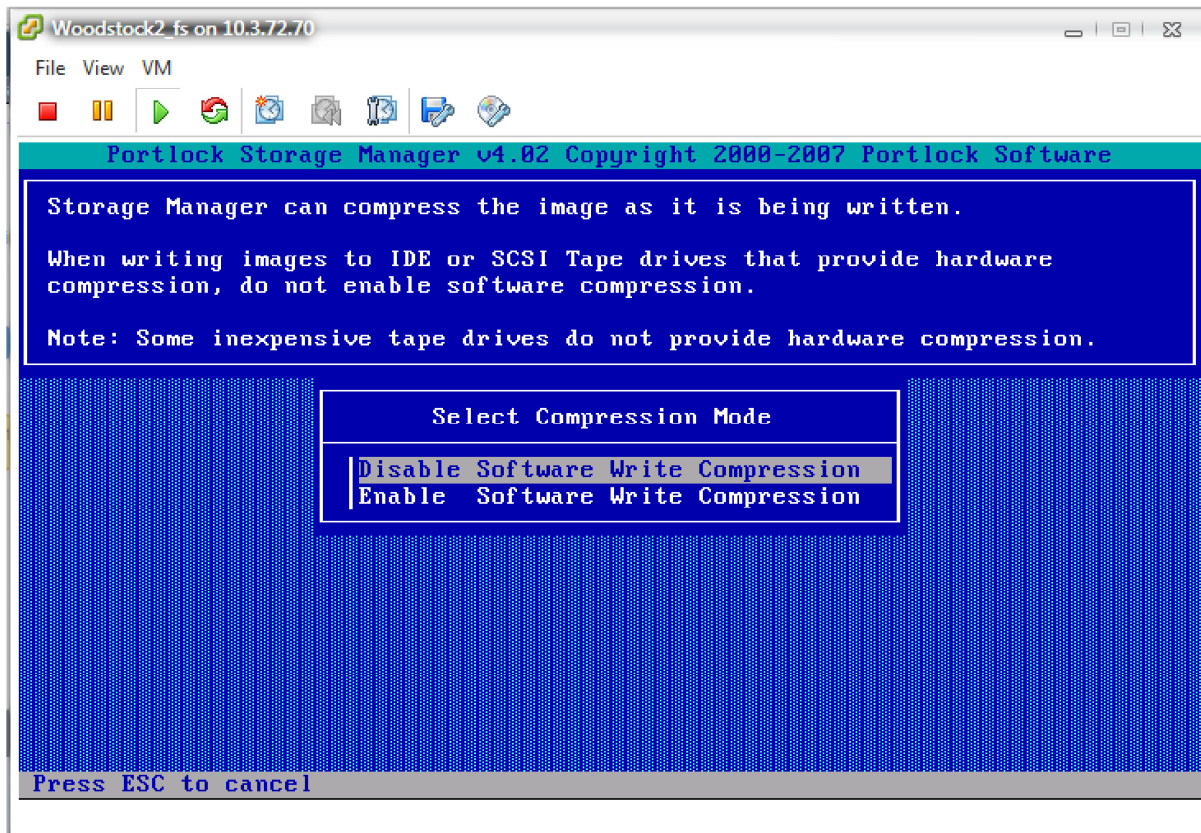
Press Enter again.



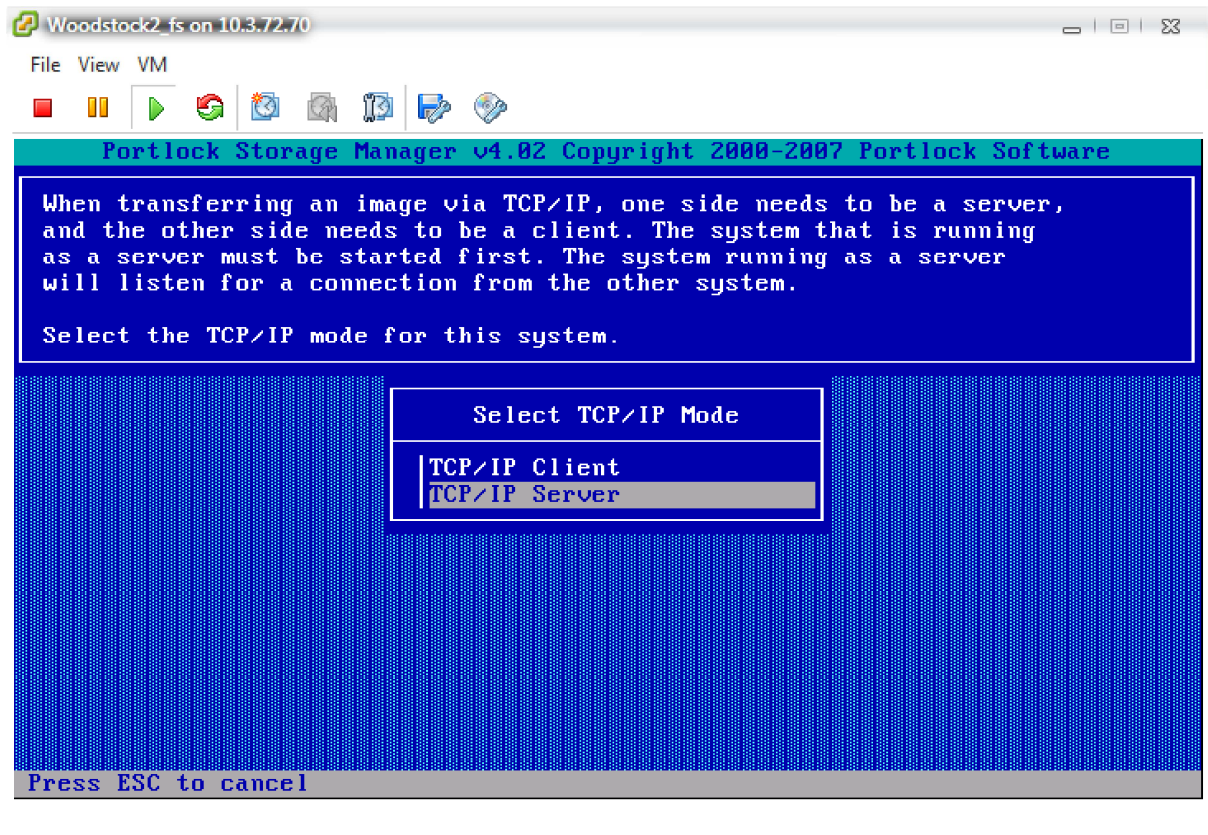
Select the Write Image to a TCP/IP Link.



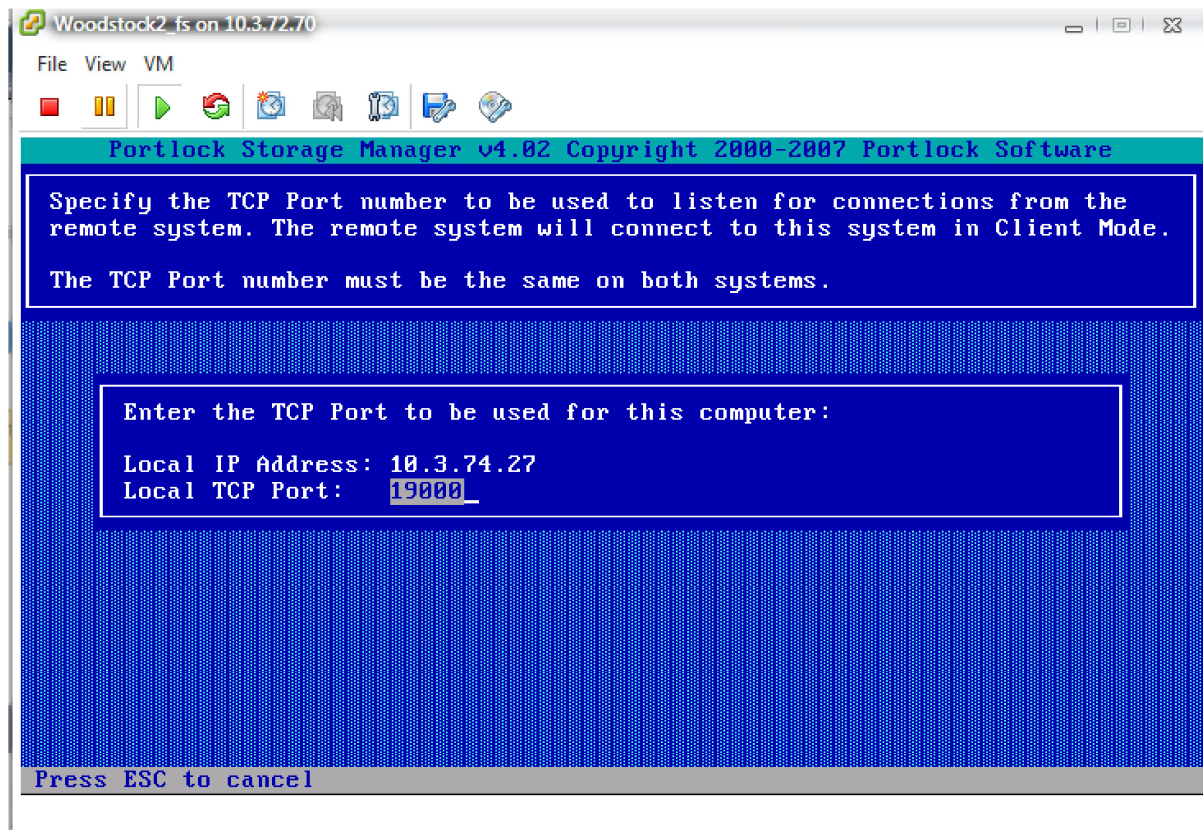
Select Disable Compression.



Select Type this will be the server as it's the Server you are restoring from.

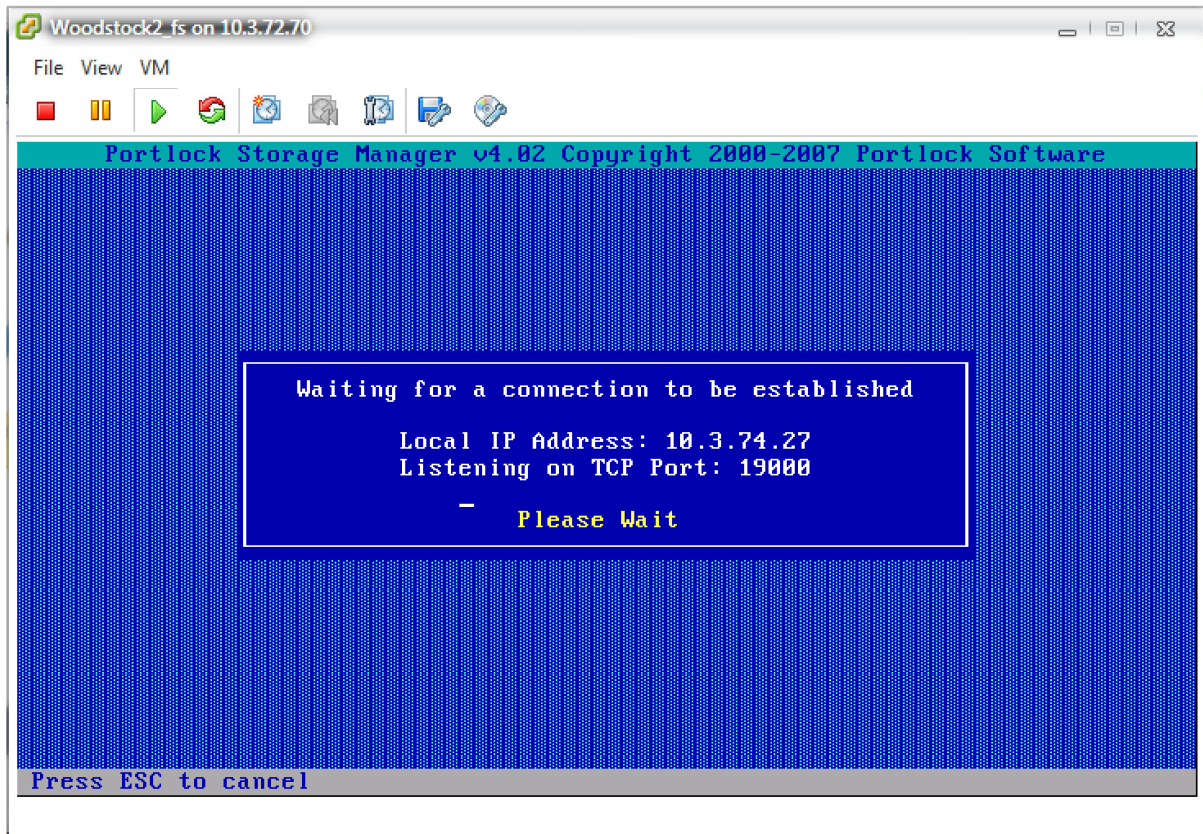


Press Enter, enter again.



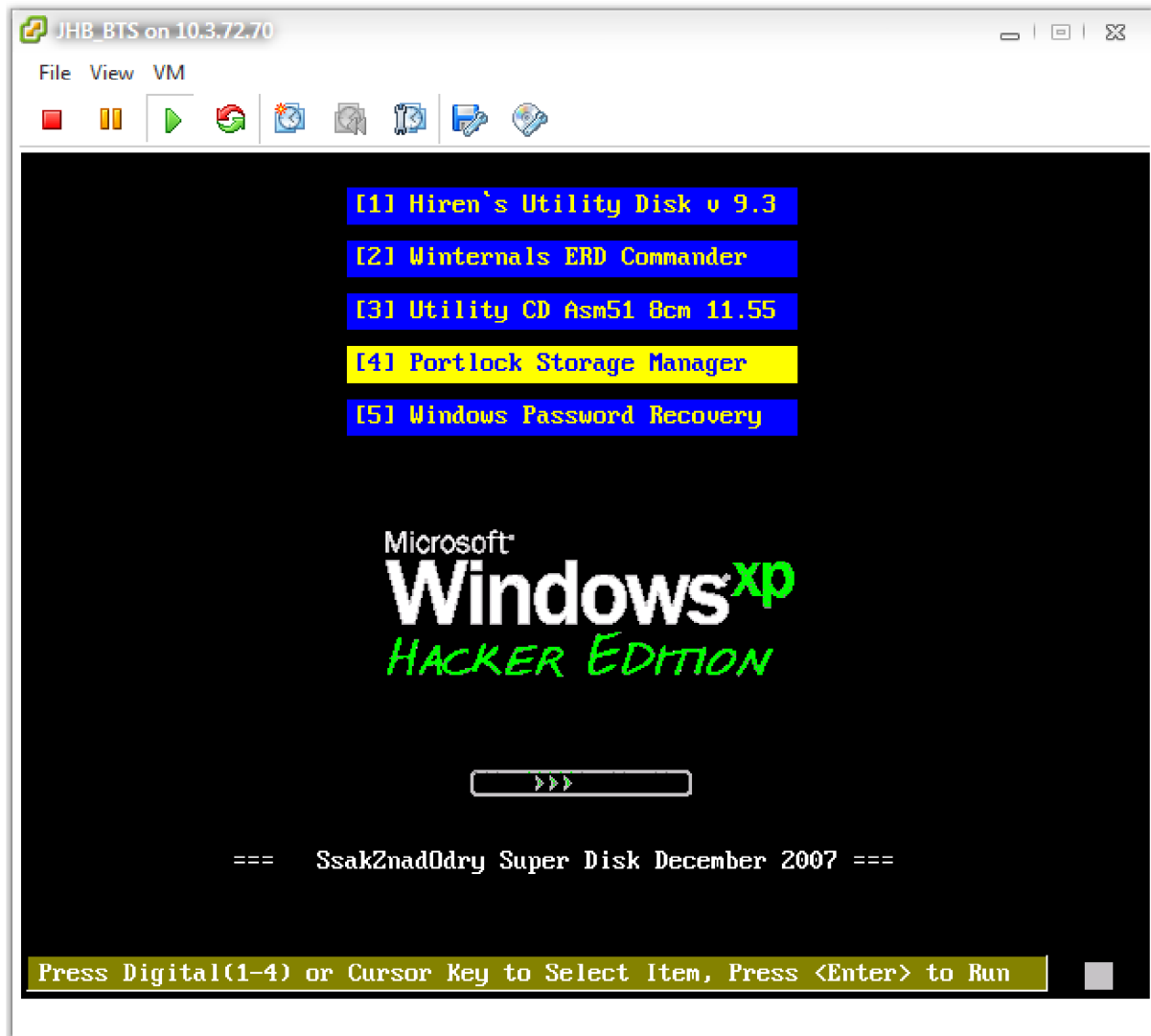
Here the Server is waiting for a client connection. This is where we go to the VM Boot.

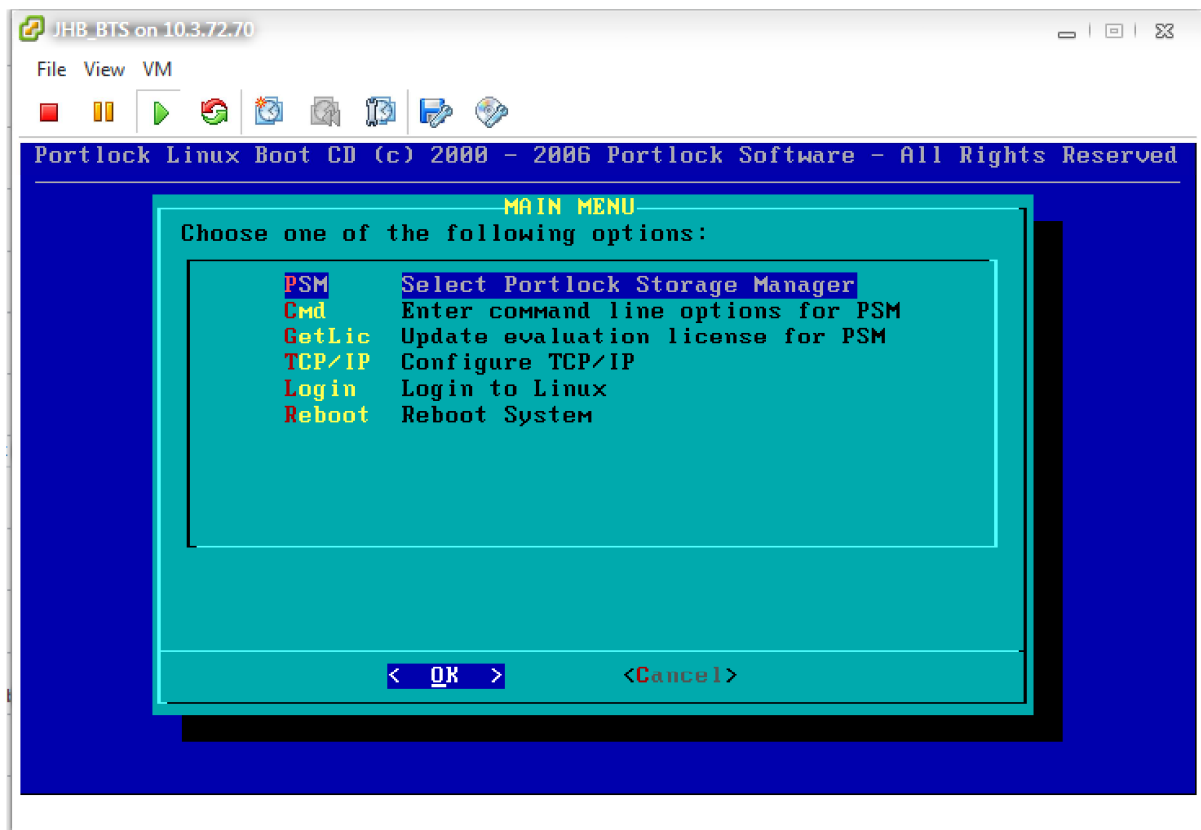
Remember the IP you See Below, yours will be different,



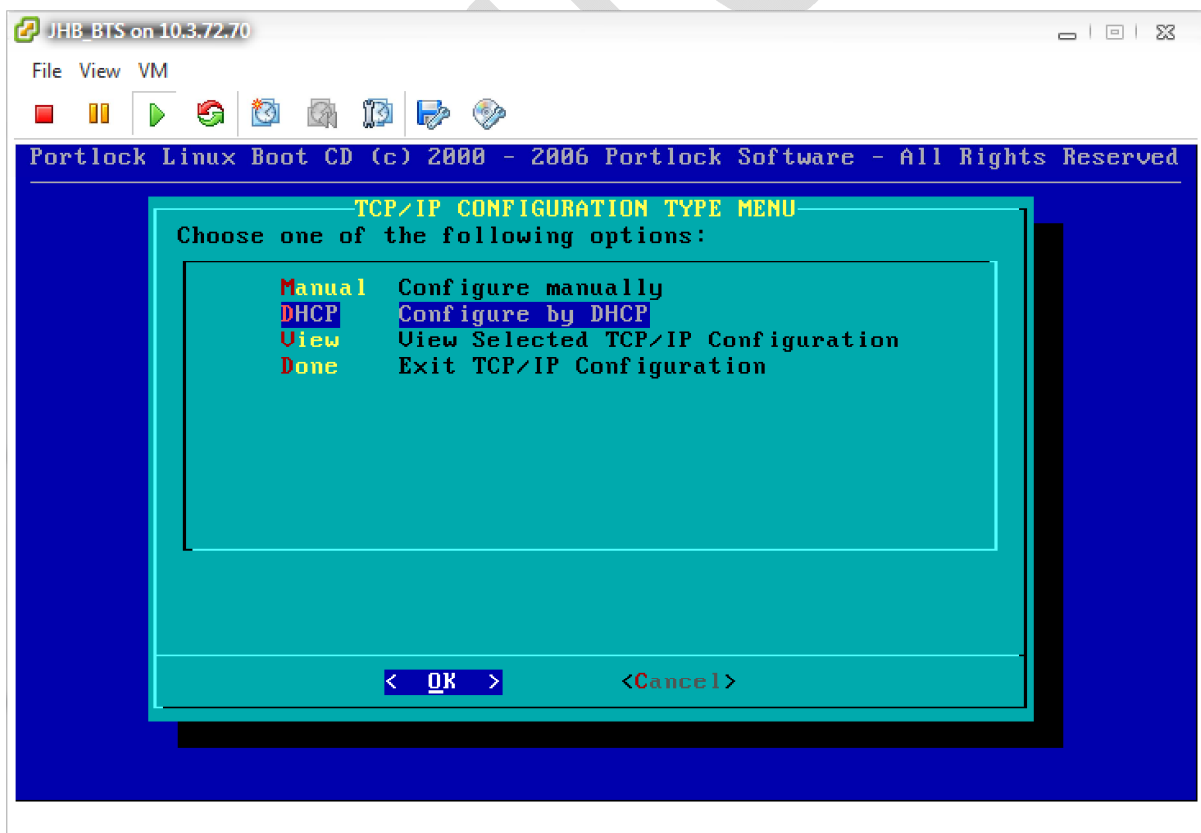
Okay now that you have the Physical server ready for Restoring to the VM, Here are the images to help you through the VM steps.

Enter on 4

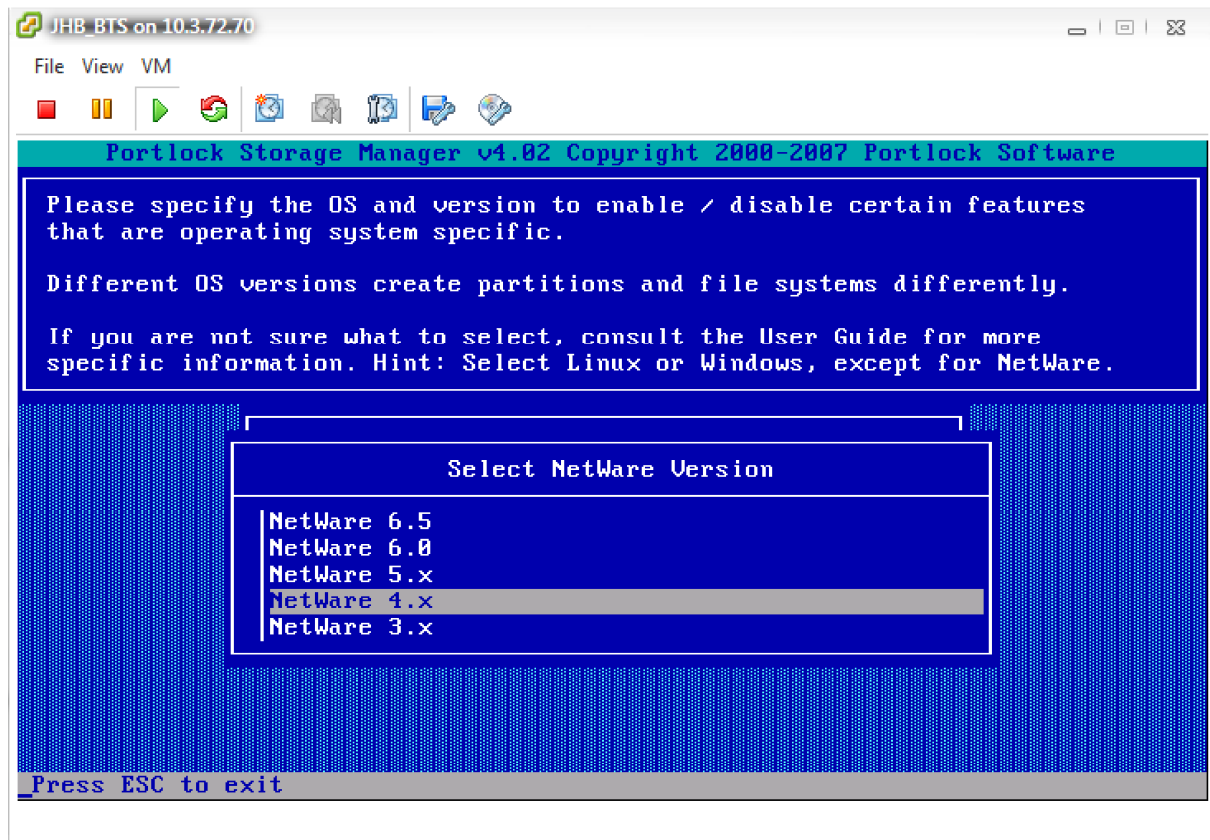




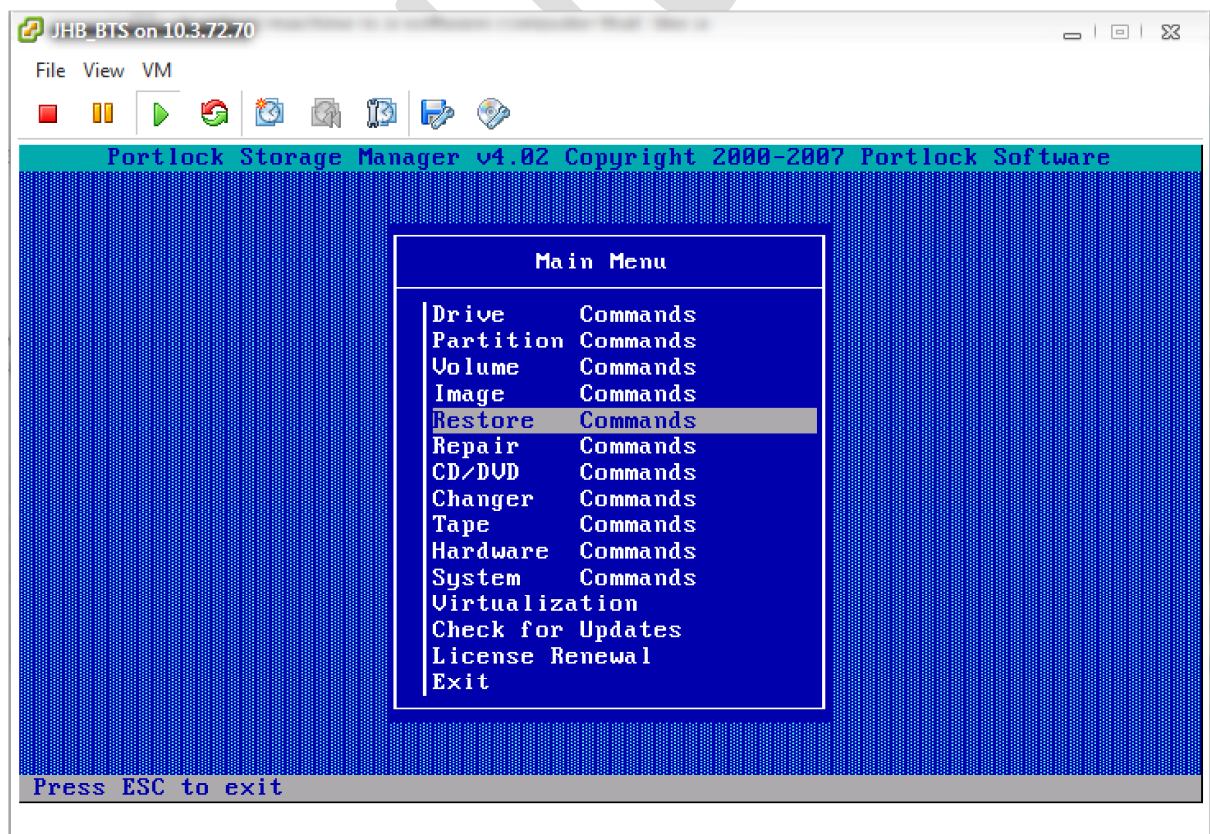
Enter on DHCP and get and IP Lease. Then ESC to the main menu Above.



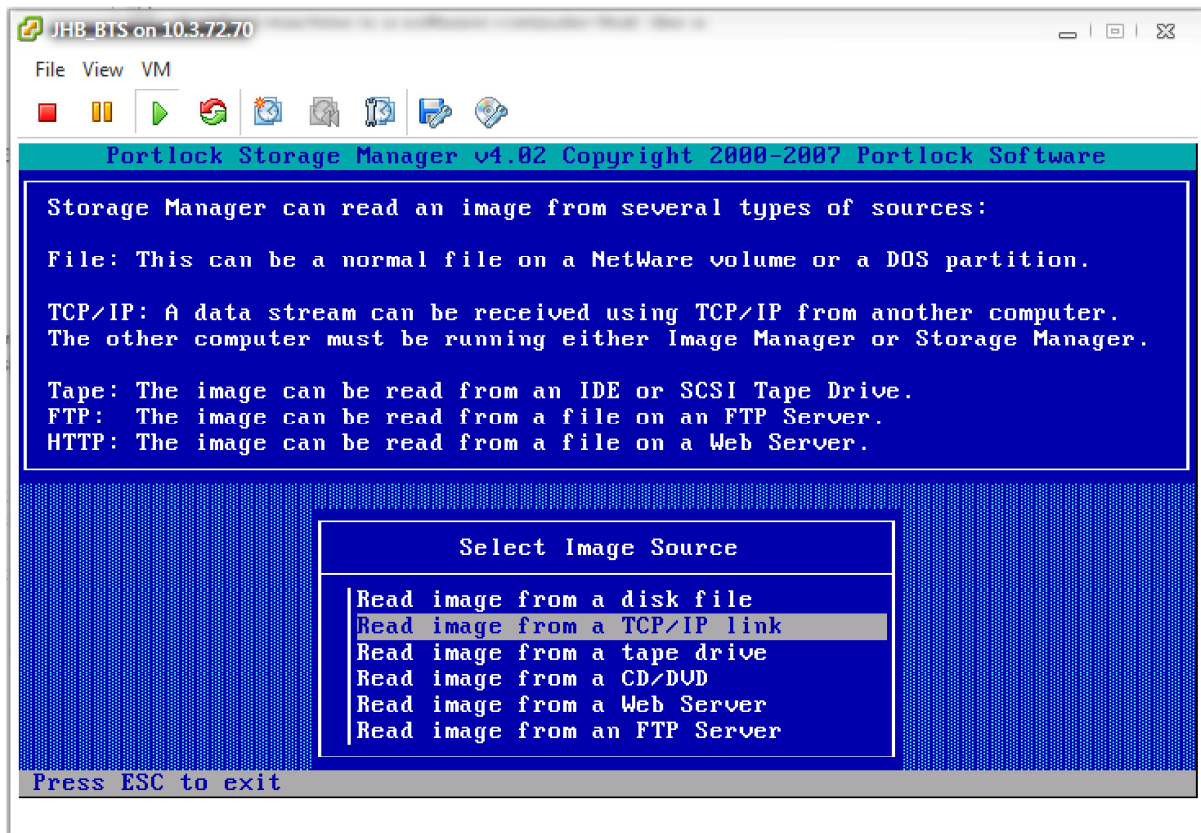
Enter on Netware and Select Version.



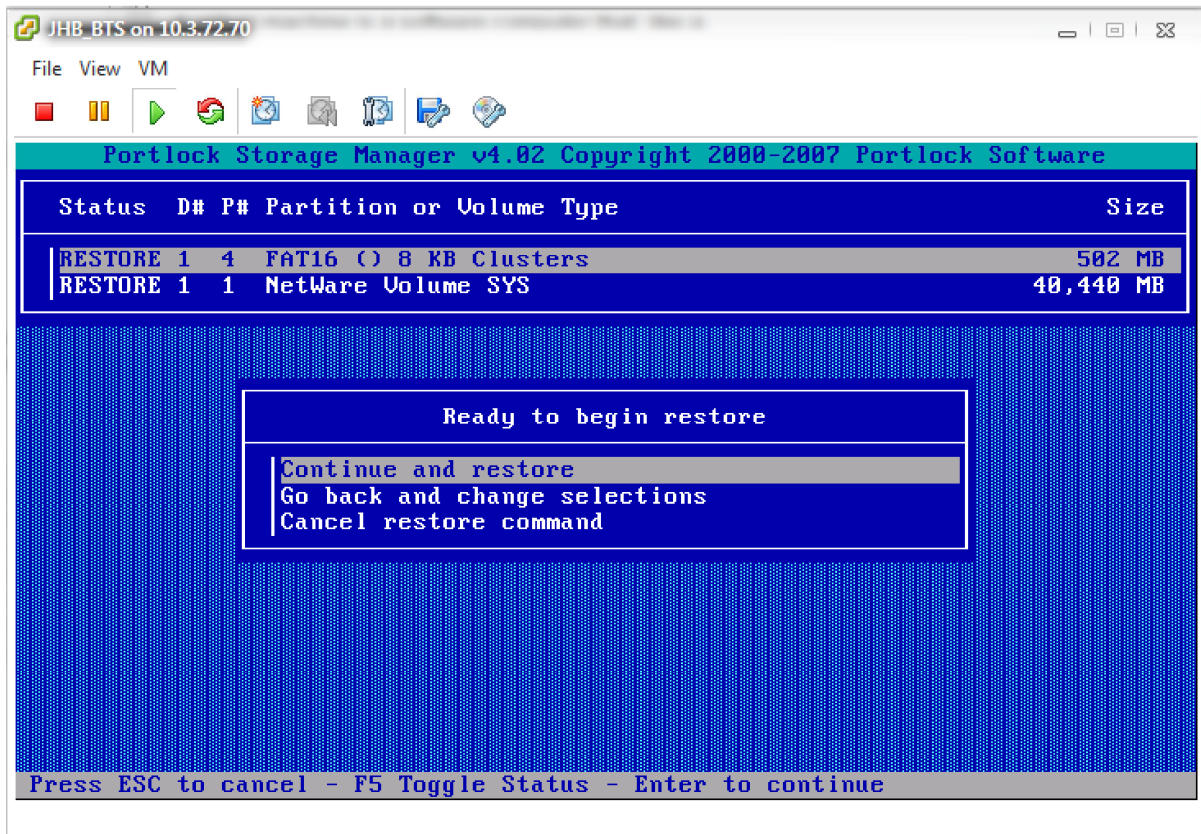
Ok now below I have selected Restore, enter on it.



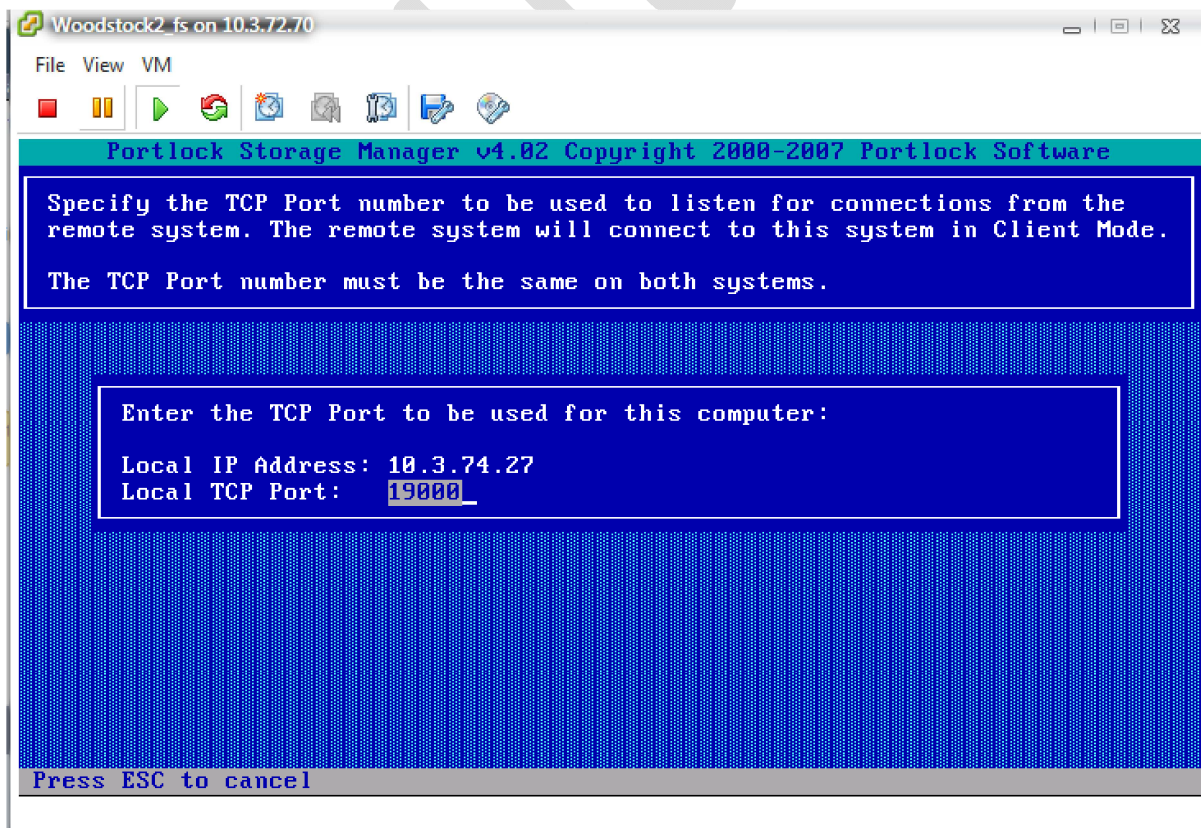
Enter on read image from a TCP/IP Link.



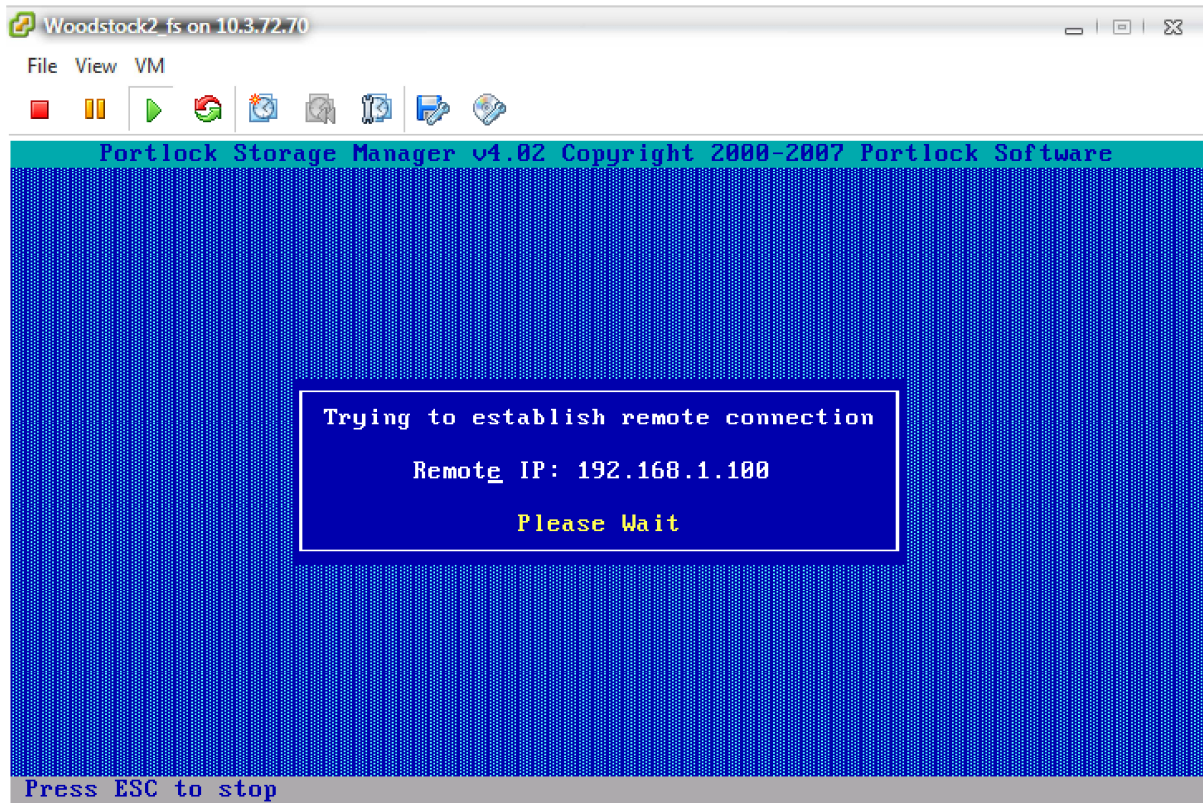
Press Enter on next Screen. And enter again



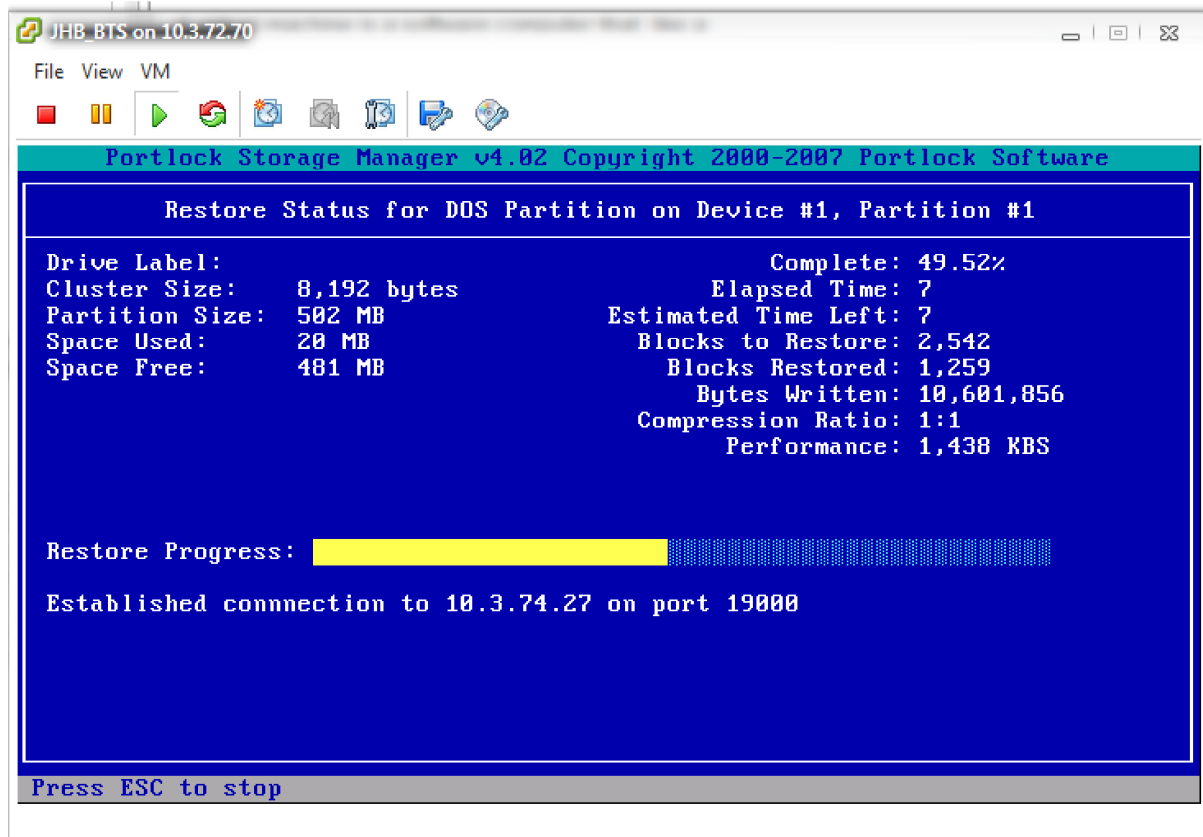
You will have to enter the ip of the server, remember the IP I asked you to write down, Enter it.



It will then connect. And ask for what partitions you want to Restore

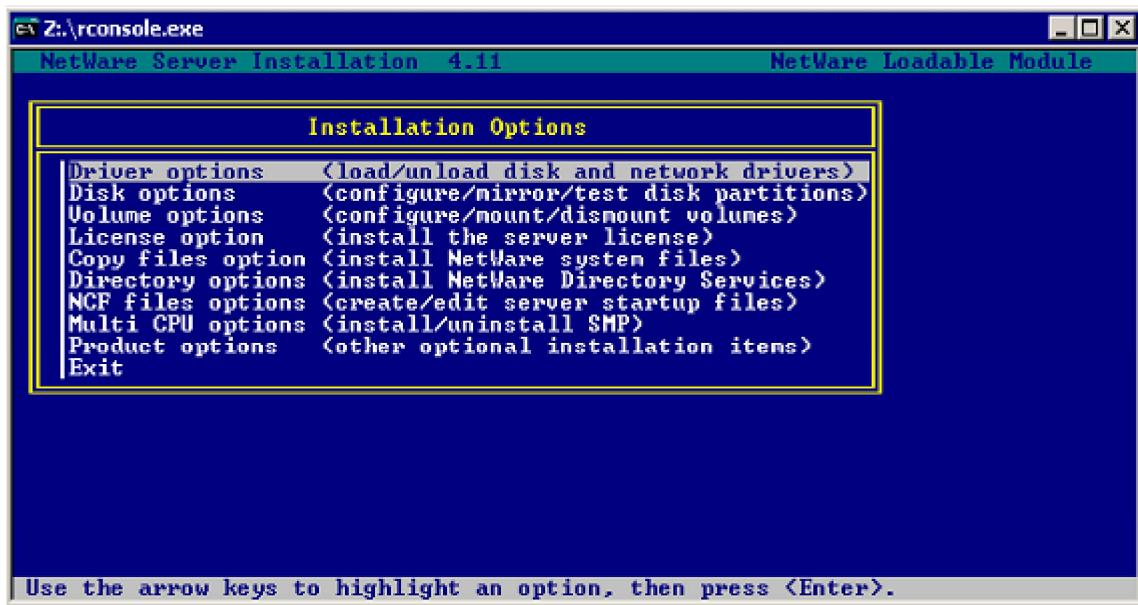


There will be other Menu's that will pop up, asking about NetWare volumes just enter yes and create a new NetWare volume.

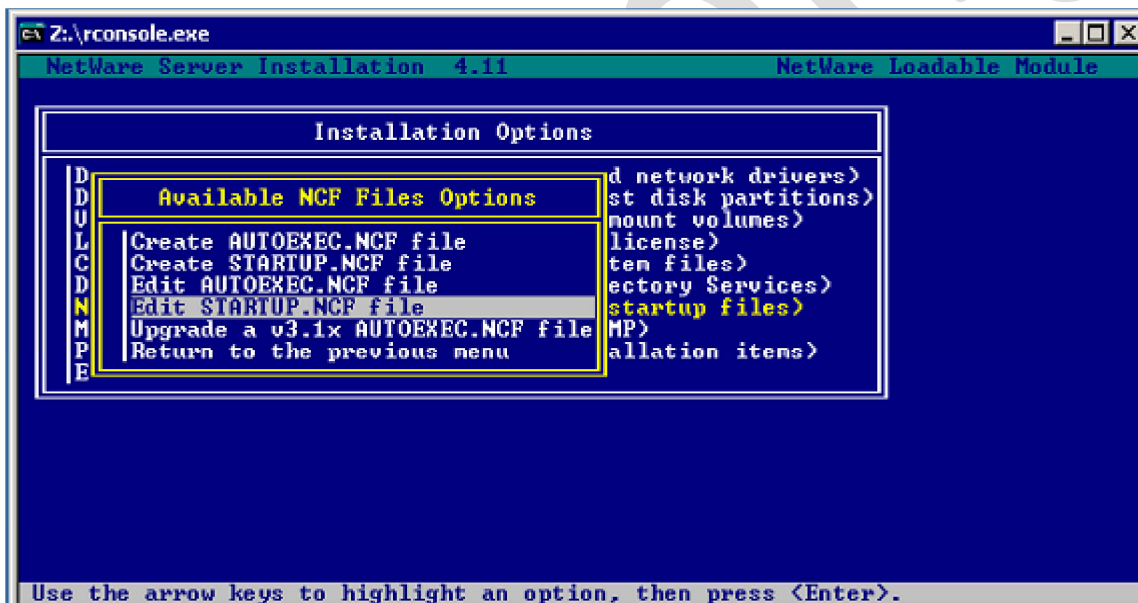


- Ok when it's done Restoring to your VM, you will need to get the NetwareISO image ready.
- Start the VM and make sure it boots properly, try and get it to the Dos Screen before it loads nwserver. Normally editing the autoexec.bat file e.g.: rem c:\nwserver\server
- When you have finally managed to boot to dos, mount the NetwareISO
- Type the following
 - c:>cd nwserver
 - c:>nwserver>copy d:*.* c:\nwserver*.*
 - It will copy all the files needed for the SCSI controller for VMware and the NW4-IDLE nlm that needs to be loaded later.
- Once that is done type c:>nwserver\server and let the server boot, it will come up and ask you for server name and Network address type in anything and press enter
- Once loaded at the console type:
 - Load c:\nwserver\install
 - It will then give you these options.

Press enter on ncf files options.



Click on edit startup.ncf.



Replace everything in Yellow with the Below Text.

```

Z:\rconsole.exe
NetWare Server Installation 4.11
NetWare Loadable Module

File: STARTUP.NCF
LOAD C:\NWSERVER\DIAG411.NLM
LOAD C:\NWSERVER\PK411.NLM
LOAD C:\NWSERVER\PUER4.NLM
LOAD C:\NWSERVER\CPUCHECK.NLM
; End of modifications made by NetWare Support Pack installation
LOAD ADPU320.HAM SLOT=10003
LOAD IDEATA.HAM INT=E PORT=1F0
LOAD SGSCSI.CDM
LOAD IDECD.CDM
LOAD NWIAPE.CDM
LOAD SCST2TP.CDM

Save file          <F10>
Mark and unmark text <F5>
Save marked text   <F6>
Help               <F1>

Previous screen   <Esc>
Delete marked text <Del>
Insert marked text <Ins>
Abort INSTALL    <Alt><F10>
  
```

LOAD MPS14.PSM

LOAD IDECD.CDM

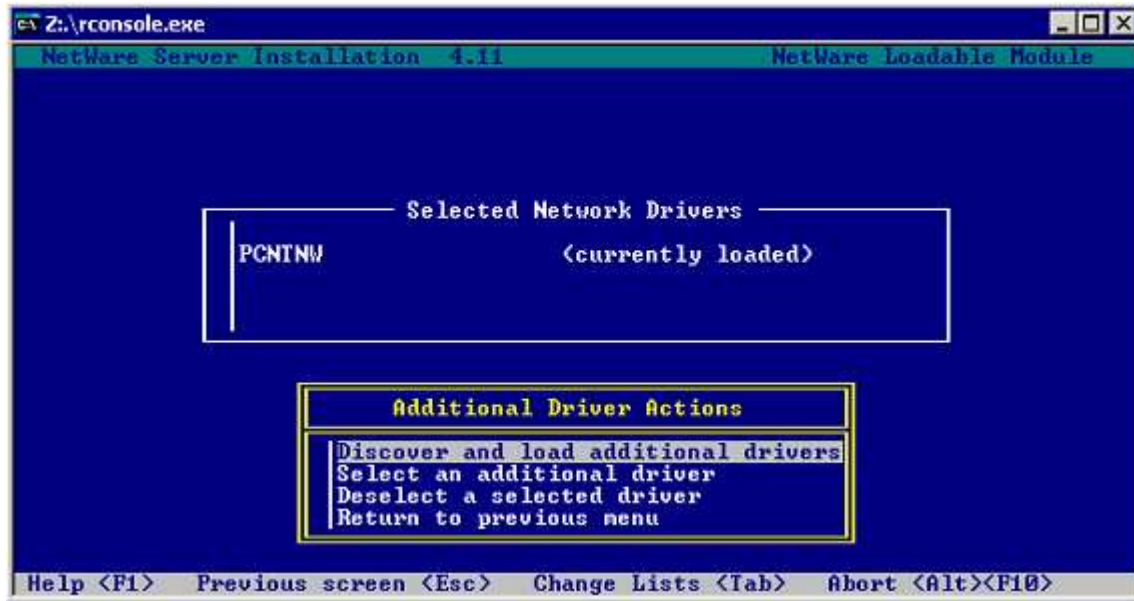
LOAD IDEHD.CDM

LOAD IDEATA.HAM SLOT=10004 (Slot Number might change)

LOAD LSIMPTNW.HAM SLOT=2 (Slot Number might Change)

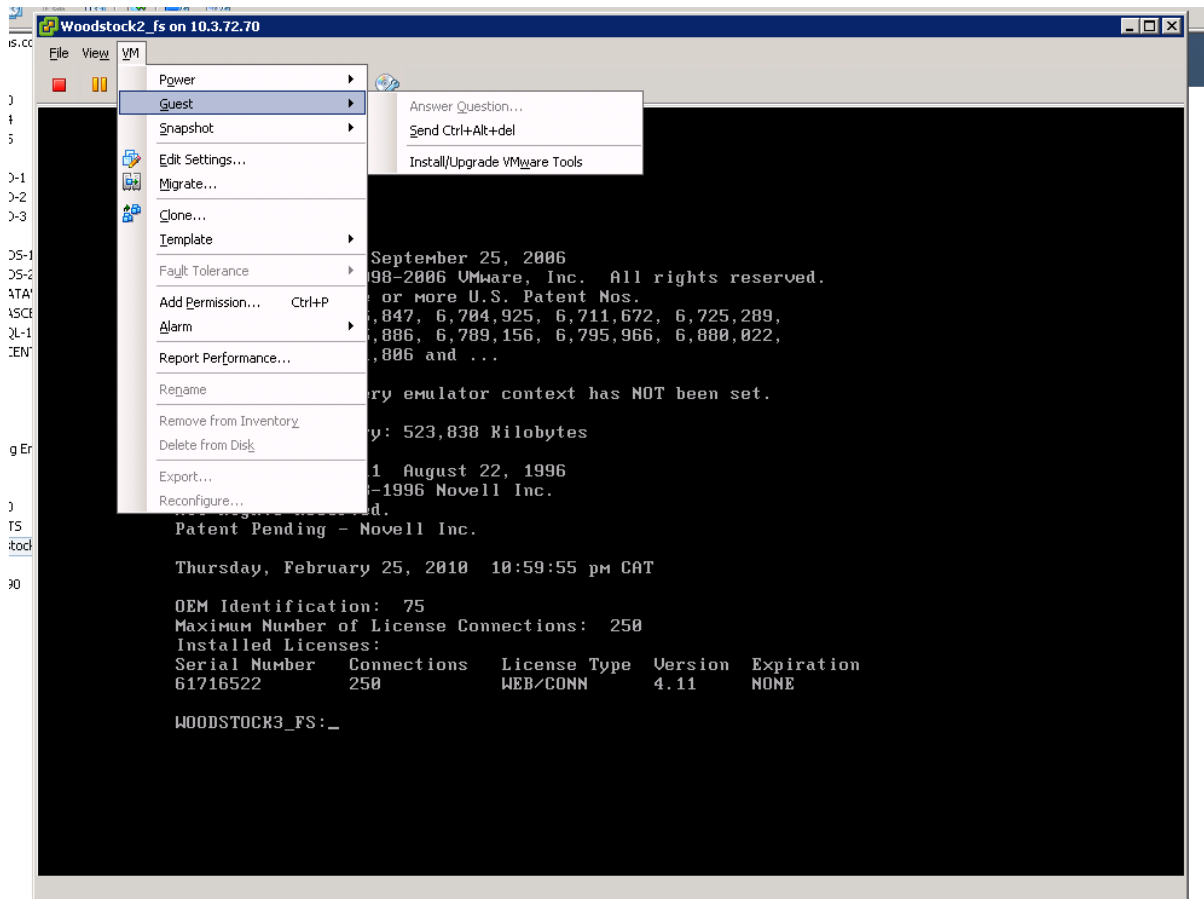
If the slot numbers change it will boot and give you the right slot numbers to change them to after.

- Ok by now the Server should be booting completely, but no network access.
- Remember when you created the VM you selected Flexible as the Network Card.
 - Load install from the console, got to Driver options, configure network drivers.
 - Below is the Nic card it will install.



It might at this point ABEND, but no matter, reboot the server and it will be ok.

- Now it gets easier, firstly you will notice the CPU utilization on the VM is SKY high, this is because VMware does not know how to Balloon the Netware Memory.
- To fix this you need to load nw4-idle.nlm.
 - At the console type the following: load c:\nwserver\nw4-idle.nlm, you can put this in your autoexec.ncf.
- Next is the vmtools install.
 - When NetWare runs in a VMware VM, it will consume all the CPU time that VMware will give it. As a result, VMware will show high utilization even when CPU utilization on the NetWare guest OS is low. VMware has resolved this with VMware tools. When you install VMware Tools on a NetWare VM, it installs VMWTOOL.NLM into sys:system, adds it to the AUTOEXE.NCF file and loads it. It installs other files as well so don't think you take a shortcut by just copying VMWTOOL.NLM to the server and loading it manually.
 - VMWTOOL.NLM does several things. This VMware document explains them:
 - http://www.VMware.com/support/gsx3/doc/tools_cfg_netware_gsx.html#wp10553
 - The most important thing is that it idles the CPU in the VM to match the CPU utilization in the NetWare guest OS. To illustrate, run the "top" program on the Linux host while the NetWare guest is running without VMWTOOL running. You'll see a process called "vmware-vmx" consuming a lot of CPU time.
 - To install VMware Tools, first switch to the console view of your NetWare VM. Make sure the NetWare OS is up and running.
 - Click on the VM menu on the VMware console.



- Choose “Install VMware Tools.” This has the effect of mounting the netware.iso image as a CD in the NetWare guest OS. Like sliding the CD into the virtual CD tray. You will need to load cdrom to start the cdrom.nlm.
- Then type cd volume list. Below is the screen shot

```

The Target is found from the Device list or Volume List
Volume Names starting with a number are treated as [display list numbers].

When mounting or changing a CD-ROM disc a deactivation of the selected
device may occur. Do not be alarmed.
Repeat Help Command to get more details on commands and options
WOODSTOCK3_FS:cd volume list

** CD ROM Volume List
No. Volume Name Mounted Device Name

WOODSTOCK3_FS:cd volume list
Sector Conversion Bound to: (Card: 0, Ctrl: 1, Unit: 0, DevType: 5)
Physical: UNIT_SIZE: 2048, BLOCK_SIZE: 512, CAPACITY: -2
Logical: UNIT_SIZE: 512, BLOCK_SIZE: 2048, CAPACITY: -8

CDROM-4.11-231:
Detected unknown/changed media, updating the rom info.

** CD ROM Volume List
No. Volume Name Mounted Device Name
2 VMWTOOLS N [V025-A1-D1:0] NECUMWar VMWare IDE CDR00 1.00

WOODSTOCK3_FS:_

```

- o Then type: cd mount 2 (being the Volume NO)

```

CDROM-4.11-270: INFO:
DO NOT turn on Compression or SubAllocation on CD volume.

CDROM-4.11-110: ERROR:
Unable to locate user group, supervisor access only.
Group Access Rights: Admin

Creating CDROM Index [0] 100%

CDROM-4.11-105: INFO:
Adjusted Volume Capacity in Blocks (block size 64k):262
Mounting Volume VMWTOOLS
** Reading In FAT
** Verifying Directory FAT Chain
** Scanning the Directory
** Checking Subdirectories
** Scanning Files with Trustee Nodes
** Scanning Deleted Files
** Linking the Name Spaces
** Shrinking the Extended Directory
WOODSTOCK3_FS:
WOODSTOCK3_FS:_

```

- o Type this command at the console: VMWTOOLS:\SETUP.NCF

```
** Scanning Deleted Files
** Linking the Name Spaces
** Shrinking the Extended Directory
WOODSTOCK3_FS:
WOODSTOCK3_FS:vmwtools:\setup.ncf
Loading module UMWINST.NLM
  VMware Tools Installer
  Version 1.01   January 21, 2009
  Copyright (c) 1998-2008 VMware, Inc. All rights reserved.
  Protected by one or more of U.S. Patent Nos.
  6,397,242, 6,496,847, 6,704,925, 6,711,672, 6,725,289,
  6,735,601, 6,785,886, 6,789,156, 6,795,966, 6,880,022,
  6,944,699, 6,961,806, ...
Installing VMware Tools for NetWare
  Extracting system/UMWTool.nlm
Java environment not detected.
Skipping etc/vmwtool/poweroff.ncf
Skipping etc/vmwtool/poweron.ncf
Skipping etc/vmwtool/resume.ncf
Skipping etc/vmwtool/suspend.ncf
Skipping etc/vmwtool/tools.cfg
Checking 'SYS:\SYSTEM\AUTOEXEC.NCF'
Installation finished. Now Tools are starting...
Sorry, but VMware Tools did not start properly.
WOODSTOCK3_FS:_
```

- Now click on the VM menu and choose “Cancel VMware Tools Install...” This will remove the virtual CD from the virtual CD drive.

And you are done.

Hope this document helped.