Cuatro Router Pod

Planning and Installation Guide

For Cisco Networking Academy® CCNA & CCNP Curriculum

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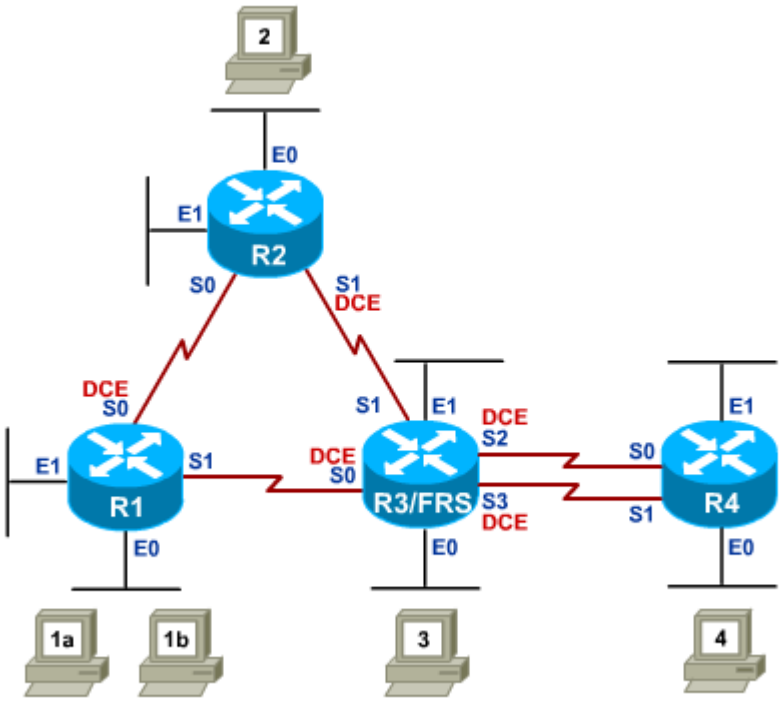
PART 1 – PLANNING

1 Introduction

The NETLAB$_{AE}$ Cuatro Router Pod is a versatile 4 router pod that supports many CCNA and CCNP lab exercises.



You may have up to eight (8) Cuatro Router Pods per NETLAB$_{AE}$ system.

The Cuatro Router Pod features direct access to router consoles. Integration with a separate VMware Server supports up to 5 virtual PCs. NETLAB$_{AE}$ can provide remote access to the keyboard, video, and mouse of the VMware virtual machines in the pod.

NETLAB$_{AE}$ users in a team or instructor-led class can share access to a device console or PC.

1.1 Deviations

Remote users may get confused by local deviations from the standard curriculum and labs. The curriculum is relatively complex and offers many opportunities to "make adjustments to the labs". If your NETLAB$_{AE}$ pods will be made accessible outside your local Academy, you should carefully consider the impact of deviations and substitutions.

Even if your user community is local or relatively small, we recommend that you (1) document the specifics of your pods and (2) use the NETLAB$_{AE}$ *News and Announcements* feature to point users to your documentation.

1.2 Remote PC Support

A Cuatro Router Pod supports up to 5 remote PCs. NETLAB$_{AE}$ allows three alternative settings for each:

- **Direct/VMware**. The PC is implemented as a VMware virtual machine.
  - Users can control the keyboard, video, and mouse.
  - Users can power on, shutdown, reboot, and revert to a clean state.
  - Users can have administrator rights.
- **Indirect**. The PC is implemented, but not managed by NETLAB$_{AE}$.
  - Users may be able to interact with the PC, but cannot access the keyboard, video, or mouse through NETLAB$_{AE}$.
- **Absent**. The PC is not implemented.

These options are fully explained in the *NETLAB+ VMware Remote PC Guide*. Direct/VMware offers complete administrative access on the remote PC. To learn more about VMware Server, please visit http://www.netdevgroup.com/ae/vmware.htm.

Direct/Standalone (as described in the *NETLAB+ Remote PC Guide*) is not supported on this pod.

1.3 Dynamic Topologies

The Cuatro Router Pod features dynamic topologies. NETLAB$_{AE}$ can alter the topology and reposition PCs by manipulating VLANs on the control switch. This is done automatically based on the selected lab exercise. Instructors can change exercises and topologies during instructor led class reservations.

2 Lab Device Requirements

Lab devices are part of the topology and users can interact with them either directly or indirectly.

The equipment listed in subsequent sections is derived from the official Academy spreadsheet **CCNPConfigurationandPricingGuide.xls** (November 2006).

Other equipment may work if it is supported by NETLAB$_{AE}$ and can meet the minimum requirements for feature sets, interfaces, IOS, RAM, and Flash. A list of NETLAB$_{AE}$ supported lab equipment can be found on the NDG website. Please note, compatibility with NETLAB$_{AE}$ does not guarantee compatibility with the Academy labs.

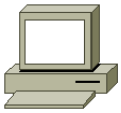
2.1 Routers R1, R2, R3 and R4

Router Name	Recommended Routers	Ethernet Ports Required	Serial Ports Required	Recommended Serial Modules
R1, R2, R4	Cisco 1841 Cisco 2801 Cisco 2811	2	2	1 x WIC 2T
R3	Cisco 1841 Cisco 2801 Cisco 2811	2	4	2 x WIC 2T

Several labs will use router R3 as a Frame Relay switch. That is the reason for having two (2) WIC modules, which means four (4) serial interfaces.

Interface name translation is only supported on two of the four R3 serial interfaces. If you are deploying more than one Cuatro Router Pod, please use the same router model and WIC slots for each R3 router to avoid configuration loading problems between pods.

Serial interfaces may be built-in, or provided by modular interface cards such as the WIC-2T. Serial connections between routers require the appropriate serial cables. You can use DTE and DCE cables back-to-back, or special cables that provide both DTE and DCE in one cable (available from SIGMAnet).



2.2 PCs and Servers

A Cuatro Router Pod supports 5 VMware Server virtual machines. VMware Server is installed on a separate server.

The following operating system choices are typical based on the curriculum. These choices are not mandatory; you can make substitutions provided:

(1) VMware Server supports the operating system (as a "guest").
(2) Your choices are compatible with the curriculum.

Virtual Machine	Recommended O/S	Functions
PC1a	Windows XP	Student PC, client activities
PC1b	Windows XP	Student PC, client activities
PC2	Windows XP	Student PC, client activities
PC3	Windows XP	Student PC, client activities
PC4	Windows XP	Student PC, client activities

3 Control Device Requirements

NETLAB$_{AE}$ *control devices* provide internal connectivity, console access, and managed power. Control devices are dynamically managed by NETLAB$_{AE}$ and are not accessible or configurable by lab users.

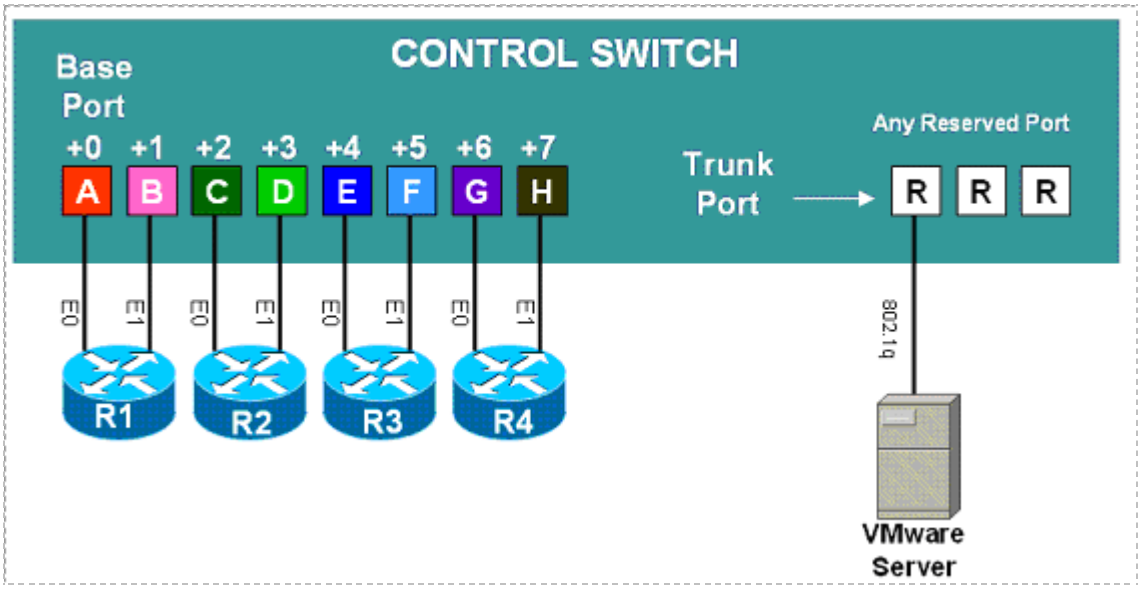
The *NETLAB+ Administrator Guide* explains how to add, change, or delete control devices.

A Cuatro Router Pod requires the following control device resources:

Control Device Resource	Quantity Required
Control Switch	**8** consecutive ports **1** reserved port (VMware server)
Access Server	**4** lines
Switched Outlet Devices	**4** outlets

3.1 Control Switch Overview

NETLAB$_{AE}$ uses a control switch to provide connectivity between devices in a Cuatro Router Pod and VMware server(s). This pod requires **8 consecutive ports** on a supported control switch (other than a Catalyst 1900 series).

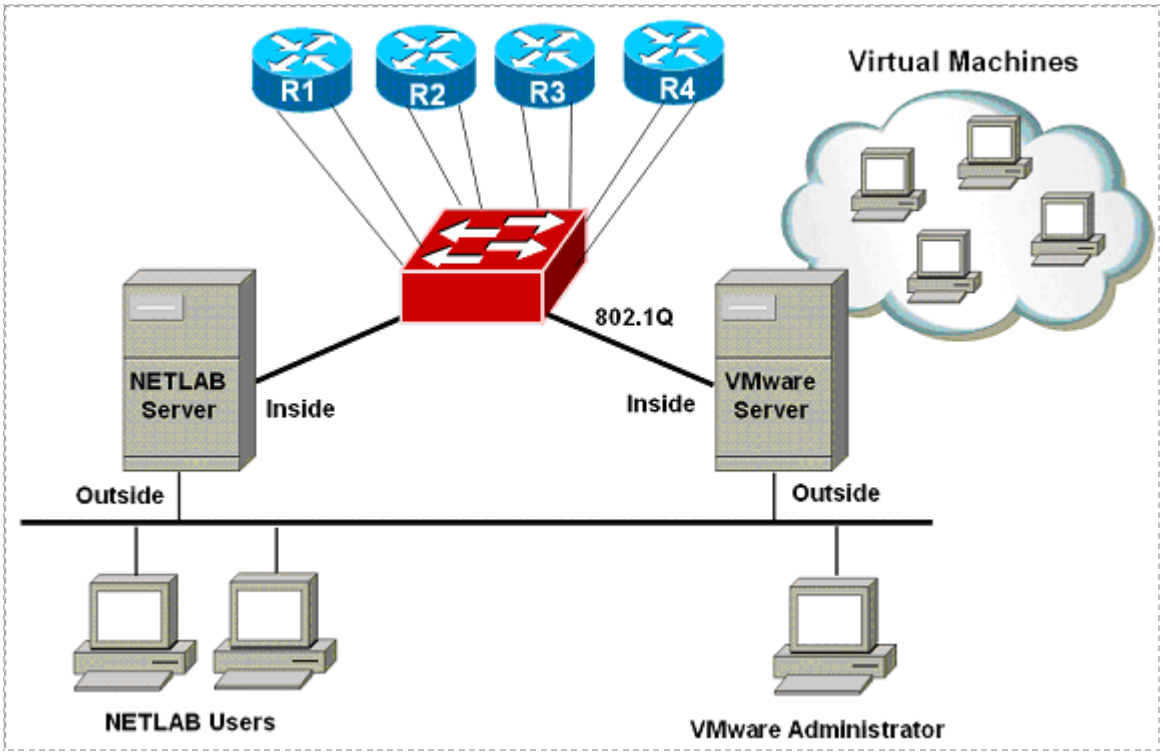


Ports are labeled **+0** to **+7** in the diagram and are relative to the *base port*. These ports must be consecutive on the same control switch. As with all pods, you choose a base port for the pod during pod installation (section 5). A control switch can support multiple pods. To determine the actual port numbers used for this pod, add the base port number to the relative port numbers shown in the diagram. For example, if the base port is 5, the actual port numbers will be 5 to 12.

Using SNMP, NETLAB$_{AE}$ will automatically setup VLANs and configure ports on the control switch. These VLANs are depicted as letters "A" through "H" and represent one subnet in the topology. Each NETLAB$_{AE}$ pod has a unique *VLAN pool* and the actual VLAN numbers will be unique for each NETLAB$_{AE}$ pod. This is to avoid conflict between pods.

One "reserved" port on the control switch connects to an 802.1q NIC card on the VMware Server. This allows devices in the pod to communicate with virtual machines.

The reserved port may be located on a different control switch, provided that all links between control switches are also configured as 802.1q trunks and all VLANs are allowed. You may also have more than one VMware Server and virtual machines in the pod can be located on different VMware Servers. For more details, please see section 7.

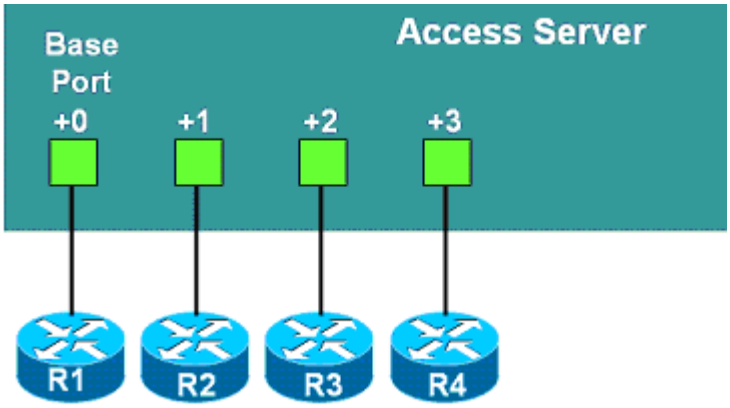


3.2 Access Server Ports

Access servers provide console connections to lab routers so that users can access them from NETLAB$_{AE}$. Users do not communicate directly with the access server. Rather, all connections are proxied through NETLAB$_{AE}$.

A Cuatro Router Pod requires **4** access server ports.

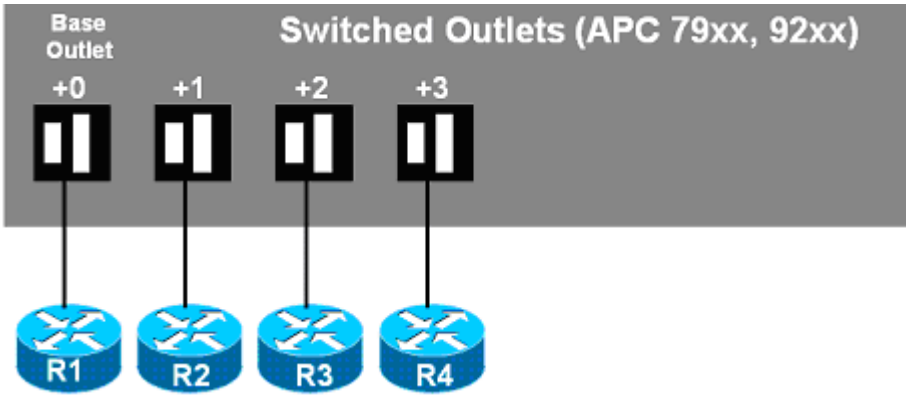
These ports do not have to be consecutive, and can span multiple access servers.



3.3 Switched Outlets

Switched outlets provide managed electrical power, allowing NETLAB$_{AE}$ and users to turn lab equipment on and off. A Cuatro Router Pod requires **4** switched outlets, one for each router.

Outlets do not have to be consecutive and may span multiple switched outlet devices (i.e. APC7900 or APC7920).



PART 2 – IMPLEMENTATION

4 Pre-requisites

This section covers tasks that should be executed prior to adding a Cuatro Router Pod.

4.1 Understanding VMware Server and Virtual Machines

The *NETLAB+ VMware PC Remote Guide* contains essential information for setting up a VMware Server and virtual machines. It should be used in conjunction with this guide.

4.2 Setup Control Devices

Using the guidelines in section 3, decide which control switch ports, access server ports, and switched outlets you will use for your Cuatro Router Pod. Add control devices if necessary. Control device configuration is documented in the *NETLAB+ Administrator Guide.*

4.3 Upload IOS Images

Upload the IOS images for the lab routers. NETLAB$_{AE}$ will recover these images on the devices if they are erased from flash.

4.4 Disable User Logins (optional)

You must take all equipment pods offline to add pods or configure control devices. You may wish to disable user logins during this time.

5 Adding the Pod

This section walks you through the process of adding a Cuatro Router Pod using the NETLAB$_{AE}$ New Pod Wizard.

5.1 Start the New Pod Wizard

Login to the administrator account.

Select Equipment Pods.

Select Take All OFFLINE if any of the pods are online. Caution: this will cancel any reservations in progress.

Select Add a Pod.

The New Pod Wizard will now help you add an equipment pod to your system.

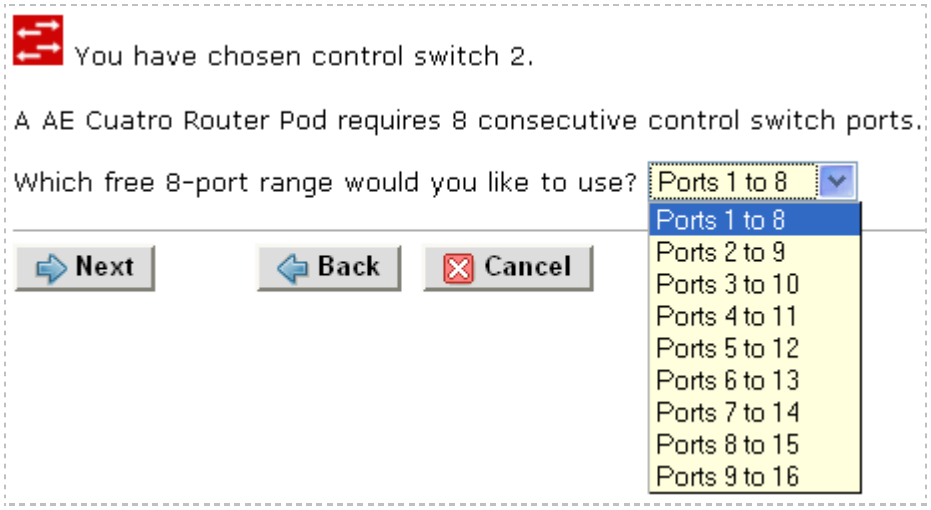
5.2 Add a Cuatro Router Pod

When prompted, select the Cuatro Router Pod .

5.3 Select Control Switch and Ports

A Cuatro Router Pod requires **8 consecutive control switch ports**. NETLAB$_{AE}$ will present a list of the control switches on your system. Switches that meet the port requirement can be selected. Choose one control switch for your new pod.

Next, select the ports you want to use.



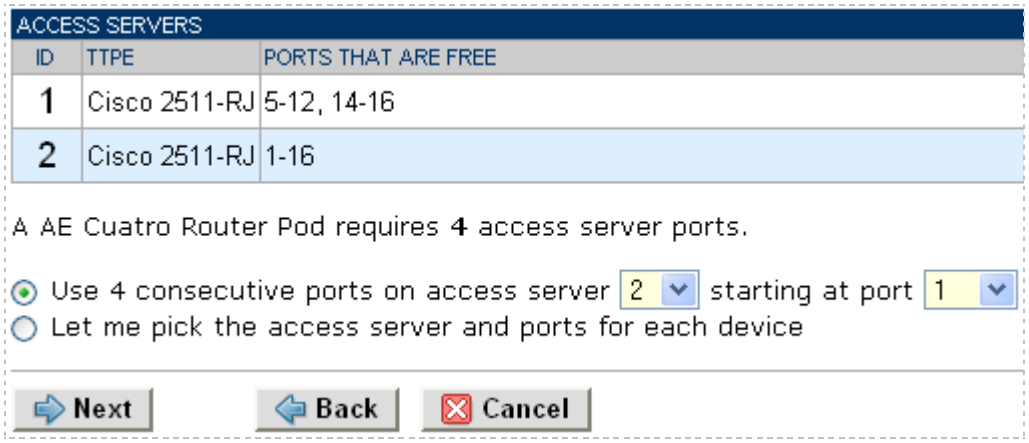
5.4 Select Access Server(s) and Ports

A Cuatro Router Pod requires **4 access server ports**.

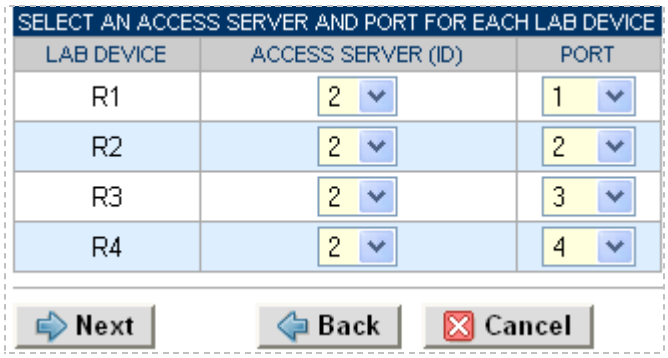
It is a good idea to use consecutive ports on one access server if possible. This practice will make it easier to cable and troubleshoot. If consecutive ports are not available, you can use non-consecutive ports, on different access servers if necessary.

Use the physical port numbers shown on the access server. Some models start at port 1 (Cisco 2509 and 2511) and others start at port 0 (Cisco NM-16A and NM-32A modules).

NETLAB$_{AE}$ allows you to choose consecutive ports on one access server, or you can choose "Let me pick" to select an access server and port for each router.



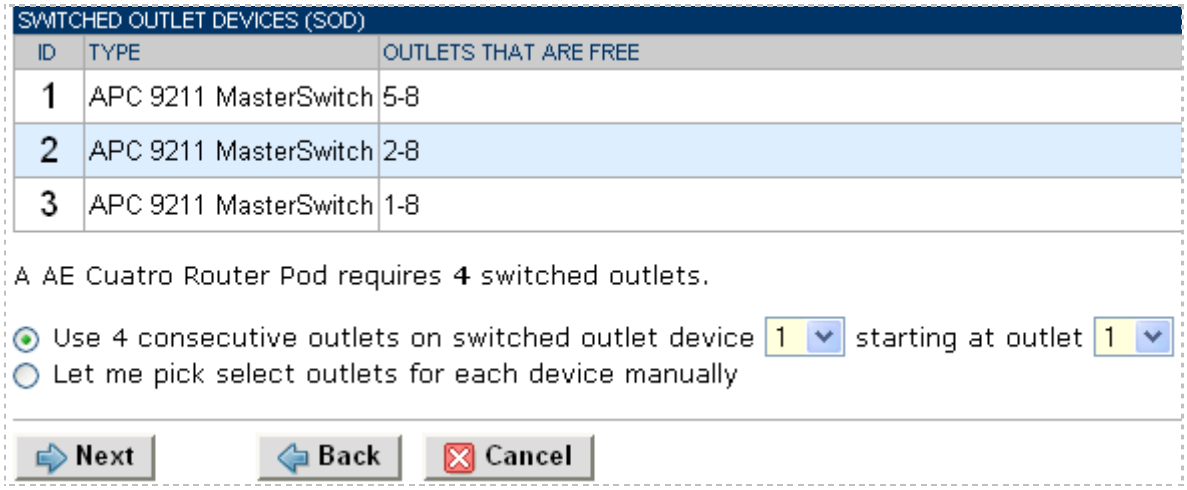
"Let me pick", allows you to make granular selections and split ports among several access servers.



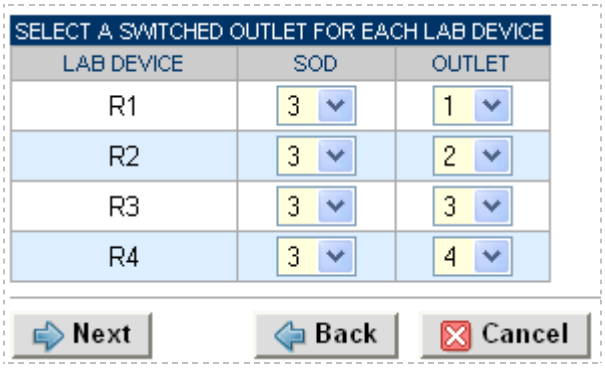
5.5 Select Switched Outlets

A Cuatro Router Pod requires **4 switched outlets**.

It is a good idea to use consecutive outlets on one switched outlet device (SOD) if possible. This practice will make it easier to cable and troubleshoot. If consecutive outlets are not available, you may use non-consecutive outlets, spanning multiple SODs if necessary.



"Let me Pick", will allow you to make granular selections.



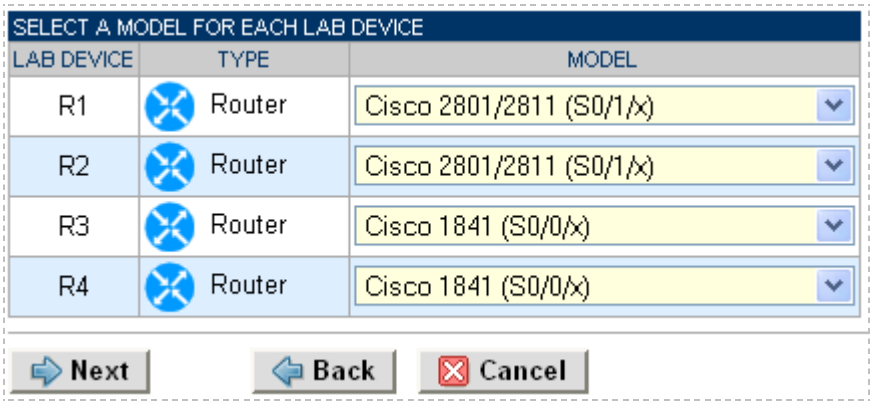
5.6 Select Device Types

Select the router models you are going to deploy.

⇒ Your selections are used to assign the appropriate NETLAB$_{AE}$ device driver.

⇒ Improper selections may cause errors.

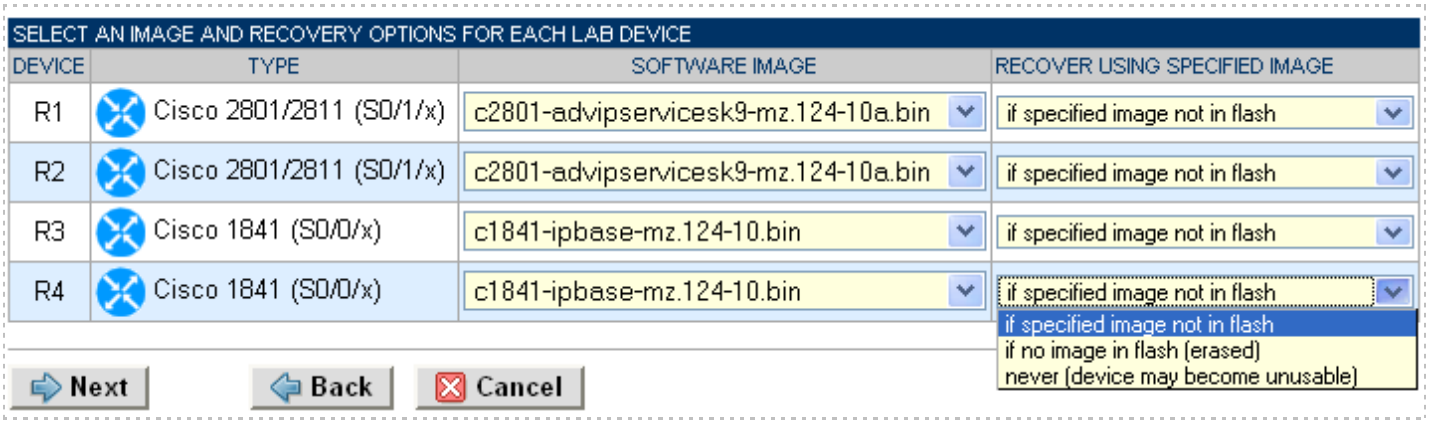
⇒ NETLAB$_{AE}$ may offer selections that do not support the curriculum. See section 2 for a list of recommended devices for this pod.



Although R3 does not show two serial WIC interfaces, R3 needs to have two WIC serial interfaces installed for a total of four serial ports. The pull down menu for R3 should be set to the serial WIC module that connects router R3 to router R1 and R2.

5.7 Select Software Images and Recovery Options

NETLAB$_{AE}$ scrubs each router at the end of lab reservation or upon request. During a scrub, NETLAB$_{AE}$ can recover an IOS image if it is erased from flash.



You have three choices for flash recovery:

Recovery Using Specified Image	During A Scrub Operation…
If specified image not in flash	Restores the selected software image if that image is not in flash.
If no image in flash (erased)	Restores the selected software image if there are no .bin images in flash. No action is taken if flash contains a .bin image (even if it is not the specified one).
Never (device may become unusable)	NETLAB$_{AE}$ will take no action if the flash does not contain a bootable image. In this case, NETLAB$_{AE}$ automated boot process will fail and manual restoration of IOS will be required.

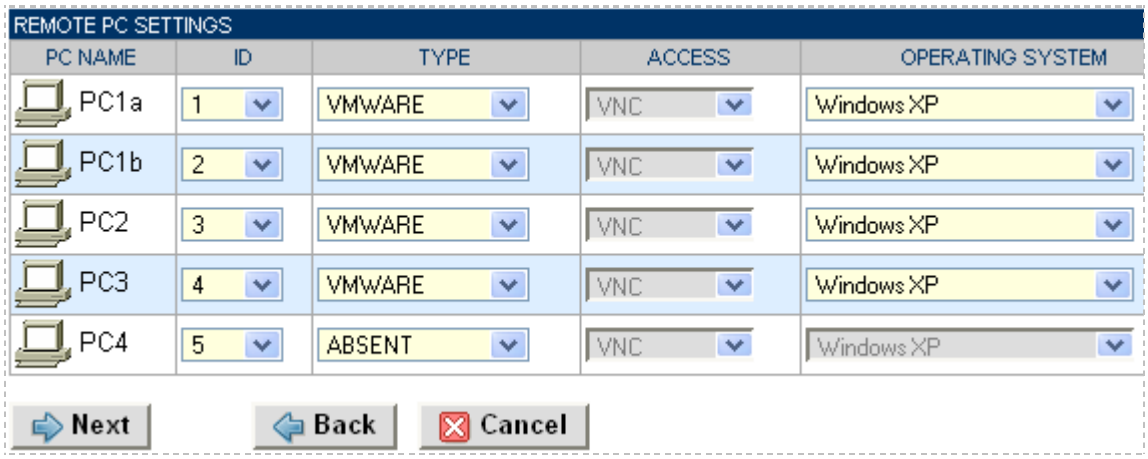
If you select an automatic recovery option, you must also select a software image supported by the curriculum (see section 2).

5.8 Select PC Options

In this task, you will select an ID, type, access method, and operating system for your PCs and servers.

The example below shows the typical settings for a VMware Server setup. We have chosen not to implement PC4 in this example, so the type is set to ABSENT.

Figure 5.8.1 – Typical remote PC settings

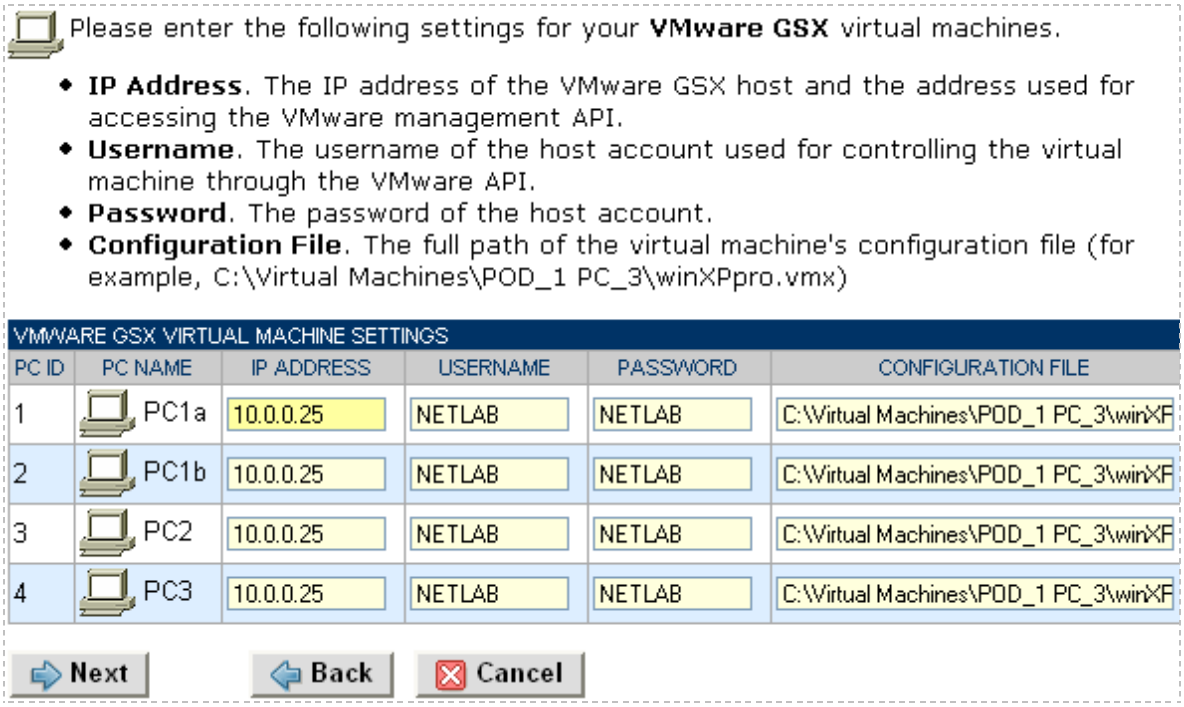


The following TYPE and ACCESS combinations correspond to the documentation.

The default TYPE setting is STANDALONE. This setting is not supported in the Cuatro Router Pod. You must change the default setting.

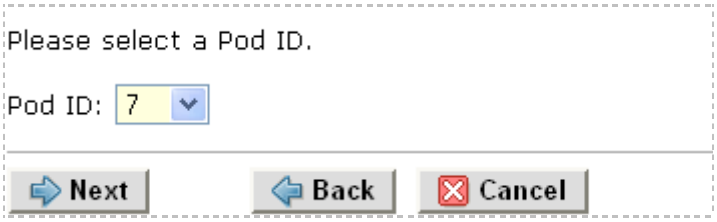
To implement…	Set TYPE to…	Set ACCESS to…
Direct/VMware	VMWARE	VNC
Direct/Standalone (not supported in this pod)	STANDALONE	VNC
Indirect	(any)	INDIRECT
Absent (no PC)	ABSENT	n/a

5.9 VMware Settings



5.10 Select a Pod ID

Each pod is assigned a unique numeric ID.

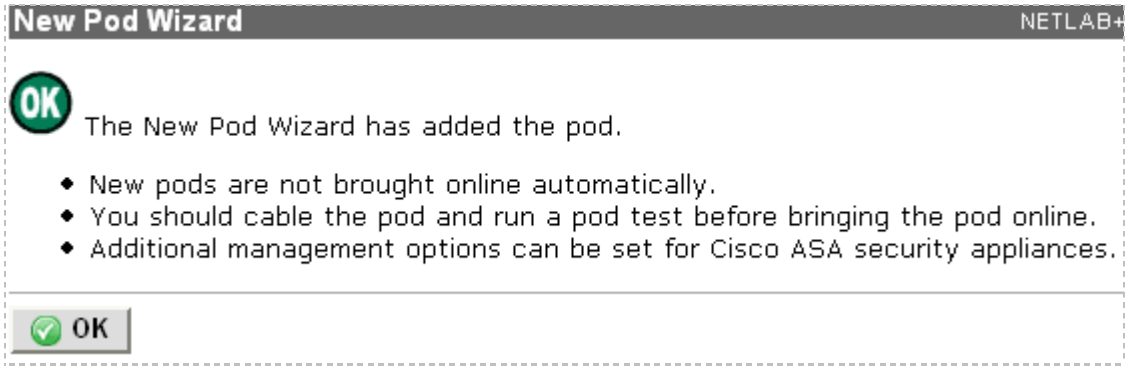


5.11 Select a Pod Name

Each pod can have a unique name. This name will appear in the scheduler, along with the pod type.

5.12 Verify Your Settings

At this point NETLAB$_{AE}$ has added the pod to its database. However, the pod has not been brought online yet. You will want to cable up the pod, configure PCs, and run a pod test before bringing the pod online. These tasks are discussed in the remaining sections.



After you click OK, the new pod will appear in the list of equipment pods. Click on the magnifier button or pod ID to manage you new pod.

NETLAB$_{AE}$ will display the status of the pod and the high-level settings for each device, PC, and control switch.

POD 7 - STATUS

POD ID	POD NAME	STATUS	ACTIVITY	POD TYPE
7	Galactica	OFFLINE	IDLE	CUATRO ROUTER POD 4 routers, PCs

POD 7 - ROUTERS, SWITCHES, AND FIREWALLS (click on the GO buttons to reconfigure devices)

GO	NAME	TYPE	ACCESS PORTS	SWITCHED OUTLETS	SOFTWARE IMAGE
	R1	Cisco 2801/2811 (S0/1/x)	AS 2 PORT 1	SOD 3 OUTLET 1	c2801-advipservicesk9-mz.124-10a.bin
	R2	Cisco 2801/2811 (S0/1/x)	AS 2 PORT 2	SOD 3 OUTLET 2	c2801-advipservicesk9-mz.124-10a.bin
	R3	Cisco 1841 (S0/0/x)	AS 2 PORT 3	SOD 3 OUTLET 3	c1841-ipbase-mz.124-10.bin
	R4	Cisco 1841 (S0/0/x)	AS 2 PORT 4	SOD 3 OUTLET 4	c1841-ipbase-mz.124-10.bin

POD 7 - PCs AND SERVERS (click the GO buttons to reconfigure)

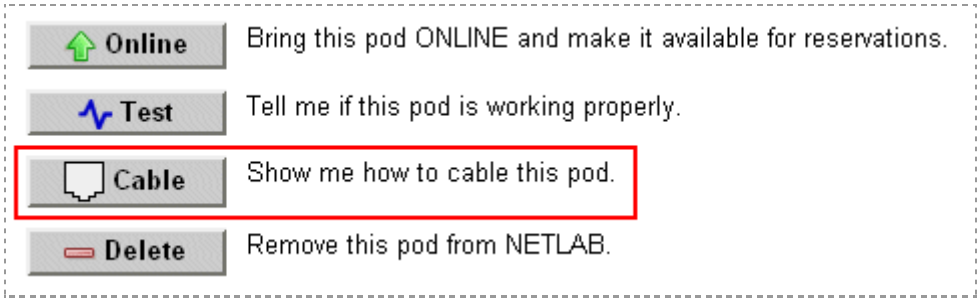
GO	NAME	PC ID	STATUS	TYPE	ACCESS	CONTROL IP	OPERATING SYSTEM
	PC1a	1	ONLINE	VMWARE	VNC	10.0.0.25	Windows XP
	PC1b	2	ONLINE	VMWARE	VNC	10.0.0.25	Windows XP
	PC2	3	ONLINE	VMWARE	VNC	10.0.0.25	Windows XP
	PC3	4	ONLINE	VMWARE	VNC	10.0.0.25	Windows XP
	PC4	5	ONLINE	ABSENT	NULL		

POD 7 - CONTROL SWITCH

SWITCH ID	POD PORT RANGE	BASE VLAN	VLAN POOL	
2	1-8	160	160-167	

6 Cable the Pod

Use the NETLAB$_{AE}$ cable chart feature to help you connect the lab devices in your pod. The chart is generated in real-time and contains port-specific information based on your current lab device and control device settings. The cable chart function is accessed from the pod management page.



CABLE CHART FOR POD 7

R1 (Cisco 2801/2811 (S0/1/x))

CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet0/0	CAT-5 Straight Through	C/S 2	Port 1
FastEthernet0/1	CAT-5 Straight Through	C/S 2	Port 2
Console	Console Cable	A/S 2	Port 1
Power	Power Cord	SOD 3	Outlet 1
Serial0 DCE	Back-to-back serial cables	R2	Serial0 DTE
Serial1 DTE	Back-to-back serial cables	R3	Serial0 DCE

R2 (Cisco 2801/2811 (S0/1/x))

CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet0/0	CAT-5 Straight Through	C/S 2	Port 3
FastEthernet0/1	CAT-5 Straight Through	C/S 2	Port 4
Console	Console Cable	A/S 2	Port 2
Power	Power Cord	SOD 3	Outlet 2
Serial0 DTE	Back-to-back serial cables	R1	Serial0 DCE
Serial1 DCE	Back-to-back serial cables	R3	Serial1 DTE

The cable chart is continued on the next page.

R3 (Cisco 1841 (S0/0/x))

CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet0/0	CAT-5 Straight Through	C/S 2	Port 5
FastEthernet0/1	CAT-5 Straight Through	C/S 2	Port 6
Console	Console Cable	A/S 2	Port 3
Power	Power Cord	SOD 3	Outlet 3
Serial0 DCE	Back-to-back serial cables	R1	Serial1 DTE
Serial1 DTE	Back-to-back serial cables	R3	Serial1 DCE
Serial2 DCE	Back-to-back serial cables	R4	Serial0 DTE
Serial3 DCE	Back-to-back serial cables	R4	Serial1 DTE

R4 (Cisco 1841 (S0/0/x))

CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet0/0	CAT-5 Straight Through	C/S 2	Port 7
FastEthernet0/1	CAT-5 Straight Through	C/S 2	Port 8
Console	Console Cable	A/S 2	Port 4
Power	Power Cord	SOD 3	Outlet 4
Serial0 DTE	Back-to-back serial cables	R3	Serial2 DCE
Serial1 DTE	Back-to-back serial cables	R3	Serial3 DCE

Virtual machine information will not appear on the cable chart. Refer to section 7 for configuration instructions.

The Ethernet interface names show in the cable guidance will be the actual interface names based on your selected hardware. However, the interface names shown for serial ports are relative, not actual. Please consider this when cabling the pod.

7 Configuring VMware and Virtual Machines

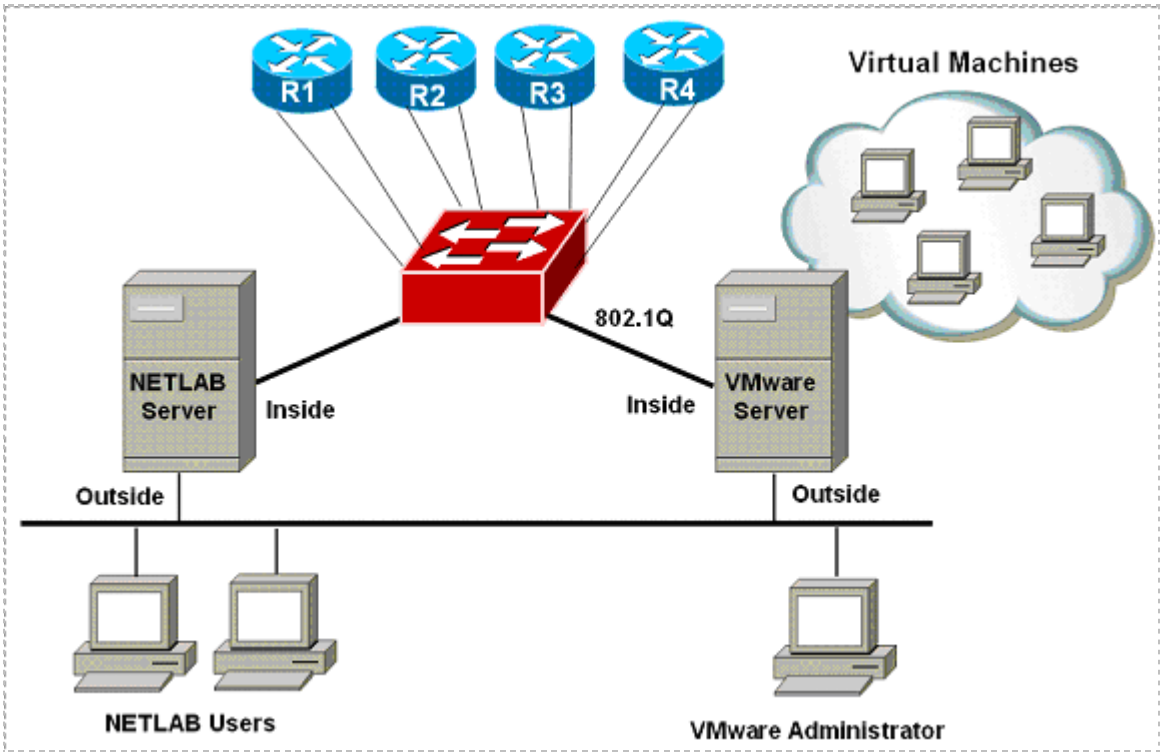
The *NETLAB+ VMware Remote PC Guide* explains how to set up VMware Server and virtual machines. Please review the pod-specific information in this section and apply it to the general information in the *NETLAB+ VMware Remote PC Guide*. Please note, only the sections referring to VMware are relevant; a Cuatro Router Pod does not support standalone PC's.

After you load applications or make changes to a PC, be sure to take a VMware snapshot. NETLAB$_{AE}$ instructs VMware to "revert" to the snapshot at the end of each lab reservation. Any changes made after a snapshot are lost.

The IP addresses and/or default gateways of each PC may vary. Depending on your snapshots, the student may need to adjust IP settings to reflect the lab.

7.1 Connecting Virtual Machines to the Pod

Virtual Machines must communicate with routers in the pod. Control switches provide the connection point. In the recommended configuration (below), the VMware server is equipped with an inside and outside interface. The inside interface is configured for 802.1Q connects to a reserved port on a control switch. Traffic between virtual machines and devices in the pod traverse the VMware server inside interface. Preferably, the VMware server should connect to the same control switch as the pod.

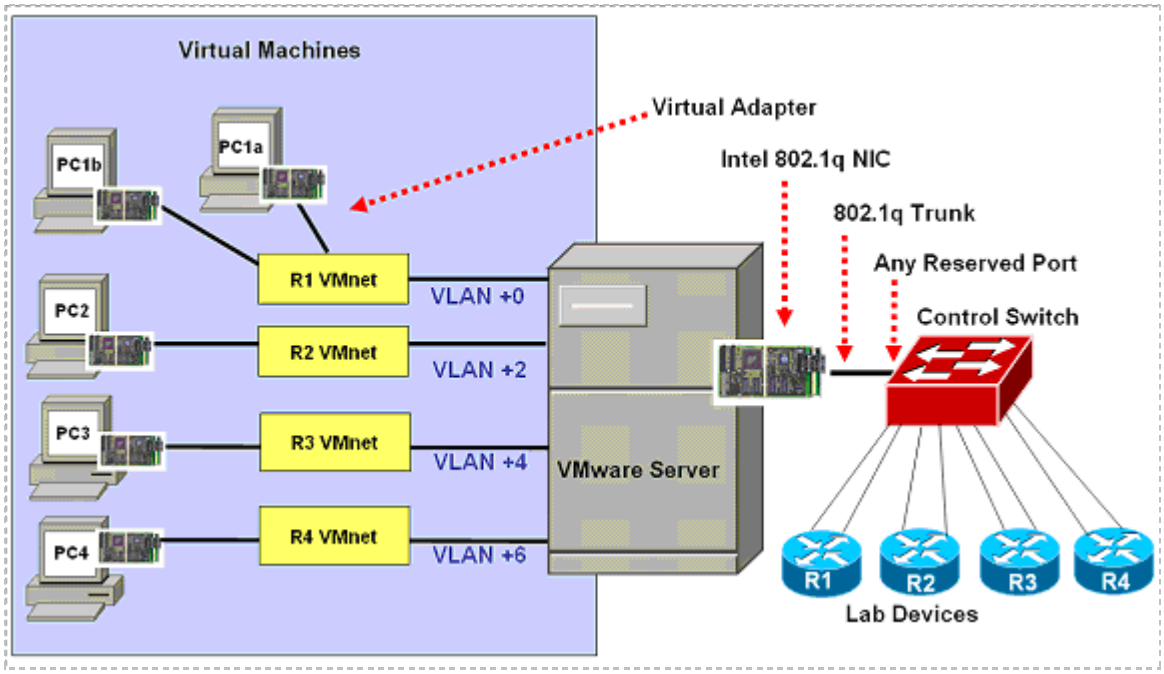


7.2 VMware Virtual Switches and VLANs

VMware Server virtual network adapters and virtual LAN switches (VMnets) are used to connect virtual machines to the pod. Cuatro Router Pod uses **4 VMnets** in the required configuration. Since VMware Server supports 10 virtual switches, it is possible to host up to 2 complete Cuatro Router Pods on a single VMware Server.

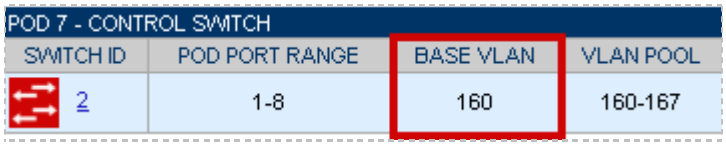
Each virtual switch is mapped to a specific VLAN and bound to the VMware inside 802.1Q NIC card. The actual VLAN numbers used are based on the pod's ID number.

PC1a and PC1b share a common VMnet and VLAN.



Each NETLAB$_{AE}$ pod is automatically assigned a pool of unique VLAN numbers. You must determine which VLAN numbers correspond to each virtual switch on the VMware server.

First, determine the base VLAN for the pod you are setting up. This is shown on the pod management page. From the administrative account, go to Equipment Pods and select the pod from the list. Obtain the BASE VLAN from the CONTROL SWITCH table.



POD 7 - CONTROL SWITCH

SWITCH ID	POD PORT RANGE	BASE VLAN	VLAN POOL
2	1-8	160	160-167

In this example, pod 7 uses VLANs 160-167. The base VLAN is 160.

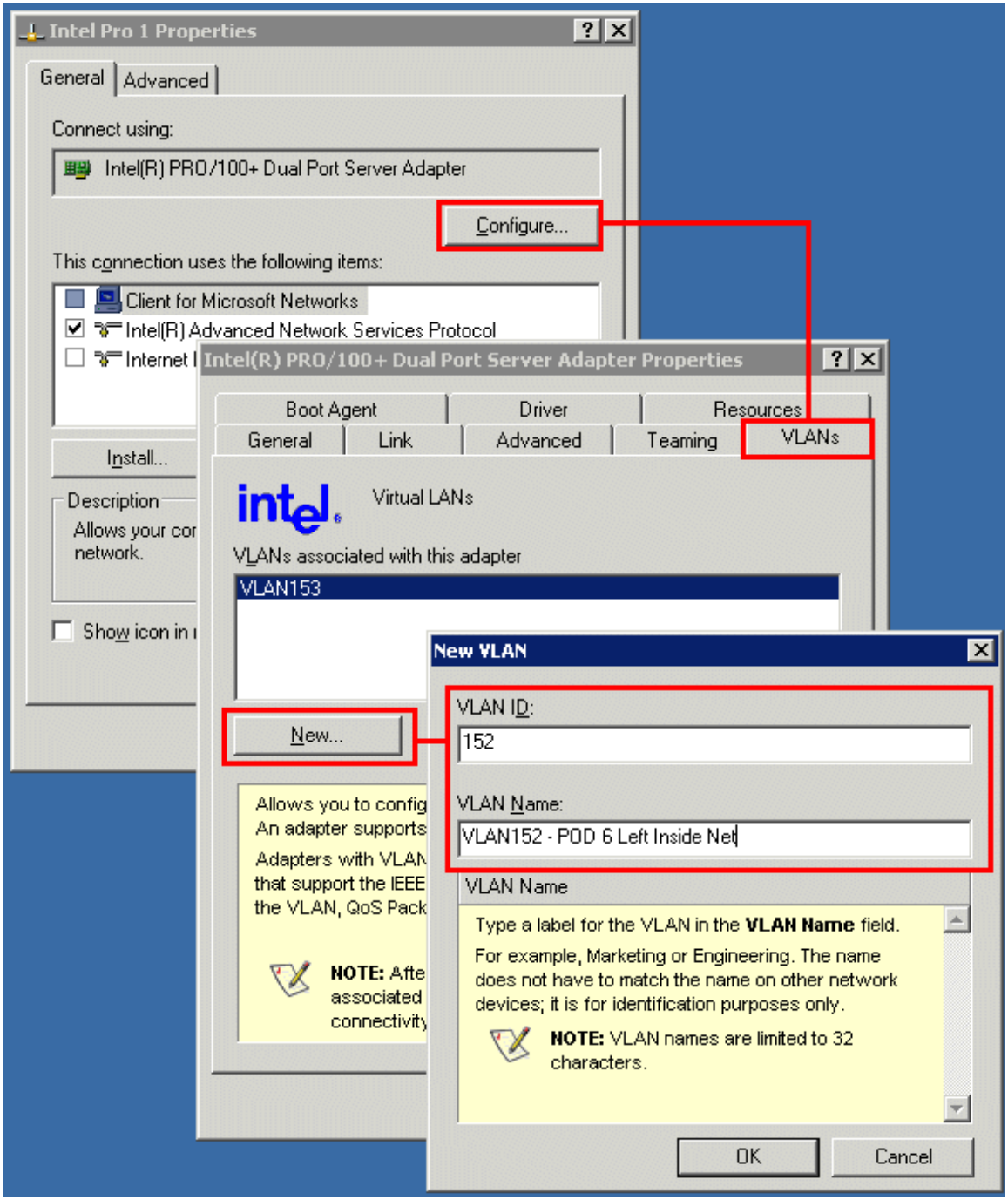
Next, determine the actual VLAN number for each virtual network by adding the base VLAN to the offsets in the table below.

Virtual Machines	Virtual Switch (VMnet)	Offset (add to base VLAN)	Actual VLAN	Example
PC1a PC1b	R1 VMnet	+ 0	= _____	160 + 0 = 160
PC2	R2 VMnet	+ 2	= _____	160 + 2 = 162
PC3	R3 VMnet	+ 4	= _____	160 + 4 = 164
PC4	R4 VMnet	+6	= _____	160 + 6 = 166

7.3 Configure VMware Server Inside Port

Refer to section 6 of the *NETLAB+ VMware Remote PC Guide.* Create the VLANs (calculated above) on the VMware server's inside 802.1Q NIC.

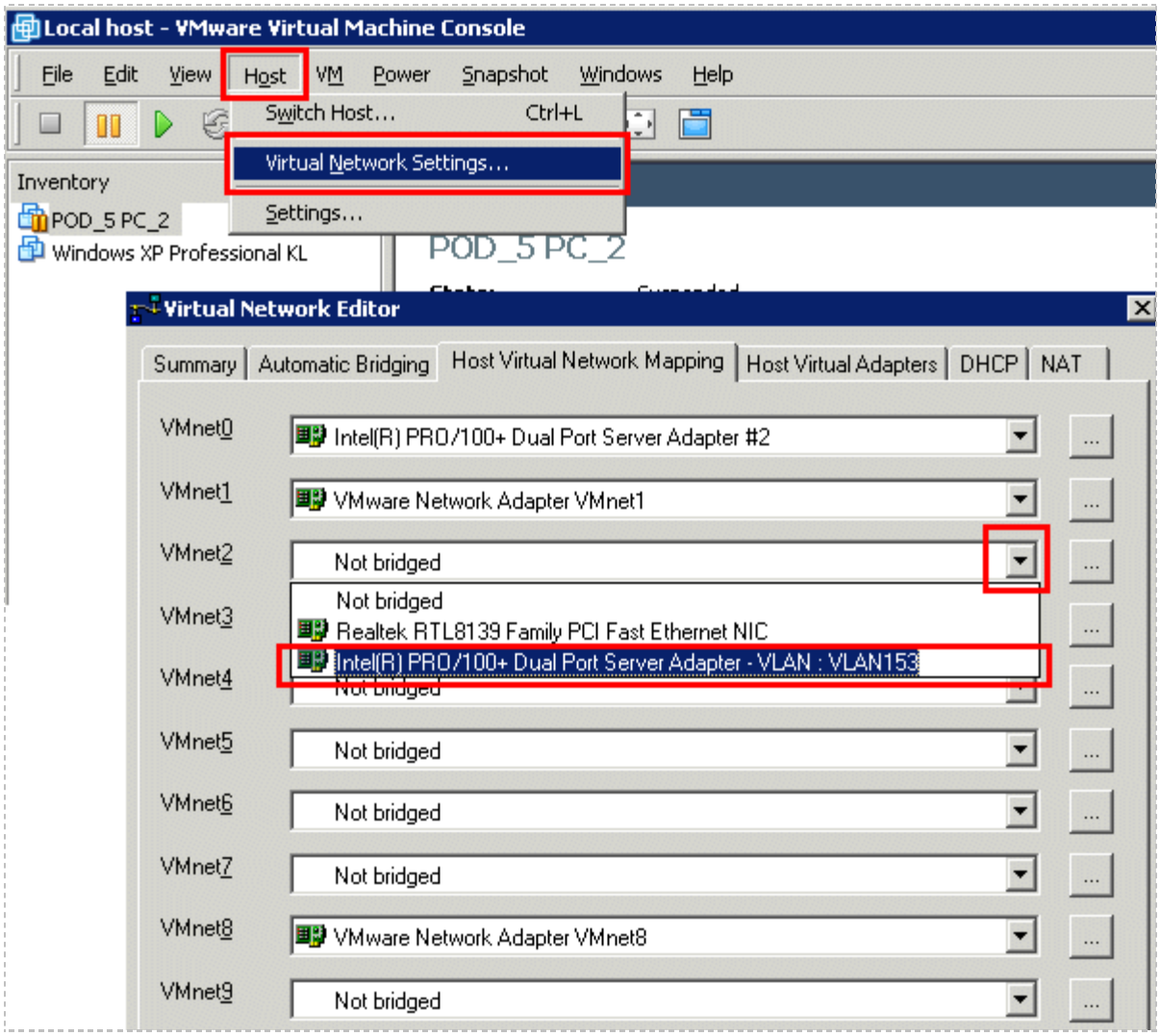
Be sure to **uncheck** TCP/IP and Client for Microsoft Networks from each VLAN subinterface. Only the VMware bridge protocol should be checked.



7.4 Create Virtual Switches (VMnet)

Refer to section 6 of the *NETLAB+ VMware Remote PC Guide.* Create the virtual switches and bind them to the VLANs created in the previous section.

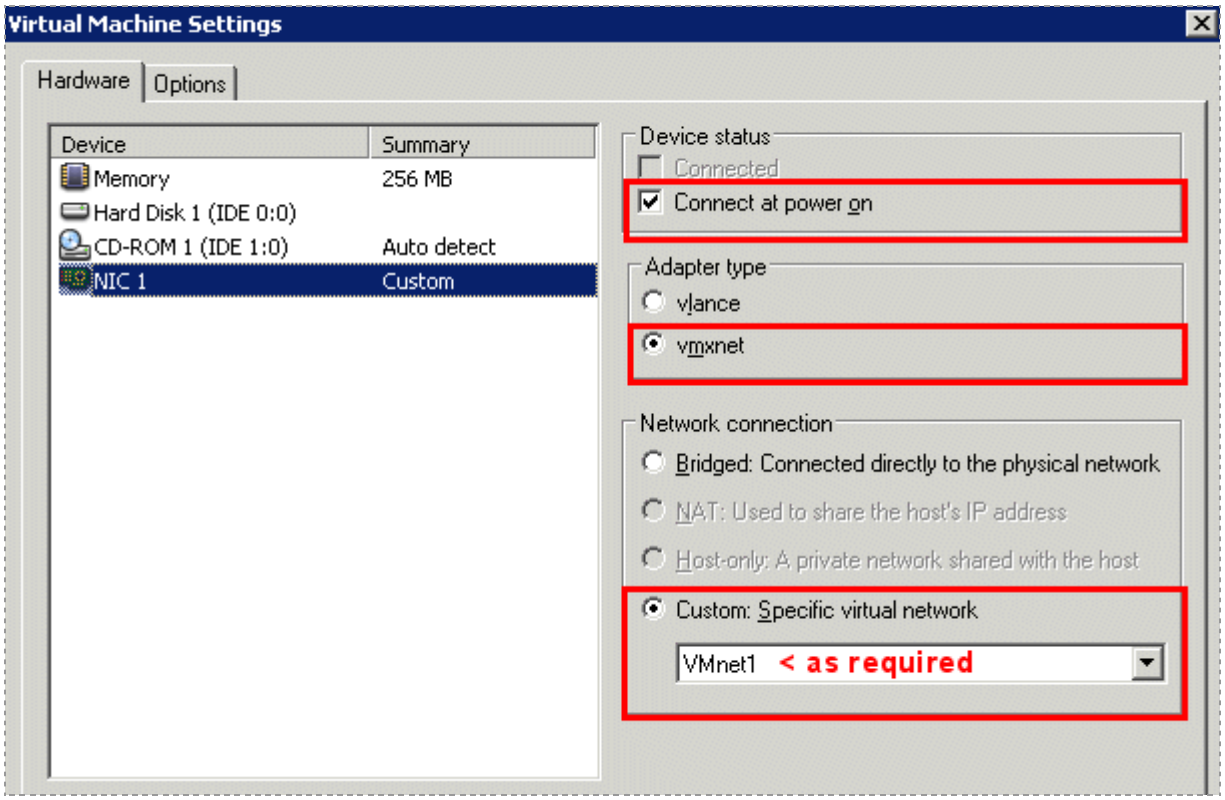
It does not matter which VMnet number you use. By default, VMnet0, VMnet1, and VMnet8 are reserved for special functions in VMware. However, you can convert these into ordinary VMnets to use with pods. This is explained in Appendix A of the *NETLAB+ VMware Remote PC Guide.*



7.5 Binding Virtual Machines to Virtual Switches (VMnet)

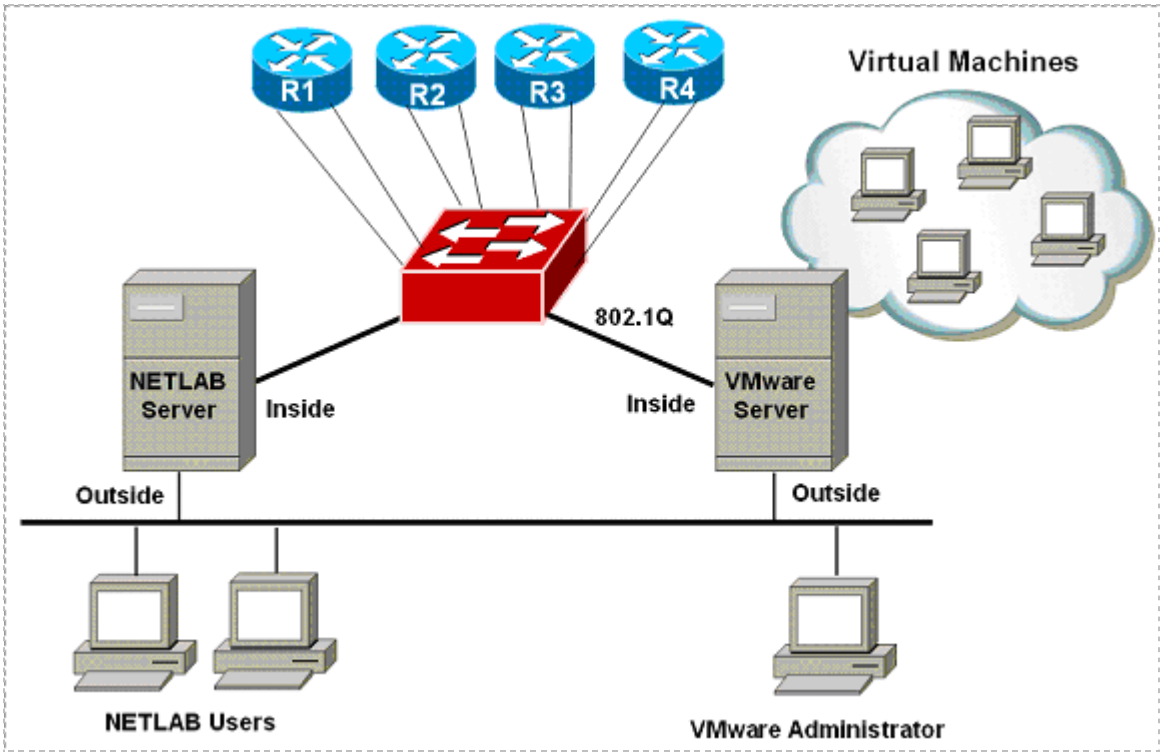
Refer to section 7 of the *NETLAB+ VMware Remote PC Guide.* In the last section, you associated a specific VLAN with a virtual switch (VMnet). When you create a virtual machine, you must bind it to the correct virtual switch (and by association, VLAN).

Virtual Machines	Virtual Switch (VMnet)	Offset (add to base VLAN)	Actual VLAN	Example
PC1a PC1b	R1 VMnet	+ 0	= _____	160 + 0 = 160
PC2	R2 VMnet	+ 2	= _____	160 + 2 = 162
PC3	R3 VMnet	+ 4	= _____	160 + 4 = 164
PC4	R4 VMnet	+6	= _____	160 + 6 = 166



7.6 Configuring the Control Switch for VMware

One "reserved" port on the control switch connects to an 802.1q NIC card on the VMware Server. This allows devices in the pod to communicate with virtual machines. The reserved port should be configured as an 802.1q trunk port.



Once you have allocated a reserved port on the control switch, connect the VMware Server inside NIC using a straight through CAT5 cable. Configure the switch port as a trunk and allow only the VLANs that were bound to the VMnets. If your VMware server hosts virtual machines for more than one pod, allow all the relevant VLANs for each pod.

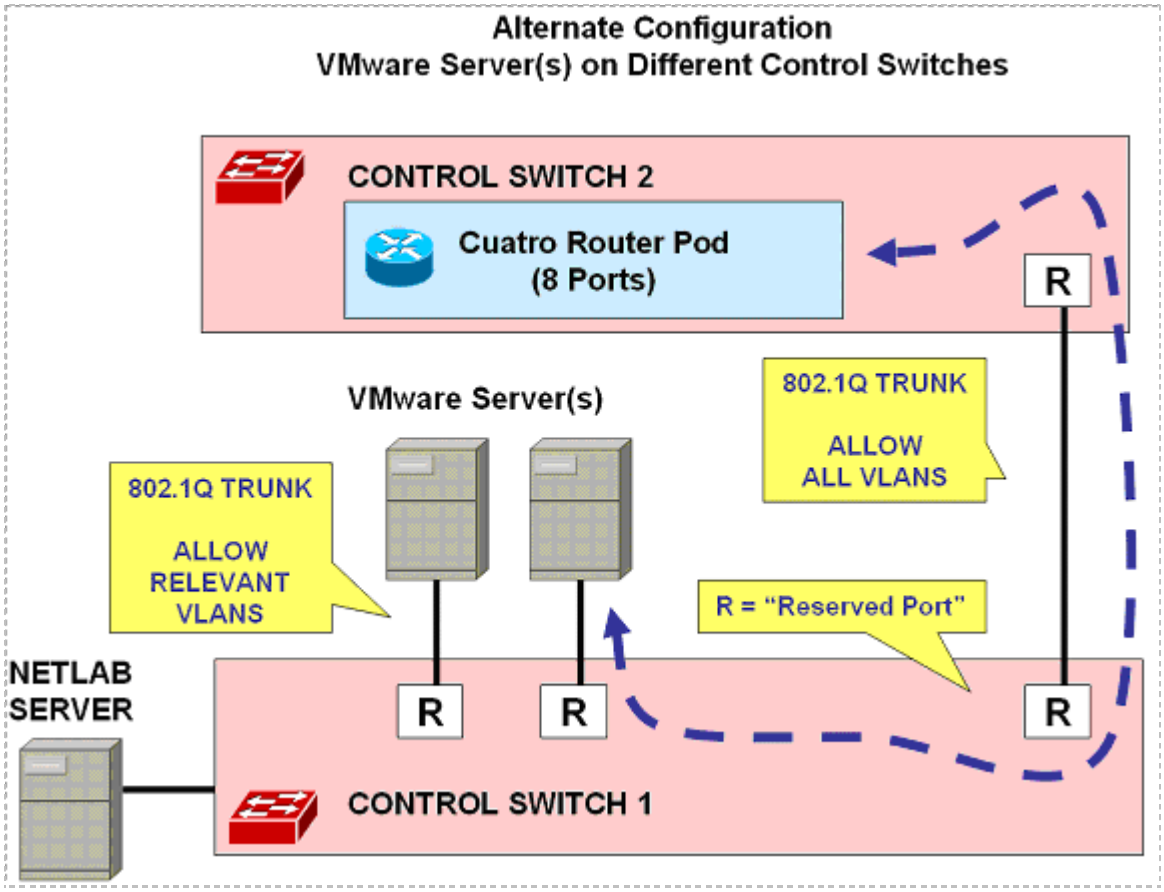
Note: The control switch console password is **router**. The enable secret password is **cisco**. These passwords are used by NETLAB+ automation and technical support - please do not change them.

Example switch port configuration. Interface number and VLANs will vary.

```
interface FastEthernet0/23
 switchport mode trunk
 switchport trunk allowed vlan 160,162,164,166
 switchport nonegotiate
 no switchport access vlan
 no shutdown
```

7.7 VMware Server(s) on Different Control Switch

The reserved port may be located on a different control switch, provided that all links between control switches are also configured as 802.1q trunks and all VLANs are allowed. You may also have more than one VMware Server. Virtual machines in the pod can be located on different VMware servers.



Ports connecting to VMware servers should only allow the VLANs associated with the pods being served. In addition, "switchport nonegotiate" should be used to suppress Dynamic Trunk Protocol (DTP):

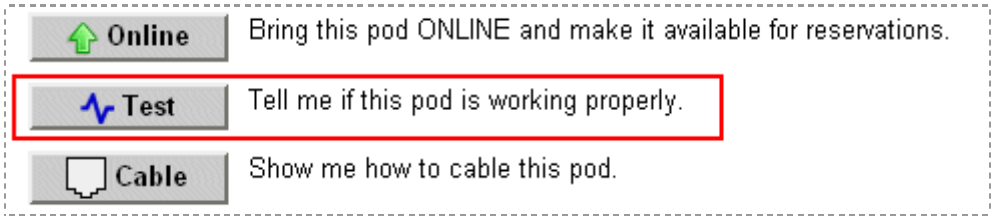
```
interface FastEthernet0/23
 switchport mode trunk
 switchport trunk allowed vlan 160,162,164,166
 switchport nonegotiate
 no switchport access vlan
 no shutdown
```

Ports connecting control switches together, allow all VLANs and DTP:

```
interface FastEthernet0/24
 switchport mode trunk
 no switchport access vlan
 switchport trunk allowed vlan all
 no shutdown
```

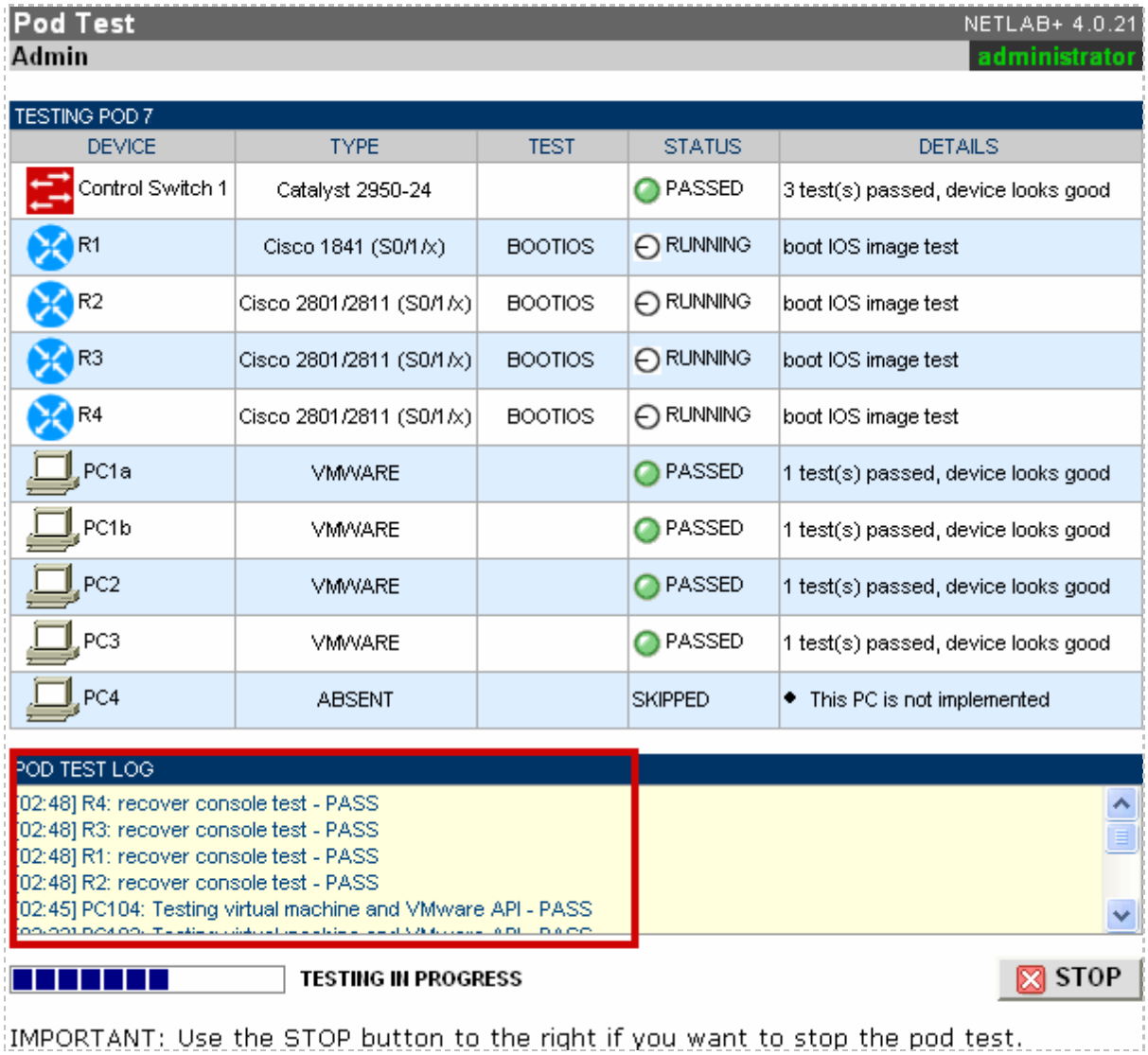
8 Testing the Pod

After all routers and virtual machines have been installed, you should run a pod test to verify that your pod is working. The pod test will detect common configuration and cabling problems.



Some tests may take a long time. During the BOOTIOS test, NETLAB$_{AE}$ may have to load the specified IOS image if it is not in flash. Some images are very large and can take up to 30 minutes to program into flash memory.

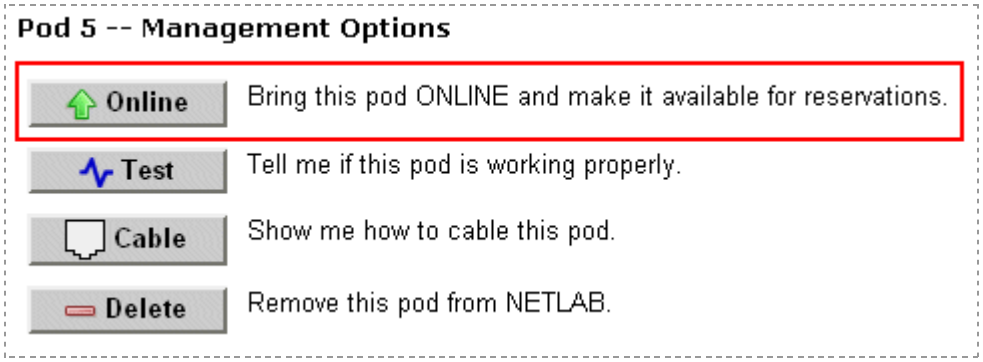
If you cannot resolve an issue and decide to contact technical support, please cut and paste the text from the POD TEST LOG and include with your e-mail.



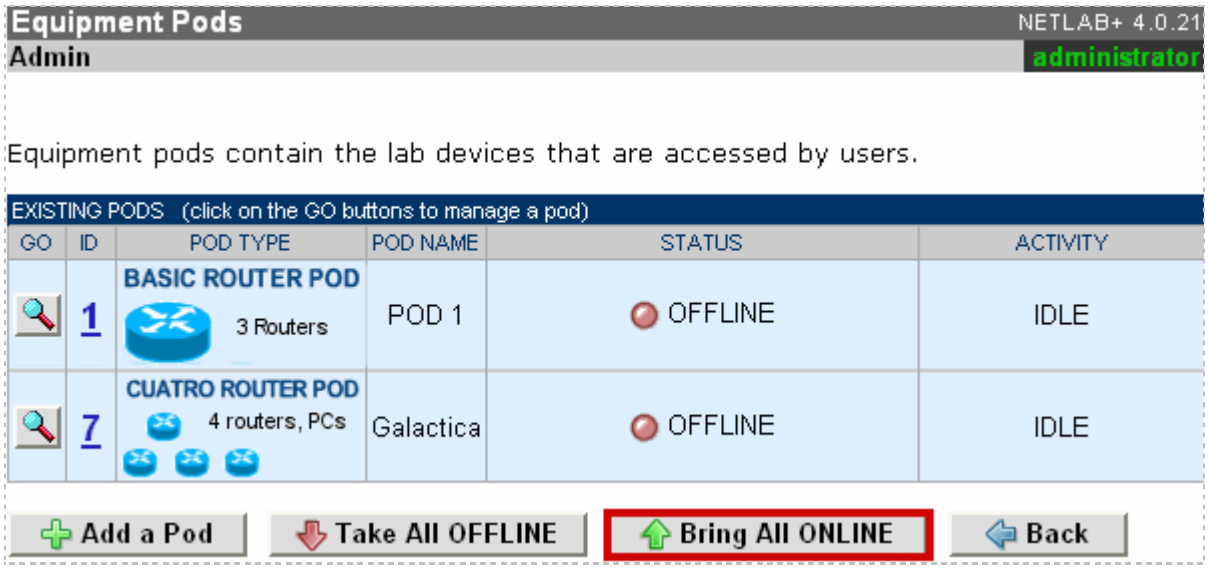
9 Finishing Up

9.1 Bring the Pod(s) Back Online

Now you can bring the pod online and make it available for lab reservations. You can bring just this pod online by clicking the Online button under Management Options.



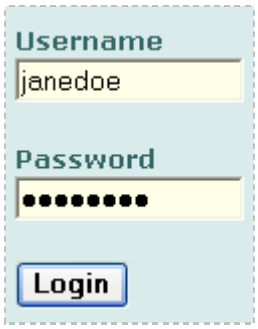
Alternatively, you can click Bring All ONLINE on the Equipment Pods page. Choose this option when you have no more additions or modifications to pods or control devices and you wish to put all pods into service.



9.2 Enable Cuatro Router Pod Exercises

To make Cuatro Router Pod available to classes and students, you must enable the corresponding lab exercise content in each new or existing class.

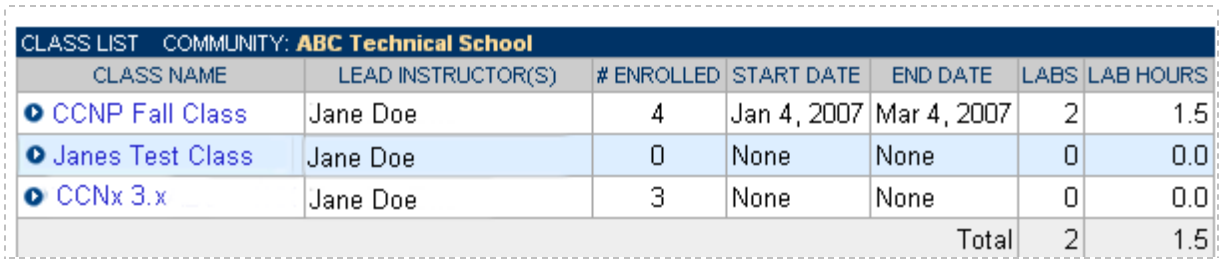
To add or edit class information, log into NETLAB$_{AE}$ using your instructor account. See the Instructor Accounts section of the *NETLAB+ Administrator Guide* for details.



Select **Class** from the menu bar at the top of the MyNETLAB page, or the link in the body of the page.

The Class Manager page will be displayed.

Select to add a new class or select an existing class from the class list by clicking on a class name.

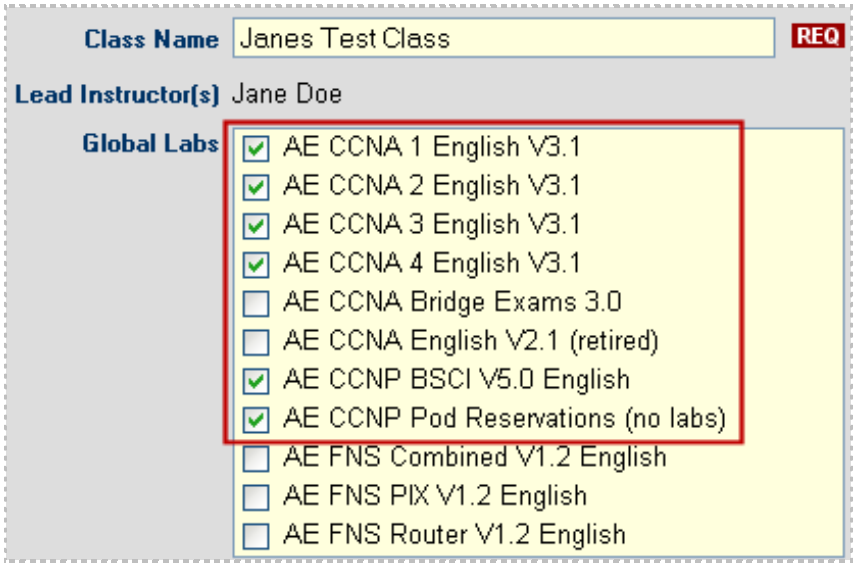


CLASS LIST COMMUNITY: **ABC Technical School**

CLASS NAME	LEAD INSTRUCTOR(S)	# ENROLLED	START DATE	END DATE	LABS	LAB HOURS
CCNP Fall Class	Jane Doe	4	Jan 4, 2007	Mar 4, 2007	2	1.5
Janes Test Class	Jane Doe	0	None	None	0	0.0
CCNx 3.x	Jane Doe	3	None	None	0	0.0
				Total	2	1.5

In the global labs section of the class settings, check the labs that you wish to make available to your class.

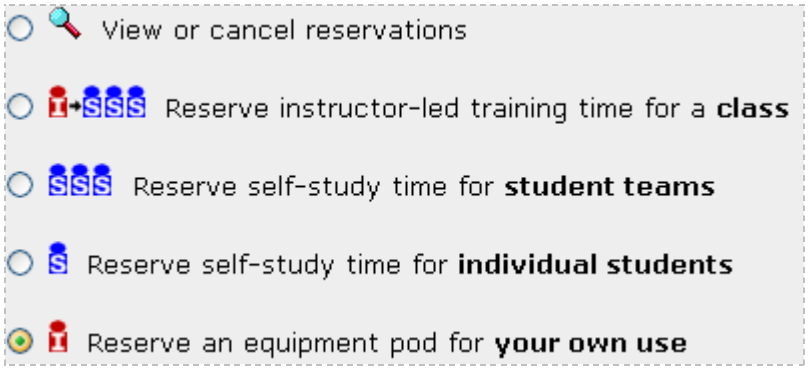
These selections determine whether the Cuatro Router Pod is made available for student, team, or ILT reservations for this class.



9.3 Schedule a Lab Reservation for Your New Pod

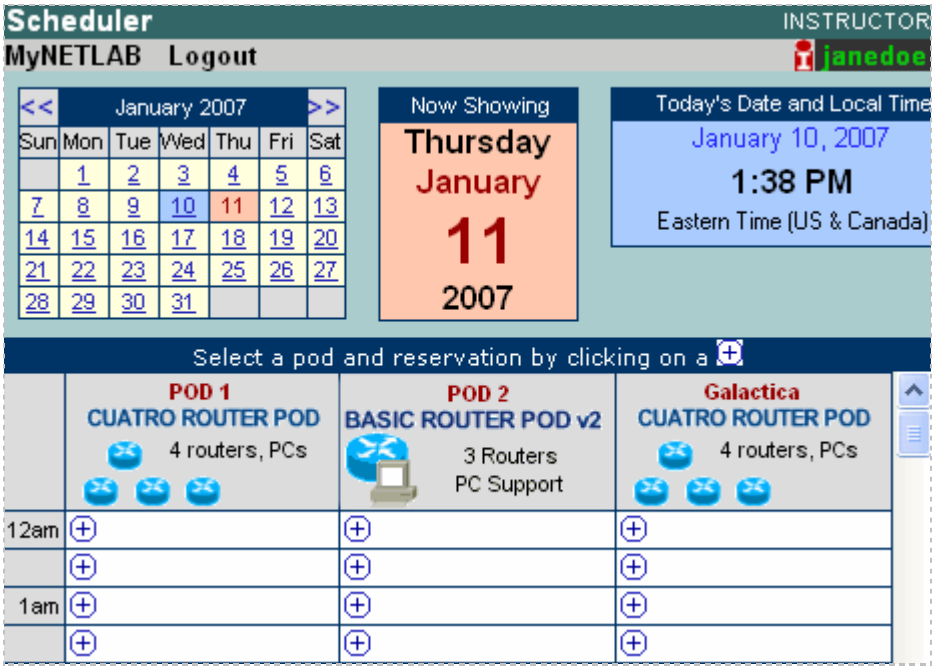
To schedule a lab reservation, select **Scheduler** from the menu bar or the link on the body of the MyNETLAB page.

The Scheduler Options screen will be displayed. Detailed descriptions of the scheduler options are available by selecting **Help** on the menu bar. In this example, we will reserve an equipment pod for your own use.

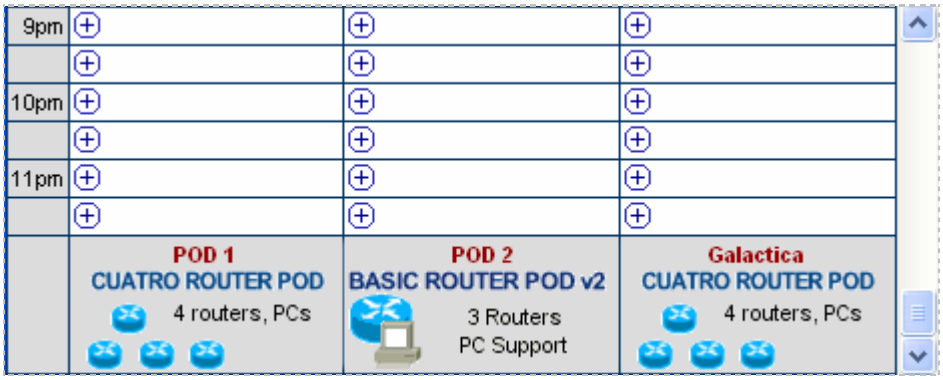


Select **OK** to proceed to the reservation calendar.

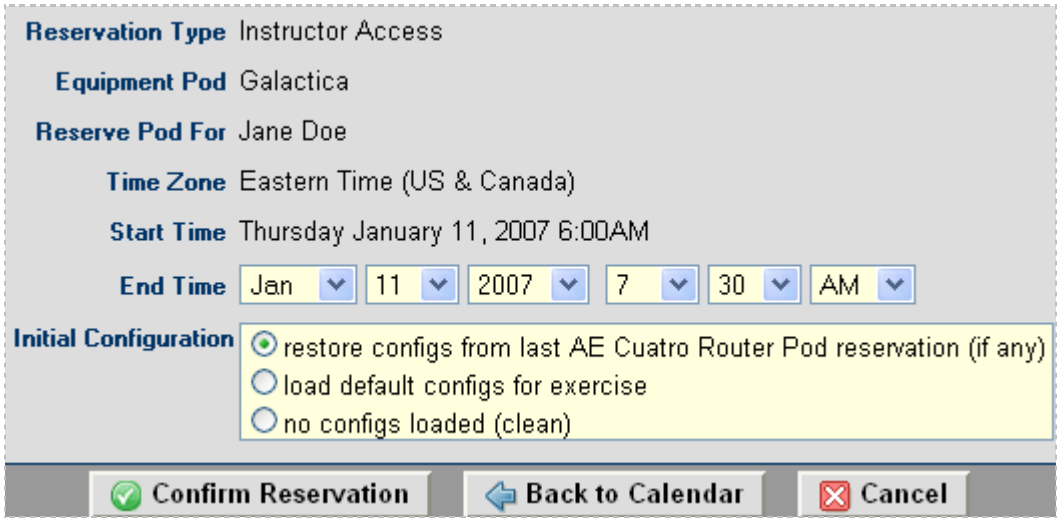
The selection of pods depicted may be different from the pods available at your site.



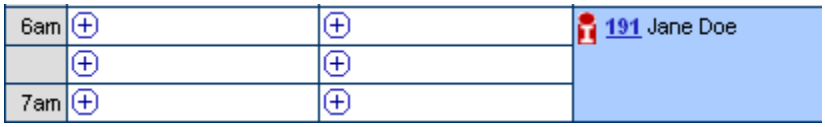
The reservation time area may be scrolled up and down.



⊕ Select an available time, and the confirmation page will be displayed.



Review the details of the reservation and select **Confirm Reservation**. You can return to the reservation calendar to see your lab reservation on the time reservation portion. Remember, you may need to scroll the page to see your information.



For more information on scheduling reservations, see the Scheduler section of the *NETLAB+ Instructor Guide*.