



# Administrator Guide

Document Version: **2018-05-24**



This guide documents features available in **NETLAB+ version 2018.R1.Final** and later.

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## 1 Introduction

NETLAB+ is an Internet based network lab for instructor led training developed by Network Development Group, Inc. NETLAB+ allows organizations to use the power of the Internet to teach students by facilitating direct interaction with real network equipment. Students throughout the world have real-time access to the equipment in a training environment that is easy to manage and allows students and instructors to share connections simultaneously to the same equipment.

The NETLAB+ system is delivered as a network appliance and requires no customer knowledge of UNIX, web server software, or other system administration functions.

The administrative tasks detailed in this guide are performed through two types of interfaces:

**System Console:** Menu driven interface used to establish basic connectivity.

**Web Interface:** Almost all administrative tasks are performed through the web-based interface. Tasks performed using the web-based interface include viewing logs and alerts, performing system maintenance, management of administrator and instructor accounts and equipment configuration.

TCP/IP configuration must be performed from the system console to provide basic network connectivity in order to access the Web-based interface. Please refer to the Installation Guide or [Appendix A](#) of this document for information on console configuration.

## 2 Using the Web Interface

The web-based interface allows the administrator to monitor and maintain the NETLAB+ server and devices. This interface is accessible to the administrator. In order to use the Web-based Interface, several basic installation tasks must be performed (See the Installing the NETLAB+ Server section of the *NETLAB+ Installation Guide*). To access the login page, direct a browser to the IP address of the NETLAB+ server.

Enter **administrator** and the factory default password, **netlab**.

Username: **administrator**

Password: **netlab**

The password must be changed during the initial login by the administrator. Usernames and passwords are case-sensitive. Please record your new password in a safe place. Changing the password is strongly recommended.

**Username**

**Password**

**Login**

[Forgot Password?](#)

**POWERED BY**

NETLAB+® provides remote access to lab equipment and curriculum. To access, you need a user ID and password, assigned by your instructor or local system administrator.

**Personal firewall software** can interfere with this application. If you experience login or port test failures, please disable your firewall software to determine if this is causing the problem.

**Browser security settings** can interfere with required features. It is recommended that you add the IP address (or host name) of this site to your browser's trusted site list. This application uses **Java™**, JavaScript, Cookies, Popup Windows, and IFRAMES. Please adjust your browser settings accordingly.

System	Web Browser	Version	Status
Windows	Mozilla Firefox	3.6.15	Supported
	Internet Explorer	8.0.6	Supported
	Apple Safari	5.0.2	Beta
	Google Chrome	7.0.517	Beta
Mac	Mozilla Firefox	3.6.15	Supported
	Apple Safari	5.0.2	Beta
Linux	Mozilla Firefox	3.6.15	Supported

After successful login, the Administration page will be displayed. The administrative functions include displaying various logs and alerts, performing system and configuration tasks and diagnostic tests. Select any task by clicking on the icon or the function name. The administrative functions are shown on the next page.



[Administrator Alerts](#)



[NETLAB Event Log](#)



[Web Server Access Log](#)



[Web Server Error Log](#)



[Backup System](#)



[Shutdown NETLAB](#)



[Reboot NETLAB](#)



[Configure Services](#)



[Software Updates](#)



[Set Date / Time](#)



[Administrator Profile](#)



[Manage Communities](#)



[Manage Accounts](#)



[Manage Classes](#)



[System Banners](#)



[Enable / Disable User Logins](#)



[Equipment Pods](#)



[Control Devices](#)



[Virtual Machine Infrastructure](#)



[Lab Device Software \(IOS, SDM, etc.\)](#)



[Pod Assignment \(System Level\)](#)



[Pod Rules](#)



[Pod Designer](#)



[Lab Designer](#)



[Manage Installed Labs](#)



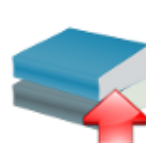
[Disk Status](#)



[Network Configuration](#)



[Usage Reporting](#)



[Add / Remove Curriculum](#)



[Academy Sharing Portal](#)



## 2.1 Remote Access Test

A Remote Access Test is performed during each user login. The purpose of the test is to attempt to establish an outbound TCP connection. This connection is necessary for remote device access, and remote PC access and access to chat functions. This test will fail if a connection using the TCP port(s) defined by the NETLAB+ administrator cannot be established.

**Remote Access Test**
INSTRUCTOR

**PORT TEST FAILED**

A TCP/IP connection for remote console and remote PC functions could not be established.

Please refer to the diagram above.

This system uses **TCP port 23** for remote access functions. It is possible that personal firewall software on your computer, or some other firewall in the path is blocking connections on this TCP port.

- Are you using Windows Firewall, McAfee®, Norton, Comodo, Zone Alarm®, AVG, or other security software?
- If your software is prompting you to validate the connection, please accept and try again.
- Manual configuration changes to your software may be required.
- For technical details about this port test, please click the Support button.

In this example, the Remote Access Test failed when instructor “janedoe” logged in.

NETLAB+ now allows the administrator to define the Remote Access Port (or list of ports) that may be used in place of the factory default.

The default port is TCP port 2201; this is a change from previous NETLAB+ software versions. *Existing systems with software prior to 2009.R1.beta.2 will continue to have the former default setting of 23.* The administrator may change this port and/or add additional ports for remote users/sites that block the default port outbound.

It is critical that the ports specified are opened in the site firewall, or the client may experience delays and/or port test failures during user login.

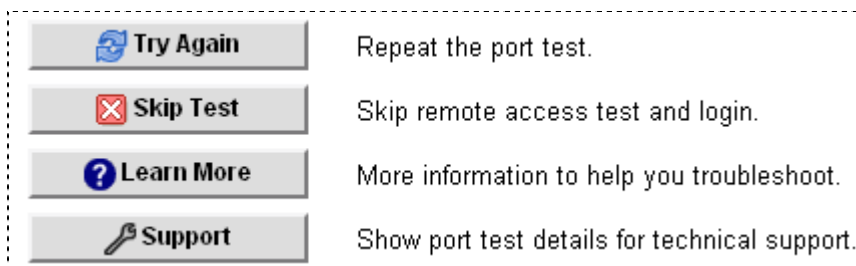
Please see the Remote Access Ports section of the *NETLAB+ Installation Guide*.

There are several reasons why the Remote Access Test may fail:

**1) Personal Firewall settings on your computer:** The personal firewall software on your computer may be set by default to prohibit the port connection. This issue is routinely resolved by selecting to allow the connection when prompted by a pop-up window from your personal firewall software.

**2) Security policy at your current location:** It is possible that local security policy does not allow outbound access using the port(s) chosen by the NETLAB+ administrator. This is the most likely diagnosis if you are able to successfully access the system from another location.

**3) Ports have not been opened in the site firewall:** As part of the installation process, you must be certain to open the ports in the site firewall that have been designated available for outbound client connections. This is only likely to be the problem if all users are unable to establish a connection.



Use the **“Try Again”** option if you wish to repeat the test after adjusting your personal firewall settings. You may select **“Skip Test”** if you prefer to proceed to your MyNETLAB page without resolving the issue at this time. You will not have remote device access, remote PC access or chat functions (chat functions will be available in a future software release).

## 2.2 Maintenance Reminder

For your convenience, your NETLAB+ system displays the status of your system maintenance agreement. The maintenance fee covers the cost of technical support and software updates.

The last day of your current maintenance agreement is displayed in the upper right-hand corner main page when logged in to the administrator account. This notice will be displayed in green until 60 days before the maintenance end date. The status message will then change from green to yellow. You can review your renewal options by selecting the **How to Renew** link.

The screenshot shows the NETLAB+ administrator interface. At the top right, it says 'NETLAB+ 2011.R4' and 'administrator'. Below the navigation bar, there is a text block: 'The NETLAB administrator account allows you to perform configuration tasks and manage your system. For security, some configuration tasks must be done from the system console.' To the right of this text is a yellow box with the following text: 'MAINTENANCE ENDS November 1, 2011 31 DAY(S) REMAINING HOW TO RENEW'.

If your maintenance agreement is not renewed by the maintenance end date, the notification message color will change from yellow to red. You are strongly encouraged to make immediate arrangements to continue maintenance to avoid any disruption of services.

Software updates are made available only to systems that are current on their maintenance.

You may find it helpful to enable the display of the maintenance reminder to instructors who use the system on a regular basis. This is recommended particularly if you do not log into the administrator account frequently. As the Administrator, you may enable the display of the maintenance notification for an instructor by editing the instructor account information as shown in section [2.15.3](#).

### 2.3 Administrative Alerts



The status of system events, such as software upgrades are detailed in the Alert log. The alerts that are tracked by NETLAB+ can be used by the administrator or central support team as needed, to track user access and server processes to aid in troubleshooting or device configuration.

The log is generated by NETLAB+ automatically. Events and errors are dated and time-stamped. The interface includes an option to delete some or all of the alert entries.

### 2.4 NETLAB+ Event Log



The NETLAB+ Event Log contains entries for each event occurring in the NETLAB+ system, including changes to system configuration, user logins, user authentication issues, automated processes, creation and deletion of accounts and classes. The events that are tracked by NETLAB+ can be used by the administrator or central support team as needed.

The log is generated by NETLAB+ automatically. Events and errors are dated and time-stamped. You may select the time-period of events to view.

**OK** | Select to display the log.

**Cancel** | Select to return to previous screen.

**NETLAB Event Log**

This utility is used to view the NETLAB Event Log.

- View this week only
- View last 1+ weeks
- View last 2+ weeks
- View last 3+ weeks
- View last 4+ weeks

**OK**     **Cancel**

All events are dated and time-stamped.

```
[2005-02-06 06:00:20 UTC] nss-status: OK
[2005-02-06 08:00:01 UTC] integrity: check started
[2005-02-06 09:15:06 UTC] nss-backup: database backed up, ID=37016
[2005-02-06 09:45:01 UTC] archive maintenance daily job
[2005-02-06 12:00:12 UTC] nss-status: OK
[2005-02-06 15:37:02 UTC] login by administrator from 24.211.158.20
[2005-02-06 15:38:34 UTC] logout by administrator
[2005-02-06 16:00:01 UTC] integrity: check started
[2005-02-06 16:20:42 UTC] login by administrator from 24.211.158.20
[2005-02-06 18:00:18 UTC] nss-status: OK
[2005-02-06 22:53:11 UTC] logout by administrator
[2005-02-07 00:00:12 UTC] nss-status: OK
[2005-02-07 00:08:11 UTC] login by administrator from 24.211.158.20
[2005-02-07 01:20:24 UTC] login by administrator from 24.211.158.20
[2005-02-07 01:57:17 UTC] authentication failure [BADSID]: Your Net
[2005-02-07 01:57:43 UTC] login by administrator from 24.211.158.20
```

## 2.5 Web Server Access Log



The NETLAB+ Web Server Access Log lists a dated and time-stamped entry for each web server action. When troubleshooting, the log entries may be helpful to determine if a user is making contact with the web server. The file can also be used by the Technical Support Team to diagnose any web server problems. Similar to the NETLAB+ Event Log, you may select the time-period of entries to view.

**Web Server Access Log**

This utility is used to view the Web Server Access Log.

- View this week only
- View last 1+ weeks
- View last 2+ weeks
- View last 3+ weeks
- View last 4+ weeks

All entries are dated and time-stamped.

```
[06/Feb/2005:15:36:42 +0000] 24.211.158.20 200 3598 "GET /? HTTP/1.1"
[06/Feb/2005:15:36:42 +0000] 24.211.158.20 304 - "GET /customer/cna
[06/Feb/2005:15:36:42 +0000] 24.211.158.20 304 - "GET /netlab.css H
[06/Feb/2005:15:36:42 +0000] 24.211.158.20 304 - "GET /img/on.gif H
[06/Feb/2005:15:36:42 +0000] 24.211.158.20 304 - "GET /img/offx.gif
[06/Feb/2005:15:37:01 +0000] 24.211.158.20 200 670 "POST /login.cgi
[06/Feb/2005:15:37:02 +0000] 24.211.158.20 302 293 "GET /login.cgi?
[06/Feb/2005:15:37:05 +0000] 24.211.158.20 200 5719 "GET /my-netlab
[06/Feb/2005:15:37:05 +0000] 24.211.158.20 304 - "GET /customer/def
[06/Feb/2005:15:37:05 +0000] 24.211.158.20 304 - "GET /netlab.css H
[06/Feb/2005:15:37:05 +0000] 24.211.158.20 304 - "GET /img/alert_75
[06/Feb/2005:15:37:05 +0000] 24.211.158.20 304 - "GET /img/netlab_l
```

## 2.6 Web Server Error Log



The NETLAB+ Web Server Error Log lists a date and time-stamped entry for each web server error. While the Web Server Access logs contain entries for all events, the Error Log contains entries for errors only. When troubleshooting, the file can be used to diagnose any web server problems. Similar to the NETLAB+ Access Log, you may select the time-

period of entries to view.

**Web Server Error Log**

This utility is used to view the Web Server Error Log.

- View this week only
- View last 1+ weeks
- View last 2+ weeks
- View last 3+ weeks
- View last 4+ weeks

All entries are dated and time-stamped.

```
[Sun Feb 6 04:02:01 2005] [notice] Apache/1.3.22 (Unix) A
[Sun Feb 6 04:02:01 2005] [notice] Accept mutex: sysvsem
[Sun Feb 6 22:49:30 2005] [error] [client 208.243.98.8] Ir
[Mon Feb 7 16:07:05 2005] [error] [client 24.211.158.20] E
[Mon Feb 7 16:09:04 2005] [error] [client 24.211.158.20] E
```

## 2.7 Backup System



As of version 2018.R1.final, your NETLAB+ system includes a utility to allow you to make local backups of your NETLAB+ system. We strongly encourage you to establish a plan for making backups of your NETLAB+ system on a regular basis to protect against data loss and for disaster recovery preparedness. In the event the server needs to be replaced, you will need to provide NDG with the latest backup file.



In order to comply with General Data Protection Requirements (GDPR), NDG is discontinuing remote backup service for NETLAB+ AE/PE so that NDG will no longer transfer or store "Personal Data" entered in a NETLAB+ system outside of the hosting organization.


End-of-service for remote backups will take place as per the following schedule:

- Remote backup service will end as of May 25th, 2018 for all systems located in the European Union (EU).
- Remote backup service will end immediately for any system for which the [NETLAB+ Data Processing Addendum](#) has been accepted.
- Remote backup service will end for all systems as of August 31st, 2018.

Perform the following steps to create a local backup of your NETLAB+ system:

1. Select the option for **Backup System** on the Administrator home page.
2. The **Local Backup** page will be displayed. This page contains information on the status of remote backups, which will vary depending on when you access this page, the location of your system and whether you have accepted the [NETLAB+ Data Processing Addendum](#). It will also indicate the time that the last local backup was performed. Select the option to **Create New Backup**.


**Local Backup**  
Admin



The local backup utility makes an encrypted backup file of the NETLAB+ database. In the event the server needs to be replaced, you will need to provide the provide NDG with the latest backup file.


**IMPORTANT NOTICE:** The automatic remote backup service is no longer available due to GDPR NDG no longer maintains backups of this system on its central servers

The last local backup was performed 0.1 hours ago at 2018-05-23 13:53:08 UTC and was 1110128 bytes.

 **Create New Backup**

- Depending on your browser settings, a file save dialog may appear, directing you to save the backup file. If your browser settings are configured to save files to a set location, you may go to that location to confirm you have downloaded the file. After you have confirmed receipt of the backup file, click the **I Have Downloaded the Backup File** button to confirm the backup was made. This will update the last backup time recorded in NETLAB+.

**Local Backup**  
 Admin




The local backup utility makes an encrypted backup file of the NETLAB+ database. In the event the server needs to be replaced, you will need to provide the provide NDG with the latest backup file.

Depending on your browser settings, a file save dialog may appear, directing you to save the backup file. If your browser settings are configured to save files to a set location, you may go to that location to obtain the backup file.


After you have confirmed receipt of the backup file, click the "I Have Downloaded the Backup File" button to confirm the backup was made. This will update the last backup time recorded in NETLAB+.

I Have Downloaded The Backup File

- A message will display, indicating the size of the backup file. Confirm that the size displayed is the same as the file you have downloaded and click **Understood**.




Backups should be performed on a regular basis. Keep your backup file in a safe place. In the event the server needs to be replaced, you will need to provide NDG with the latest backup file.



The downloaded file should be **1110128** bytes.

- Check the file properties to confirm the size is correct.
- Keep the backup in a safe place; NDG will need this file if a restore is needed.

 Understood



## 2.8 Shutdown NETLAB+



Using the Shutdown NETLAB+ function, the administrator can perform a graceful shutdown of the NETLAB+ server. Do not shutdown the NETLAB+ server using the power switch, since this may cause data integrity problems by forcing processes to suspend abruptly.

Once the system is shut down, it cannot be brought back up through the administrator's interface, since the server will not be operating and the interface will not be available through a browser. To restore operation, it will be necessary to press the reset button or cycle the power switch on the NETLAB+ server.

Click the shutdown button to perform a graceful shutdown of the NETLAB server.

**CAUTION:** To bring the system back up, you will need to press the reset button or cycle the power switch on the NETLAB server!



## 2.9 Reboot NETLAB+



Use this task to reboot the NETLAB+ server. Performing the reboot procedure does not require a physical power up to restore the system, but bear in mind that the administrator will be disconnected from the server during the reboot and will need to login again when the reboot has completed. The reboot process will cause any users connected to the NETLAB+ server to be disconnected.

Click the reboot button to perform a graceful reboot of the NETLAB server.

REBOOT

Cancel

## 2.10 Configure Services



The Configure Services page allows the administrator to configure several services to run automatically. These services are available to all NETLAB+ systems with a current support agreement with the NETWORK DEVELOPMENT GROUP, Incorporated. If Software Update Service and Time Service are enabled, software upgrades will be installed, and the system clock will be updated daily. These services are enabled by default. You must select **Update Settings** at the bottom of the page to save any changes made to these settings.

It is strongly recommended that these services remain enabled. These services can be configured to run automatically provided you have a current support agreement with NDG.



You may notice that the option to configure remote backups is no longer available on your system. In order to comply with General Data Protection Requirements (GDPR), NDG is discontinuing remote backup service for NETLAB+ AE/PE so that NDG will no longer transfer or store "Personal Data" entered in a NETLAB+ system outside of the hosting organization. See [2.7](#) for details.

**Software Update Service**

Check this box to have NETLAB+ perform software upgrades automatically. NETLAB+ will contact the central support site every six hours. If a software upgrade is available, it will be downloaded and installed when the lab is not in use.

**Time Service**

Check this box to have NETLAB+ update its system clock on a daily basis. The clock is synchronized with the NETLAB+ central support server.

The Technical Support Over Remote Access Ports Service is used for troubleshooting only, and should only be enabled at the suggestion of the product vendor.

**Technical Support over Remote Access Port(s)**

Enable this option to allow NDG to access and troubleshoot your system using the TCP port(s) you have defined for remote access. Normally this would be done using SSH which provides additional capabilities. However, if firewalls and/or local policy prohibit NDG access using SSH (TCP port 22), you may enable this option. You should only enable this option at NDG's request in conjunction with problem resolution.

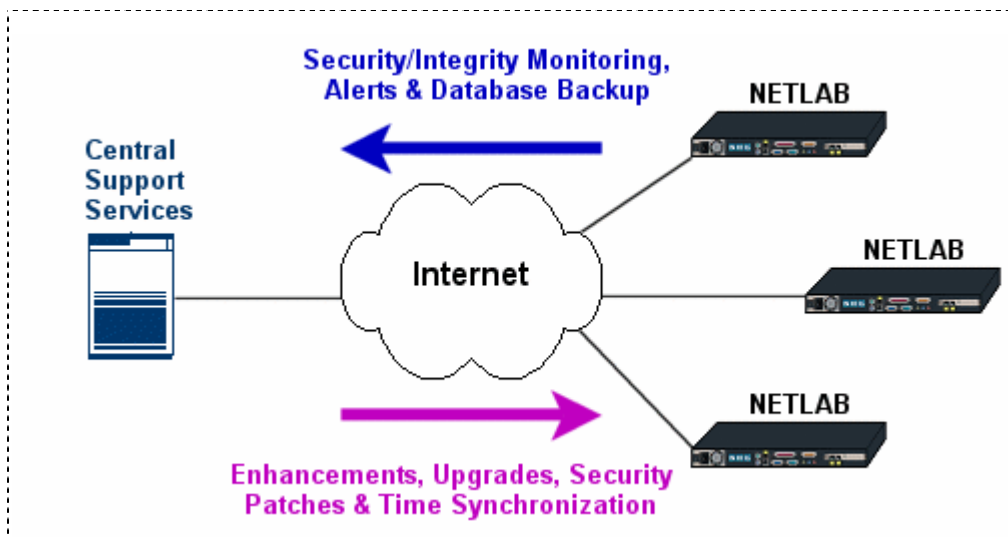
**Permit Third Party Telnet Applications / Clear Text Passwords**

Enable this feature to permit terminal access to lab device using third party Telnet application software. The Telnet protocol will transmit clear text passwords. Disable this feature to prevent clear text passwords from crossing the network -- users will be required to use the built-in NETLAB+ terminal applications and the secure automatic login feature.

**Obscure Login for Third Party Telnet Application Users**

This security option determines the type of login prompts and error messages displayed to third party Telnet applications. If enabled (obscured), NETLAB+ will emulate UNIX-style login prompts and error messages, making NETLAB+ look like a generic Unix system to both users and port scanners. The disabled (unobscured) setting provides NETLAB+ specific login prompts and informative error messages to users, but also provides information to port scanners that could be used to identify the system.

The NETLAB+ license agreement requires the system to have Internet connectivity and access to the NETLAB+ Central Server Center. In order to meet this license requirement, NETLAB+ must be able to send outbound HTTP requests through the Internet to a central server using the HTTP protocol.



More information on NETLAB+ Central Support Services is available at this address:  
[http://www.netdevgroup.com/support/netlab\\_css\\_connect.html](http://www.netdevgroup.com/support/netlab_css_connect.html)

Also available on the Configure Services page, the HTTP Proxy section allows the administrator to enter an IP address and TCP port number of a non-transparent proxy server, if one is used on the network. These values are only required for proxy servers that are non-transparent. If the proxy server at your site does not require manual client configuration, the fields should be left blank. If changes are made to the proxy server settings, click the **Update Settings** button to apply the new values.

NETLAB+ may not function properly with every proxy server. It may be necessary to find an alternate location for the NETLAB+ server within your network

### HTTP Proxy

NETLAB uses outbound HTTP (web protocol) for all services. Some networks require that all HTTP traffic pass through a proxy server.

- Leave the IP address/port values blank if your network does not use a proxy server, or the proxy is transparent (i.e., no client configuration is required).
- If you have a non-transparent proxy server, please enter the IP address and TCP port number here.

Proxy IP address:

TCP port:

NETLAB+ performs SMTP services to deliver email as part of the configurable services offered to administrators and instructors. The administrator may also enter the IP address for an alternate SMTP mail server, if needed. Some mail servers only allow mail from designated servers. Using an alternate SMTP mail server has not been tested for all configurations or servers.

### Alternate SMTP Mail Server

To send e-mail, NETLAB normally performs the function of a SMTP mail server. If outbound SMTP mail is restricted within your network, please specify the IP address of a SMTP server that can be used to deliver mail.

Alternate SMTP server IP address:



**Update Settings**

Select to save any changes made on this page.

## 2.11 Software Updates



The administrator may use this function to manually check for an updated software version and perform an upgrade. This is accomplished by first selecting the Check Availability option. The NETLAB+ system will query the Central Support System to see if an update is available and display an informational message indicating whether an update is available. If an updated version is available, you may select **Perform Upgrade Now** to perform the update.

NOTE: Your system is currently configured to upgrade software automatically. If you wish to perform all upgrades manually from this page, you can disable the automatic upgrade feature from the [services page](#).

Your system is currently running software version **2011.R5**.

Please see the [release notes](#) for upgrade details.

**Check Availability**

**Perform Upgrade Now**

If the administrator wishes to perform all software updates manually, the Software Upgrade Service (see [2.10](#)) can be disabled. A link to these services is provided on the page.

It is recommended that the Software Update Service be enabled rather than performing manual updates. (See [2.10](#)).

## 2.12 Set Date/Time



The administrator may use this function to display the currently configured date and time. This information is displayed in UTC format. Allowing the NETLAB+ server to configure the date and time through Central Services makes certain that the NETLAB+ server maintains accurate time settings.

To perform manual date adjustment the administrator must first disable the Time Service (see 2.10). A link to these services is provided on the page.

NETLAB is currently configured to synchronize the date and time automatically. If you would like to set date and time manually, please [disable the time service](#).

If the Time Service has been disabled, the Set Date/Time page will display a form allowing you change the system date and time manually.

It is recommended that the Time Service be enabled rather than setting the clock manually (see 2.10).

This page was generated **Wednesday October 12 2011 12:28:30 PM UTC**

NETLAB normally updates the system clock using the time service, which is currently disabled. We recommend that you [enable time service](#) instead of setting the clock manually.

This form allows you to change the system date and time manually. Enter the local date, time and time zone. NETLAB converts all times to Universal Coordinated Time (UTC) so it does not matter what time zone the NETLAB system is actually located in.

**Date** Oct ▼ 12 ▼ 2011 ▼

**Local Time** 12 ▼ 28 ▼ PM ▼

**Time Zone** (GMT+00:00) Coordinated Universal Time (UTC) ▼

### 2.13 Administrator Profile

Selecting this function will display a form allowing the administrator to change the contact information for both the business and technical contacts for the NETLAB+ system. The Administrator will be prompted to update this information during the initial login to the system, and subsequent 90-day intervals. Keeping this information updated will enable NDG to contact the appropriate parties quickly should any issues arise.



The information includes Contact Name, E-mail Address, Phone Number and AOL Instant Messenger ID for both business and technical contacts. There is an option to receive NETLAB+ system alerts by E-mail. Selecting to receive NETLAB+ News allows NDG to send general announcements (such as version upgrade notifications) to the specified E-mail address. We recommend that you enable this option so we can keep you informed of new features.

CONTACT INFORMATION		
	Technical Contact	Business Contact
Contact Name	Jane Doe	Mary Jones
E-mail Address	janedoe@fictionalname.org	mjones@fictionalname.org
Phone Number	(919)555-5555	(919)555-5555
AOL Instant Messenger ID	janedofictional	mjonesfictional
Receive Alerts by E-mail	Yes	No
Receive NETLAB+ News	Yes	Yes

[← Back to Admin](#)
[🔧 Update Contact Info](#)
[# Change Admin Password](#)

Select **Update Contact Info** to open the update screen to make any changes to the profile information.

CONTACT INFORMATION		
	Technical Contact	Business Contact
Contact Name	Jane Doe	Mary Jones
E-mail Address	janedoe@fictionalname.org	mjones@fictionalname.org
Phone Number	(919)555-5555	(919)555-5555
AOL Instant Messenger ID	janedofictional	mjonesfictional
Receive Alerts by E-mail	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input checked="" type="radio"/> No
Receive NETLAB+ News	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Yes <input type="radio"/> No

**Update Contact Info**
 **No Change**



### 2.13.1 Change Administrator Password

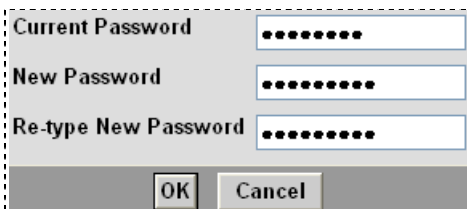
The administrator may elect to change his password by selecting **Change Admin Password** on the administrator profile page. See section 2.13. The Change Password screen will also be displayed during the initial login into the administrator account, changing the password during the initial login is mandatory.

To change the administrator password, enter the current password, and the new password. The new password must then be retyped. Select **OK** to change the password.

Username and Passwords are case-sensitive.

- Passwords must meet the following requirements:
- Not found in the English dictionary and not too simple
- Between 7 and 16 ASCII characters
- Contain both numbers and letters

An error message will be displayed if the new password does not meet these requirements.



The screenshot shows a dialog box with a dashed border. It contains three text input fields, each with a masked password (seven asterisks). The labels for the fields are 'Current Password', 'New Password', and 'Re-type New Password'. Below the fields are two buttons: 'OK' and 'Cancel'.

## 2.14 Manage Communities

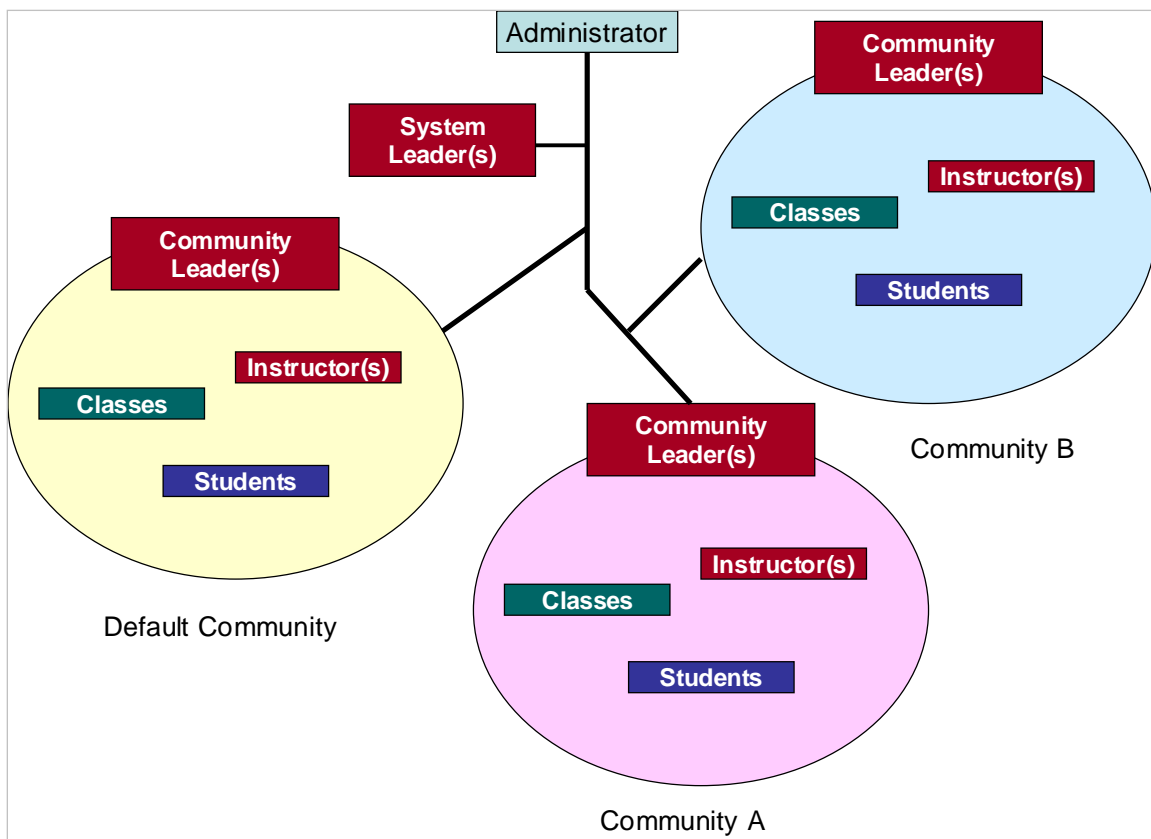


A *community* is a distinct group of instructors, students, and classes. Instructors may only manage students and classes within their own community (unless they are granted system-wide privileges by the administrator). See section [2.15.3.1](#) for information on instructor privileges. Each community reflects a separate autonomous group using the NETLAB+ system. There is no sharing of accounts or class records between communities.

The ability to support multiple communities on NETLAB+ is designed to facilitate the sharing of a NETLAB+ system among several different groups (schools, institutions academies, etc.). Blocks of time on equipment pods may be allocated by community to ensure that each community receives a predetermined share of lab resources.

Each school using your system should be defined as a community. If the system is being used by a single school, the default community assignment should be used.

Multiple communities are optional. Keep in mind that each instructor, student and class can belong to only one community. If you do not wish to use communities, all of your accounts and classes must reside in the default community.



### 2.14.1 Add New Communities

Only the NETLAB+ system administrator may add new communities to the system.

GO	ID	NAME
	1	default
	2	XYZ Technical College
	3	Fictional Name University
	4	University of Rostock

Select **Add Community** to display the Add Community page.

**New Community**

**Community ID**

**Name**

**Account Logins**  Enabled  Disabled

**Maximum Length of Reservation**  (scheduling by student accounts or teams)

**Minimum Time Between Reservations**  (scheduling by student accounts or teams)

**Welcome Message**

**News and Announcements**

show help tips

Enter information and change default settings as needed for the fields on the page. Descriptions of each field may be displayed by selecting **show help tips**.


- **Community ID:** A numeric identifier for this community. This value determines the order in which this community is displayed in the community list. You may accept the default, or select a different number. Other communities will be renumbered relative to your selection.
- **Name:** A name for this community.

- **Account Logins:** Enable or disable logins by users in this community.
- **Maximum Length of Reservations:** The maximum length of time a reservation can be scheduled by an individual student or team. This setting does not restrict reservations made by instructors. Instructors can establish lower (more restrictive) maximums for a class by setting a lower number for Preferred Maximum Length of Reservation in the class settings (see section [2.16.1](#)). Instructors cannot establish higher (less restrictive) maximums for a class than this community maximum, which is enforced for all classes within the community.
- **Minimum Time Between Reservations:** The minimum time that must elapse before an individual student or team in a class can make successive reservations. This setting does not restrict reservations made by instructors. Instructors can define higher (more restrictive) minimums for a class by setting a higher number for Preferred Minimum Time Between Reservations in the class settings (see section [2.16.1](#)). Instructors cannot establish lower (less restrictive) minimums than this community minimum, which is enforced for all classes within the community.
- **Welcome Message:** You may set a welcome message that appears on top of the MyNETLAB page for all users in the community. You may apply NETLAB+ embedded markup (see section [2.17](#)) to the text.
- **News and Announcements:** This information will appear on top of the MyNETLAB page, below the welcome message for all users of the community. You may apply NETLAB+ embedded markup (see section [2.17](#)) to the text.

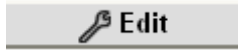
If you set Welcome and/or News and Announcement banners for a community, users in the community will see these banners instead of the ones set for the entire system (see sections [2.17.6](#) and [2.17.7](#)).

After entering information into the fields on the page, select **OK** to add the community to the system.

### 2.14.2 Edit Community Records

To edit a community record, select the  button to the left of the community ID and name. The community record will be displayed.

Quick Tech	
ID	4
Name	Quick Tech
Account Logins	Enabled
Class Maximum Length of Reservation	2.0 hours
Class Minimum Time Between Reservations	4 hours
Welcome Message	Welcome to Quick Tech!
News and Announcements	Our New <b>NETLAB</b> system is awesome!!!!

Select the  button to edit any of the fields in the community record. The edit screen will be displayed.

Quick Tech

**Community ID** 4

**Name**

**Account Logins**  Enabled  Disabled

**Maximum Length of Reservation**  (scheduling by student accounts or teams)

**Minimum Time Between Reservations**  (scheduling by student accounts or teams)

**Welcome Message**

**News and Announcements**

[show help tips](#)


Descriptions of each field (see section 2.14.2) may be displayed by selecting **show help tips**, in the lower right-hand corner of the page.

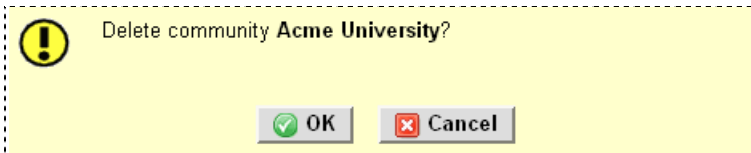
Select  to save changes to the record.


### 2.14.3 Delete Community Records

To delete a community record, select the  button to the left of the community ID and name. The community record will be displayed.

Acme University	
ID	5
Name	Acme University
Account Logins	Enabled
Class Maximum Length of Reservation	4.0 hours
Class Minimum Time Between Reservations	unlimited
Welcome Message	Welcome to Acme University!
News and Announcements	Complete your assignments from home, using NETLAB!

Select the  button to delete the community record. A confirmation screen will be displayed.

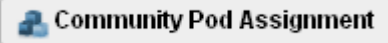


You must select  to confirm that you wish to delete the record.

All classes and accounts for the community must be deleted prior to deleting a community record. See sections [2.15.4](#) and [2.16.7](#) for details on deleting classes and accounts.

### 2.14.4 Community Pod Assignment

Community Pod Assignment is a resource management feature that grants exclusive access to a pod. At the community level, you can assign pods to a class, user or team. Pods may also be assigned at the system level, as discussed in section 2.19 and class level.


Select the  button to display the community pod assignment page, which will include a list of the pods on the system with their assignment status.

Now Showing			
Community ID	2		
Community Name	XYZ Technical College		

#### Select Pod

Pod ID	Type	Name	Community/Class Pod Assignments
1	AE Basic Router Pod V1	POD 1	0
2	AE Multi-purpose Academy Pod	MAP-VoIP	0
5	AE Basic Router Pod V2	POD 2	0



Please refer to the [Pod Assignment Guide](#) for details on community based pod assignment and other pod resource management features.

## 2.15 Manage Accounts



This function is used to add, delete, and modify account information for both student and instructor accounts. At least one instructor account must be setup by the NETLAB+ Administrator in order to access the scheduler for lab reservations. A student account should be created for each student to allow them to participate in labs as part of an instructor-led session, a team session, or an individual reservation.

You can now import account information from a file into NETLAB+. Details are provided in section [2.15.1](#).

As the NETLAB+ Administrator, you may manage accounts for any community. You may also allow instructors to manage accounts for all communities by granting them system-wide privileges (see section [2.15.3.1](#) ).

**Manage Accounts** functions include adding new accounts to the system and making modifications to existing accounts after selecting them via the account search function. These functions are described in the subsections below.

### Account Search

**Community** default ▼

**Show**

- all account types
- instructors only
- students only
- users that have never logged in
- users that have been inactive for 1 year or more

**Match User ID or Name**

🔍 Search

(partial name OK, leave blank to match all)

+ Import Accounts

+ Add Accounts

✖ Exit



### 2.15.1 Add Accounts by Importing Data From a File

Beginning with NETLAB+ version 2012.R1, user account information can now be imported into NETLAB+ from a comma or tab delimited file (\*.csv or \*.txt). An account should be created for each user to allow them to participate in labs as part of an instructor-led session, a team session, or an individual reservation.

Account information may be imported into NETLAB+ from a file with these characteristics:

1. The file must be in a comma or tab delimited file format (\*.csv or \*.txt).
2. The first row of the file may contain column headers that identify each field to import.
3. The file may contain additional, extraneous columns of data. You will select which columns are used by NETLAB+.
4. The file must include the data fields as described below.

You will achieve the best possible results with NETLAB+ recognizing your input data by using the specified field names (bolded below) as column headers, although some variation is acceptable.

Fields:

- **User ID:** A user identifier that is unique to each user. **REQUIRED**  
The User ID may contain up to 16 ASCII alphanumeric characters, and the underscore "\_" character. Alphanumeric characters include A-Z, a-z, 0-9. The specified ID must be unique to the NETLAB+ system. You may wish to establish standards for account creation. The User ID is case sensitive. No duplicate User IDs are permitted.
- Name Information for each user. You have several options as to how this information may be imported, depending on the data available in your input file. **REQUIRED (choose Option 1, 2 or 3).**

Option 1: Your file includes the following fields:

- **Given/First Name:** The name given to a user at birth.
- **Family/Last Name:** The name shared by the user's family.
- **Display Name:** Typically some combination of the user's given and family names.

Option 2: Your file includes the following fields:

- **Given/First Name:** The name given to a user at birth.
- **Family/Last Name:** The name shared by the user's family.

NETLAB+ can automatically generate the Display Name using the Given/First Name and/or Family/Last name fields.

Option 3: Your file includes the following field:

- **Display Name:** Typically, some combination of the user's given and family names contained in a single field.

NETLAB+ can automatically generate the Given/First Name and Family/Last Name based on the Display Name.

- **Email:** An email address for the user. **OPTIONAL**

**To import a file:**

1. Select a comma or tab delimited file, from the local file system, that contains the account data to be imported. Files used for importing accounts must contain lines with an equal number of commas or tab separated values and carry a ".csv" or ".txt" file extension.
2. Select a Display Name Format (optional). This setting is used only if a Display Name is not included in the input data. Select an option to indicate your preference for the format of the display name to be generated for each user.
3. After the account information has been imported from the file, you will complete the process of adding accounts on the Enter New Account Information page (see section 2.15.2) where you will have the option to change the community setting and modify the account type (student vs. instructor) as needed, depending on your instructor privileges.

**2.15.1.1 Example 1 - Import Accounts**

In this example, we will import account data from a comma-delimited file. Let's take a look at the file using a spreadsheet program, so we can view the data and make the appropriate choices for importing account information.

	A	B	C	D
1	User ID	Given/First Name	Family/Last Name	Housing
2	croberts21	Carly	Roberts	dorm
3	tgarmin22	Todd	Garmin	dorm
4	jsmith23	John	Smith	off campus
5	tbarnes24	Ted	Barnes	dorm
6				
7				
8				

Notice a few important things about this file:

- The file name acct\_import\_test\_a.csv is a comma delimited file, which is an acceptable format for importing.
- The file includes the required **User ID** field.
- The file includes name information, in a format meeting one of the three acceptable options (see above). In this case, the fields, **Given/First Name** and **Family/Last Name** are present, which meets the requirements for Name Information Option 2.
- An additional field, Housing, is present in the file. This data has no relevance to this process, however, it is not necessary to remove this data from the file, it will simply be ignored.

To Import the data:

1. On the accounts page, select the option to **Import Accounts**.

The screenshot shows the 'Account Search' interface. At the top, there is a 'Community' dropdown menu set to 'default'. Below it, a 'Show' section contains five radio button options: 'all account types' (selected), 'instructors only', 'students only', 'users that have never logged in', and 'users that have been inactive for 1 year or more'. A search bar labeled 'Match User ID or Name' is present, with a 'Search' button to its right. Below the search bar, a note reads '(partial name OK, leave blank to match all)'. At the bottom of the interface, three buttons are visible: '+ Import Accounts' (highlighted with a red box), '+ Add Accounts', and 'Exit'.

2. Select the **Choose File** button.

The screenshot shows the 'Import File' dialog box. It features an 'Import File' label, a 'Choose File' button (highlighted with a red box), and a text field displaying 'No file chosen'. Below this, there is a 'Display Name Format' dropdown menu set to 'Given/First Family/Last'. A 'show help tips' checkbox is located at the bottom right. At the bottom of the dialog, there are two buttons: 'Submit' and 'Cancel'.

3. Navigate your file system and select the file that includes the data that you want to import. Here, we will import **acct\_import\_test\_a.csv**. We will leave the setting for display name format to Given/First Family Last. Since our file does not include the display name field, the program will build the display name based on this setting.

Import File: Choose File **acct\_import\_test\_a.csv**

Display Name Format: **Given/First Family/Last**

show help tips

**Submit**  **Cancel**

4. Select the **Submit** button.
5. The data that NETLAB+ was able to extract from the file is shown in a table. Notice that the last column, which contains the unneeded housing data, is grayed out and the check box at the top is not selected. This is fine, since we do not want to import this data.

The import process is designed to behave in an intuitive manner. It will examine your file to draw logical conclusions regarding the data you will be importing. If necessary, you may make adjustments by selecting/deselecting the check boxes indicating each column of data to be imported and resetting the drop-downs indicating the field that the column contains.

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
User ID	Given/First Name	Family/Last Name	User ID
croberts21	Carly	Roberts	dorm
tgarmin22	Todd	Garmin	dorm
jsmith23	John	Smith	off campus
tbarnes24	Ted	Barnes	dorm

**Submit**  **Cancel**

6. Select the **Submit** button.

7. The imported information will be included on the **Enter New Account Information** page. The process of adding the new accounts will be completed here.
  - a. An initial password must be entered; it will be used for all new accounts being created on this page (see section 2.15.2 for password rules).
  - b. The import process has generated display names and populated the display name field for each record, so we will leave **Name Generation Type** set to **Generate None - Manual Entry**, since no further action is needed in order create display names.
  - c. Also, we modified the type of one of the accounts from student to instructor.
  - d. We did not import email addresses, nor have we entered them here. Assume for this example that students will enter their email addresses themselves when they initially access their accounts.

### Enter New Account Information

**Add to Community** XYZ Technical College ▼

**Initial Password** .....

**Retype Initial Password** .....

**Automatic Name Generation Options:**

**Enable Auto-Generation**  (auto-generate select name field(s) during data entry)

**Name Generation Type** Generate None - Manual Entry ▼

**Display Name Format** Given/First Family/Last ▼

	User ID	Given/First Name	Family/Last Name	Display Name	Type	E-mail Address
1	<span style="border: 1px solid gray; padding: 2px;">croberts21</span>	<span style="border: 1px solid gray; padding: 2px;">Carly</span>	<span style="border: 1px solid gray; padding: 2px;">Roberts</span>	<span style="border: 1px solid gray; padding: 2px;">Carly Roberts</span>	<span style="border: 1px solid gray; padding: 2px;">student</span> ▼	<span style="border: 1px solid gray; padding: 2px;"></span>
2	<span style="border: 1px solid gray; padding: 2px;">tgarmin22</span>	<span style="border: 1px solid gray; padding: 2px;">Todd</span>	<span style="border: 1px solid gray; padding: 2px;">Garmin</span>	<span style="border: 1px solid gray; padding: 2px;">Todd Garmin</span>	<span style="border: 1px solid gray; padding: 2px;">instructor</span> ▼	<span style="border: 1px solid gray; padding: 2px;"></span>
3	<span style="border: 1px solid gray; padding: 2px;">jsmith23</span>	<span style="border: 1px solid gray; padding: 2px;">John</span>	<span style="border: 1px solid gray; padding: 2px;">Smith</span>	<span style="border: 1px solid gray; padding: 2px;">John Smith</span>	<span style="border: 1px solid gray; padding: 2px;">student</span> ▼	<span style="border: 1px solid gray; padding: 2px;"></span>
4	<span style="border: 1px solid gray; padding: 2px;">tbarnes24</span>	<span style="border: 1px solid gray; padding: 2px;">Ted</span>	<span style="border: 1px solid gray; padding: 2px;">Barnes</span>	<span style="border: 1px solid gray; padding: 2px;">Ted Barnes</span>	<span style="border: 1px solid gray; padding: 2px;">student</span> ▼	<span style="border: 1px solid gray; padding: 2px;"></span>

8. Once again, select the **Submit** button. This will complete the process of adding accounts to your system.

**All Requested Accounts Were Added**

**Add to Community** XYZ Technical College

**Initial Password** *accepted, not shown*

**Automatic Name Generation Options:**

**Enable Auto-Generation**  (auto-generate select name field(s) during data entry)

**Name Generation Type** Generate None - Manual Entry

**Display Name Format** Given/First Family/Last

**Generate All Display Names Now**

	User ID	Given/First Name	Family/Last Name	Display Name	Type	E-mail Address (optional)	
1	croberts21	Carly	Roberts	Carly Roberts	student		
2	tgarmin22	Todd	Garmin	Todd Garmin	instructor		
3	jsmith23	John	Smith	John Smith	student		
4	tbarnes24	Ted	Barnes	Ted Barnes	student		

### 2.15.1.2 Example 2 - Import Accounts

In this example, we will again import account data from a comma-delimited file. Let's look at the file using a spreadsheet program, so we can view the data and make the appropriate choices for importing account information.

acct\_import\_test\_b.csv

	A	B	C	D	E
1	cfaison61	Cesar Xavier Faison	bus	History	
2	rscorpio62	Robert A. Scorpio	train	Technology	
3	adevane63	Anna Devane	onsite	Literature	
4	sunshine64	Sebastian Sunshine	bicycle	Technology	
5	sdrucker65	Sam Drucker	car	Accounting	
6	bbradley66	Betty Jo Bradley	train	Veterinary	
7					
8					

Notice a few important things about this file:

- The file name acct\_import\_test\_b.csv is a comma delimited file, which is an acceptable format for importing.

- The file does not include the recommended column headings. As you will see, we can still use the file "as is", however, the import process may require user intervention to determine the appropriate data to import.
  - The file includes a column with a unique identifier to be used as **User ID**.
  - The file includes name information, in a format meeting one of the three acceptable options (see above). In this case, a single name field containing both Given/First Name and Family/Last Name is present, which can be used as **Display Name**, Name Information Option 3.
  - Two additional columns are present in the file. This data has no relevance to this process, however, it is not necessary to remove this data from the file, it will simply be ignored.
1. As in Example 1, select **Import Accounts-> Choose File**. Navigate your file system and select the file that includes the data that you want to import. Here, we will import **acct\_import\_test\_b.csv**.

2. Select the **Submit** button.
3. The data that NETLAB+ was able to extract from the file is shown in a table. All of the table data is grayed out, since the import process did not have sufficient information to determine what fields contain input data.

**acct\_import\_test\_b.csv File Data**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
User ID	User ID	User ID	User ID
cfaison61	Cesar Xavier Faison	bus	History
rscorpio62	Robert A. Scorpio	train	Technology
adevane63	Anna Devane	onsite	Literature
sunshine64	Sebastian Sunshine	bicycle	Technology
sdrucker65	Sam Drucker	car	Accounting
bbradley66	Betty Jo Bradley	train	Veterinary

**Submit**  **Cancel**

- Select the checkbox at top of the first column. This column includes the data for User ID (as indicated in the dropdown).

acct_import_test_b.csv File Data			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
User ID	User ID	User ID	User ID
cfaison61	Cesar Xavier Faison	bus	History
rscorpio62	Robert A. Scorpio	train	Technology
adevane63	Anna Devane	onsite	Literature
sunshine64	Sebastian Sunshine	bicycle	Technology
sdrucker65	Sam Drucker	car	Accounting
bbradley66	Betty Jo Bradley	train	Veterinary

- Select the second column and set the dropdown to **Display Name**.

acct_import_test_b.csv File Data			
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
User ID	Display Name	User ID	User ID
cfaison61	Cesar Xavier Faison	bus	History
rscorpio62	Robert A. Scorpio	train	Technology
adevane63	Anna Devane	onsite	Literature
sunshine64	Sebastian Sunshine	bicycle	Technology
sdrucker65	Sam Drucker	car	Accounting
bbradley66	Betty Jo Bradley	train	Veterinary

- The other data columns that are still grayed out are not needed and will not be imported. Click the **Submit** button.
- The imported information will be included on the **Enter New Account Information** page. The process of adding the new accounts will be completed here.
  - An initial password must be entered; it will be used for all new accounts being created on this page (see section 2.15.2 for password rules).
  - The import process populated the Given/First Name and Family/Last Name fields using the data from the imported Display Name field.



- c. We did not import email addresses, nor have we entered them here. Assume for this example that students will enter their email addresses themselves when they initially access their accounts.

### Enter New Account Information

**Add to Community**

**Initial Password**

**Retype Initial Password**

**Automatic Name Generation Options:**

**Enable Auto-Generation**  (auto-generate select name field(s) during data entry)

**Name Generation Type**

**Display Name Format**

	User ID	Given/First Name	Family/Last Name	Display Name	Type	E-mail Address
1	<input type="text" value="cfaison61"/>	<input type="text" value="Cesar"/>	<input type="text" value="Faison"/>	<input type="text" value="Cesar Xavier Faison"/>	<input type="text" value="student"/>	<input type="text"/>
2	<input type="text" value="rscorpio62"/>	<input type="text" value="Robert"/>	<input type="text" value="Scorpio"/>	<input type="text" value="Robert A. Scorpio"/>	<input type="text" value="student"/>	<input type="text"/>
3	<input type="text" value="adevane63"/>	<input type="text" value="Anna"/>	<input type="text" value="Devane"/>	<input type="text" value="Anna Devane"/>	<input type="text" value="student"/>	<input type="text"/>
4	<input type="text" value="sunshine64"/>	<input type="text" value="Sebastian"/>	<input type="text" value="Sunshine"/>	<input type="text" value="Sebastian Sunshine"/>	<input type="text" value="student"/>	<input type="text"/>
5	<input type="text" value="sdrucker65"/>	<input type="text" value="Sam"/>	<input type="text" value="Drucker"/>	<input type="text" value="Sam Drucker"/>	<input type="text" value="student"/>	<input type="text"/>
6	<input type="text" value="bbradley66"/>	<input type="text" value="Betty"/>	<input type="text" value="Bradley"/>	<input type="text" value="Betty Jo Bradley"/>	<input type="text" value="student"/>	<input type="text"/>

- 8. Select the **Submit** button. This will complete the process of adding accounts to your system.

### All Requested Accounts Were Added

**Add to Community** XYZ Technical College

**Initial Password** *accepted, not shown*

**Automatic Name Generation Options:**

**Enable Auto-Generation**  (auto-generate select name field(s) during data entry)

**Name Generation Type** Generate None - Manual Entry ▼

**Display Name Format** Given/First Family/Last ▼

**Generate All Display Names Now**

	User ID	Given/First Name	Family/Last Name	Display Name	Type	E-mail Address (optional)	
1	cfaison61	Cesar	Faison	Cesar Xavier Faison	student		<input checked="" type="checkbox"/> added
2	rscorpio62	Robert	Scorpio	Robert A. Scorpio	student		<input checked="" type="checkbox"/> added
3	adevane63	Anna	Devane	Anna Devane	student		<input checked="" type="checkbox"/> added
4	sunshine64	Sebastian	Sunshine	Sebastian Sunshine	student		<input checked="" type="checkbox"/> added
5	sdrucker65	Sam	Drucker	Sam Drucker	student		<input checked="" type="checkbox"/> added
6	bbradley66	Betty	Bradley	Betty Jo Bradley	student		<input checked="" type="checkbox"/> added

**I'm Done**      **Add These Accounts to a Class**

## 2.15.2 Add Accounts by Entering Data

An account should be created for each user to allow them to participate in labs as part of an instructor-led session, a team session, or an individual reservation. NETLAB+ now supports importing accounts as described in the previous section, or accounts can be entered into the system as shown here.

To add instructor and/or student accounts to the system, select the community from the drop-down community box on the Account Search page. Simply accept the default selection for community if your system has only one community.

Select the button to display the add accounts screen.

As the NETLAB+ Administrator, you may add both instructor and student accounts. Instructors may also add new accounts; depending on the privilege setting of their account (see section [2.15.3.1](#))

Assign an **Initial Password** to the accounts by entering a value for initial password. The account users will be required to change this password during their initial login.

Passwords must meet the following requirements:

- Not found in the dictionary and not too simple
- Between 7 and 16 characters
- Contain both numbers and letters

**Retype Initial Password:** Enter the initial password again.

**Enable Auto-Generation:** Auto generation uses the name information that is available to populate the remaining name field(s). For example, if Given/First and Family/Last names are entered, the auto-generation process will concatenate these fields to create the Display Name in the format indicated by the settings below.

**Name Generation Type:** If Enable Auto-Generation is checked, this setting is used to indicate the source fields and the field(s) to be generated. Select an option:

- Generate Display Name from Given/First and Family/Last Names.
- Generate Given/First and Family/Last Names from Display Name.
- Generate None - Manual Entry - No auto generation, all name field are entered.

**Display Name Format:** Indicate the format of the Display Name. This field will be used to display the user's name in the roster, scheduler and other areas within NETLAB+.

There are several format options:

- Given/First Family/Last
- Family/Last, Given/First - Notice this option includes a comma separator.
- Family/Last Given/First

### Enter New Account Information

**Add to Community**

**Initial Password**

**Retype Initial Password**

**Automatic Name Generation Options:**

**Enable Auto-Generation**  (auto-generate select name field(s) during data entry)


**Name Generation Type**

**Display Name Format**

	User ID	Given/First Name	Family/Last Name	Display Name	Type	E-mail Address (optional)
1	<input type="text" value="adole41"/>	<input type="text" value="Ann"/>	<input type="text" value="Dole"/>	<input type="text" value="Ann Dole"/>	<input type="text" value="instructor"/>	<input type="text" value="adole@xyztech.edu"/>
2	<input type="text" value="msmith42"/>	<input type="text" value="Mary"/>	<input type="text" value="Smith"/>	<input type="text" value="Mary Smith"/>	<input type="text" value="student"/>	<input type="text" value="msmith@xyztech.edu"/>
3	<input type="text" value="bmiller"/>	<input type="text" value="Bob"/>	<input type="text" value="Miller"/>	<input type="text" value="Bob Miller"/>	<input type="text" value="student"/>	<input type="text" value="bmiller@xyztech.edu"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text" value="student"/>	<input type="text"/>

Specify information for each user account:

- **NETLAB+ User ID:** A user ID that will be used to log in to the NETLAB+ system. May contain up to 16 ASCII alphanumeric characters, and the underscore "\_" character. Alphanumeric characters include A-Z, a-z, 0-9. The specified ID must be unique to the NETLAB+ system. You may wish to establish standards for account creation. The User ID is case sensitive. No duplicate User IDs are permitted.
- **Given/First Name:** The name given to a user at birth.
- **Family/Last Name:** Typically, the name a user shares with their family.
- **Display Name:** Typically, some combination of the user's given and family names contained in a single field. This field will be used to display the user's name in the roster, scheduler and other areas within NETLAB+. This field may be entered or generated by the system, depending on the Name Generation Type that is selected.
- **Account Type:** The account type, **student or instructor** must be selected for each account. Once an instructor record is created, the instructor may be assigned as a lead instructor for a class or may join a class as a *learner*. A class may contain one or more *lead instructors* (trainers). All other users in the roster (who are not leads) are *learners* (see section [2.16.3](#)).
- **E-mail Address:** Any valid e-mail address associated with the account. Entering an email address is optional, account users will be prompted to add/update their email address and time zone information when they initially log in to their account.

Select  at the bottom of the page to add the new accounts to the system. A confirmation screen will indicate that the accounts have been successfully added.

### All Requested Accounts Were Added

**Add to Community** XYZ Technical College

**Initial Password** *accepted, not shown*

**Automatic Name Generation Options:**

**Enable Auto-Generation**  (auto-generate select name field(s) during data entry)

**Name Generation Type** Generate Display Name from Given/First and Family/Last Names ▾

**Display Name Format** Given/First Family/Last ▾

**Generate All Display Names Now**

	User ID	Given/First Name	Family/Last Name	Display Name	Type	E-mail Address (optional)	
1	adole41	Ann	Dole	Ann Dole	instructor	adole@xyztech.edu	added
2	msmith42	Mary	Smith	Mary Smith	student	msmith@xyztech.edu	added
3	bmiller	Bob	Miller	Bob Miller	student	bmiller@xyztech.edu	added

**I'm Done**

You have the option to assign the newly entered accounts immediately to a class by selecting the **Add These Accounts to a Class** button (see section 2.16.3). Select **I'm Done** if you prefer to assign the accounts to a class roster at a later time.

### 2.15.3 Edit Accounts

As the NETLAB+ administrator, you may edit information in any instructor or student account in any community. You may also grant system-wide instructor privileges to allow an instructor to manage accounts in any community. Granting an instructor community-wide privileges will allow the instructor to manage student and instructor accounts within their community. Instructors with normal privileges can only manage student accounts within their own community. See section [2.15.3.1](#).

You may also enable the maintenance reminder message for an instructor account as described in this section, below.

To edit accounts, use the account search function to locate the record(s) you wish to edit. You may select a community, an account type, and/or a full or partial User Id or name to narrow down your selections.

The results of your search query will be displayed in a list.

Users matched: 17 Community: XYZ Technical College Showing: all account types Matching: (any)

USER ID	NAME	COMMUNITY	CLASSES	LAST LOGIN	SELECT
<a href="#">janeexyz</a>	Jane Doe	XYZ Technical College	CCNA Security 101 [Lead]	Jun 26, 2012	<input type="checkbox"/>
<a href="#">jsmith23</a>	John Smith	XYZ Technical College		Jun 25, 2012	<input type="checkbox"/>
<a href="#">msmith42</a>	Mary Smith	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
<a href="#">rscorpio62</a>	Robert A. Scorpio	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
<a href="#">sdrucker65</a>	Sam Drucker	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
<a href="#">sunshine64</a>	Sebastian Sunshine	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
<a href="#">tbarnes24</a>	Ted Barnes	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
<a href="#">tgarmin22</a>	Todd Garmin	XYZ Technical College		Jun 25, 2012	<input type="checkbox"/>

Perform Action on Selected Accounts: Add to Class Roster Go Select All Unselect All

New Search Import Accounts Add Accounts Exit

Select an account by clicking on the User Id. The account detail page will be displayed.

**janeexyz**

User ID	janeexyz
Given/First Name	Jane
Family/Last Name	Doe
Display Name	Jane Doe
Account Type	instructor
Community	XYZ Technical College
E-mail Address	janedoe@fictionalname.edu
Class Membership	CCNA Security 101 [Lead]
Privileges	instructor with community management privileges
Pod Designer	disabled
Logins	enabled
Last Login	Tue Jun 26, 2012 11:07AM
Maintenance	no reminders

Edit Delete Reset Password Exit

To proceed to the edit page for this account, select the **Edit** button. The account edit page may be used to modify the account name, email address and to enable and disable account logins. When account logins are disabled, the user will not be able to login to the NETLAB+ system.



For instructor accounts, account privileges may be modified. In this example, instructor Jane Doe has been granted community privileges. (See section 2.15.3.1) Another option that may only be updated by the administrator is enabling the display of the maintenance renewal reminder. Enabling this reminder for instructors who use the system on a regular basis is recommended, particularly if you do not log into the administrator account frequently.

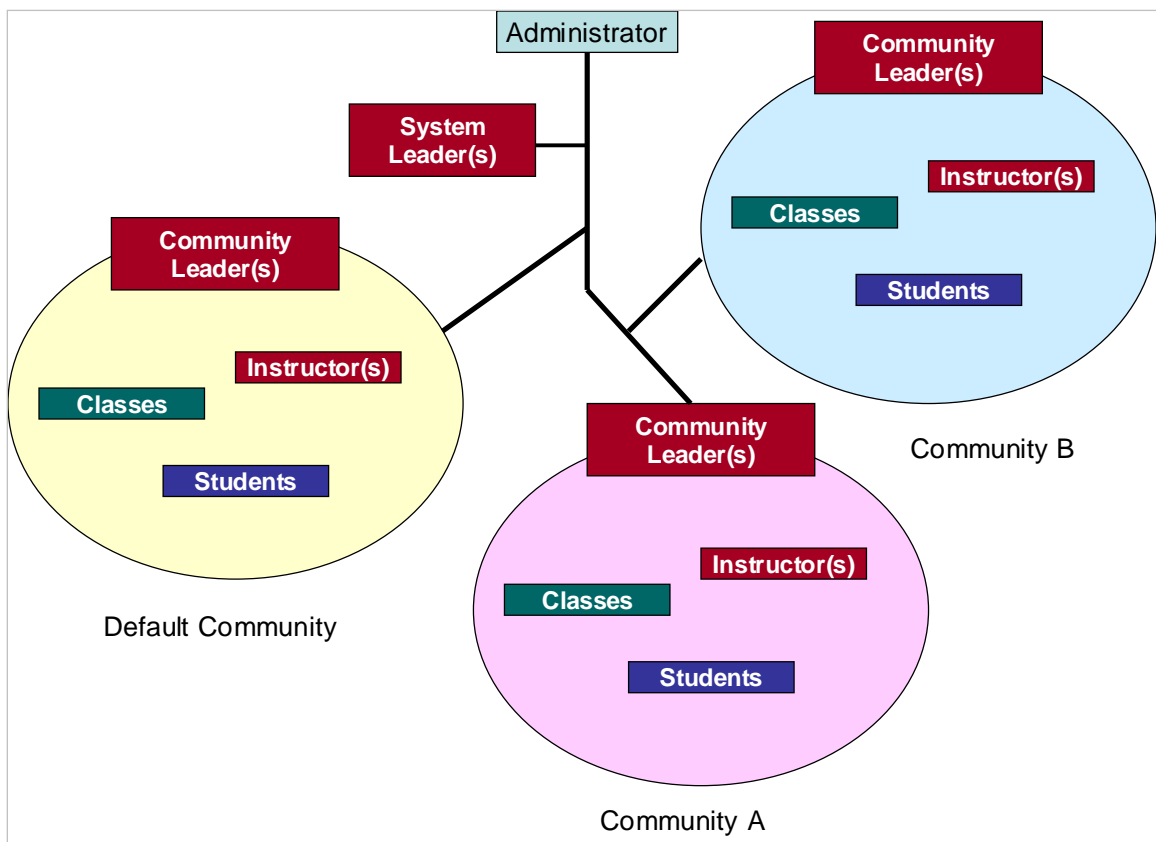
Select **Update** to save changes to the account record.

The renewal reminder will be displayed in the upper right-hand corner of the main page of the instructor account if the option to show the renewal reminder is selected. Please see section 2.2 for more information.

### 2.15.3.1 Modify Instructor Privileges

As the NETLAB+ administrator, you may edit information for any instructor or student account in any community. If you have multiple communities on your NETLAB+ system, you may wish to grant *system-wide* privileges to an instructor (see section 2.15.3.1 for an example) to allow the instructor to act as a System Leader. This will allow the instructor to manage accounts and classes in any community without accessing the administrator account.

Granting an instructor *community-wide* privileges will allow an instructor to act as a Community Leader, able to manage both student and instructor accounts within their own community. Instructors with *normal privileges* (the default) can only manage student accounts within their own community.



Only the NETLAB+ administrator can grant community-wide or system-wide privilege to an instructor account.

### **Level 1 - Normal Instructor Privileges**

- ◆ Can create and manage student accounts in their community.
- ◆ Can create and manage classes for which they are a lead.
- ◆ Can cancel lab reservations made by students in their classes.
- ◆ Cannot manage other instructor accounts.

### **Level 2 - Community-Wide Instructor Privileges**

- ◆ Can create and manage student accounts in their community.
- ◆ Can create and manage instructor accounts in their community.
- ◆ Can create and manage any classes in a community.
- ◆ Can attend all lab reservations in their community (except instructor personal reservations)
- ◆ Can cancel lab reservations made by instructors and students in their community.

### **Level 3 - System-Wide Instructor Privileges**

- ◆ Can create and manage student accounts in any community.
- ◆ Can create and manage instructor accounts in any community.
- ◆ Can manage classes in any community.
- ◆ Can attend all lab reservations in any community (except instructor personal reservations)
- ◆ Can cancel any lab reservation.

### 2.15.4 Delete Accounts

Use the account search page to search for and select a record (see section 2.15.3) that you wish to delete. Keep in mind that accounts may be assigned to multiple classes, rather than being bound to a specific class as in previous versions of NETLAB+.

If the accounts are for students who will continue to use your NETLAB+ system in other classes, you can keep the accounts and add them to the class roster of other classes as needed (see section 2.16.3)

msmith42	
User ID	msmith42
Given/First Name	Mary
Family/Last Name	Smith
Display Name	Mary Smith
Account Type	student
Community	XYZ Technical College
E-mail Address	msmith@xyztech.edu
Class Membership	CCNA Security 101
Privileges	student
Pod Designer	n/a
Logins	enabled
Last Login	Mon Jun 25, 2012 3:33PM
Maintenance	no reminders

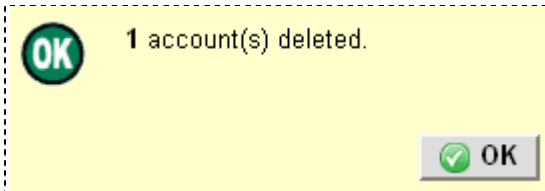
Select the **Delete** button. The page will indicate if the selected account is eligible for deletion. Eligibility for deletion is dependent upon the privilege level of the user performing the deletion (see section 2.15.3.1). The NETLAB+ administrator may delete any account, in any community.

ACCOUNTS SELECTED FOR DELETION					
USER ID	NAME	TYPE	COMMUNITY	CLASS MEMBERSHIP	STATUS
msmith42	Mary Smith	student	XYZ Technical College	CCNA Security 101	eligible for deletion

**All of the selected accounts are eligible for deletion.**

**Proceed with deletion?**

Select **Yes** to proceed with the account deletion.



The account delete function may also be performed as an action on multiple accounts, see section [2.15.6](#).

### 2.15.5 Reset Account Passwords

It may be necessary to reset an account password if a user has lost or forgotten their current password. You may use the reset password function. Upon initial login, the user will be required to change the password.

Use the account search page to search for and select a record (see section [2.15.3](#)).

msmith42	
User ID	msmith42
Given/First Name	Mary
Family/Last Name	Smith
Display Name	Mary Smith
Account Type	student
Community	XYZ Technical College
E-mail Address	msmith@xyztech.edu
Class Membership	CCNA Security 101
Privileges	student
Pod Designer	n/a
Logins	enabled
Last Login	Mon Jun 25, 2012 3:33PM
Maintenance	no reminders

Edit
 Delete
 Reset Password
 Exit

Select the **Reset Password** button to display the password reset screen. Enter the new password for the account.

Passwords must meet the following requirements:

- Not found in the dictionary and not too simple
- Between 7 and 16 characters
- Contain both numbers and letters

ACCOUNTS SELECTED FOR PASSWORD RESET				
USER ID	NAME	TYPE	COMMUNITY	STATUS
msmith42	Mary Smith	student	XYZ Technical College	eligible for password reset

Enter a temporary login password for the selected users. Upon login, each user will be required to select a new password.

Temporary Password

Retype Temporary Password

A confirmation message will be displayed.

1 password(s) reset.

- Please provide the temporary password to the selected users.

The password reset function may also be performed as an action on multiple accounts, see section [2.15.6](#).

## 2.15.6 Performing Actions On Multiple Accounts

Several account functions may be performed on multiple records at one time. Here, we select all accounts for XYZ Technical College.

**Account Search**

Community

Show  all account types  
 instructors only  
 students only  
 users that have never logged in  
 users that have been inactive for 1 year or more

Match User ID or Name

(partial name OK, leave blank to match all)

A list of all the instructor and student accounts is displayed. To the right of each account in the list is a selection box. To perform an action on multiple records, you may select individual records, or use the **Select All** and **Unselect All** buttons as needed.

Users matched: 11 Community: XYZ Technical College Showing: all account types Matching: (any)

USER ID	NAME	COMMUNITY	CLASSES	LAST LOGIN	SELECT
adevane63	Anna Devane	XYZ Technical College		never	<input checked="" type="checkbox"/>
adole41	Ann Dole	XYZ Technical College	CCNA Security 101 [Lead]	never	<input type="checkbox"/>
bmillar	Bob Miller	XYZ Technical College		never	<input checked="" type="checkbox"/>
janeexyz	Jane Doe	XYZ Technical College	CCNA Security 101 [Lead]	Jun 26, 2012	<input type="checkbox"/>
jsmith23	John Smith	XYZ Technical College		Jun 25, 2012	<input checked="" type="checkbox"/>
msmith42	Mary Smith	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
rscorpio62	Robert A. Scorpio	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
sdrucker65	Sam Drucker	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
sunshine64	Sebastian Sunshine	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
tbarnes24	Ted Barnes	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
tgarmin22	Todd Garmin	XYZ Technical College		Jun 25, 2012	<input type="checkbox"/>

Perform Action on Selected Accounts: Add to Class Roster Go Select All Unselect All

New Search Import Accounts Delete Exit

Selecting the **Add to Class Roster** action will allow you to assign the selected accounts to a class (see section 2.16.3). You may also **reset the password** (see section 2.15.5) of the selected accounts or **delete** the account records (see section 2.15.4).

## 2.16 Manage Classes



The Class Manager is used to manage classes and rosters. Information for each class using the system must be entered into the Class Manager. As the NETLAB+ administrator, you may manage classes for all the communities you have added to your NETLAB+ system. You may grant system-wide and community-wide privileges to instructor accounts as appropriate (see section 2.15.3.1) to allow instructors to manage classes.

A list of the classes that have been entered for the selected community will be displayed. Classes are listed with the start date of the class (if any), the class name, lead instructor, class type, number enrolled, and end date.

CLASS LIST COMMUNITY: XYZ Technical College						
CLASS NAME	LEAD INSTRUCTOR(S)	# ENROLLED	START DATE	END DATE	LABS	LAB HOURS
<a href="#">CCNA Fall Class</a>	Jane Doe	3	None	None	26	21.4
<a href="#">CCNP Fall Class</a>	Jane Doe	0	None	None	0	0.0
<a href="#">CCNP Intro</a>	Ann Dole Jane Doe	3	Oct 14, 2011	Jan 31, 2012	23	17.0
Total					49	38.4

### 2.16.1 Add Classes

To add a class to the system, select the  button at the bottom of the Class Manager page and enter the class information into the form. The **Class Name** field is required; other fields may be filled out now, or later through the Edit Class function (see section 2.16.2).



**Class Name**  **REQ**

**Global Labs**

- AE CCNP V6.0 ROUTE -MAP- English
- AE CCNPv6.0 ROUTE - BETA
- AE CCNPv6.0 SWITCH -CSP- BETA
- AE CCNPv6.0 SWITCH -MAP- BETA
- AE CCNPv6.0 SWITCH SBA - BETA
- AE CCNPv6.0 TSHOOT - BETA
- AE CCNPv6.0 TSHOOT SBA - BETA
- AE Cisco Voice over IP and QoS (CVOICE)
- AE FNS Combined V1.2 English
- AE FNS PIX V1.2 English
- AE FNS Router V1.2 English
- AE Multi-Purpose Academy Pod (no labs)

**Private Labs** *you have no installed private lab content to select*

**Starting Date**  None  Date

**Ending Date**  None  Date

**Self Study Lab Access**

- Allow individuals to schedule lab time
- Allow teams to schedule lab time

**Allow Multiple Labs in Same Reservation**  
(student or team reservations)

No (present only the scheduled exercise)  
 Yes (student/team may change lab exercise)

**Predetermined Lab Time Limits**

Enforce lab author's time limits (if any)  
 Do not enforce lab author's time limits

**Preferred Maximum Length of Reservation**  (community maximum is 4.0 hours)

**Preferred Minimum Time Between Reservations**  (community minimum is unlimited)

**Console Password (Cisco devices)**

**Enable Secret Password (Cisco devices)**

**E-mail Configs/Logs**  No  To lead instructors upon completion

**Retain Configs/Logs**

- Instructor-led reservations
- Individual or team reservations

**Retention Period**

Fields are described on the next page.

## Class Edit/Add Field Descriptions

- **Class Name:** The name of the class must be unique on the NETLAB+ system.
  - **Lead Instructor(s):** Instructors who are trainers in this class. Only lead instructors can schedule instructor-led lab reservations for a class. Lead instructors may schedule instructor-led lab reservations for this class. A lead instructor may also join any student or team reservations in progress that are associated with the class.
  - **Global Labs:** Select lab exercises and content that can be accessed by users in the class roster. This also affects the pod types that users can access. This setting does NOT control access to curriculum. Global labs are available to all instructors on the system (if authorized by the administrator).
  - **Private Labs:** Private labs are available only to the original installer. If you have created lab designs using the Lab Designer, they will be available for selection in this section. Please refer the *NETLAB+ Lab Design Guide* for details.
  - **Starting Date:** An optional starting date for the class. New pod reservations for this class may not be made before this date.
- If the starting date is changed later, existing equipment resource reservations are not affected.
- **Ending Date:** An optional ending date for the class. New pod reservations for this class (student or instructor) may not be made after this date.
- If the ending date is changed later, existing lab reservations are not affected.
- Self Study Lab Access
  - **Individuals:** If selected, individual users in the roster can schedule lab reservations.
  - **Teams:** Enabling this option allows learners to work in groups for self-study lab reservations and share access to equipment at the same time. Before enabling this option, place each user in the roster into the desired team (A to Z).

- **Allow multiple labs in the same reservation:** Enabling this option allows student and team reservations to change the lab exercise to a different exercise during a lab reservation. The Exercise tab will be displayed during lab access. Only labs compatible with the reserved pod type will be available for selection. A new archive entry is not created when lab exercise is changed. This feature should not be enabled if you want the archive to contain one entry per lab.
- This option only affects Student or Team reservations (ILT reservations always allow the lead instructor to change exercises). Currently, this option does not start a new archive entry. The final archive will contain combined device output for all labs. The final configuration files will reflect the state of the pod at the end of the pod reservation.

If you use the archive feature for assessment and want each lab's device output and final configuration files to appear in a separate archive entries, you should select "No" to disallow multiple labs in the same reservation.

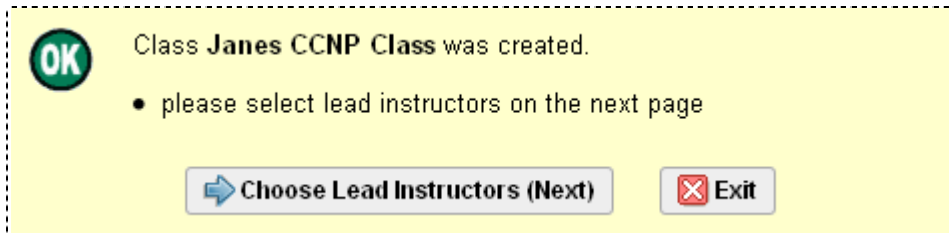
- Predetermined Lab Time Limits
    - **Enforce lab author's time limits (if any):** When a lab author specifies a time limit for a lab exercise, NETLAB+ will always use this limit to determine the length of an individual or team reservation. When a lab time limit is enforced, the Maximum Length of Reservation setting (described below) will have no affect on the reservation length. The time limit is only imposed upon learners making their own individual or team reservations. Individual or team reservations created by the lead instructor on behalf of individual learners or teams in the class are not restricted by the lab author's time limit.
  - **Do not enforce lab author's time limits:** NETLAB+ will disregard any time limits set by lab authors. Individuals and teams may determine how much time is allocated for any lab, up to the Maximum Length of Reservation setting (see below).
  - **Preferred Maximum Length of Reservation:** Sets the maximum length (in hours) of an individual or team lab reservation. Lab exercises can also have a time limit. The lower of the two times is used. The maximum time lengths of lab reservations for all classes within a community are subject to community maximums, if a community maximum has been set (see section [2.14](#)). You may not establish a higher (less restrictive) maximum for the class; it will not override the community maximum.
  - A lower (more restrictive) maximum time length for the class may be enforced by setting a value that is lower than the community maximum.
- Lead instructors and instructor-led reservations are not bound by this restriction.
- **Preferred Minimum Time Between Reservations:** Sets the minimum amount of time between successive reservations made by an individual or team. This setting can be used to prevent excessive scheduling of labs. For example, a setting of **48 hours** prevents the same individual or team from scheduling lab exercises less than 48 hours

apart. The default value, **no limit** will allow a student or team to make unlimited reservations. The minimum time between reservations for all classes within a community is subject to community minimums, if a community minimum has been set (see section 2.14). You may not establish a lower (less restrictive) minimum for the class; it will not override the community minimum. A higher (more restrictive) minimum time between lab reservations for the class may be enforced by setting a value that is higher than the community minimum.

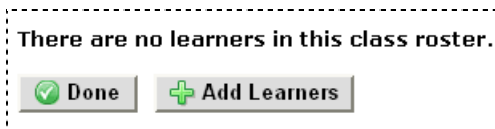
- Lead instructors and instructor-led reservations are not bound by this restriction.
- **Console Password (Cisco devices):** Cisco courses only. The password that students and instructors are expected to assign to all device consoles, 'line con 0'. When NETLAB+ performs an automated operation, it will try this password to gain access to the console. Some automated operations may abort if the device's console is not set to this value.
- **Enable Secret Password (Cisco devices):** Cisco courses only. The password that students and instructors are expected to assign as the privileged (enable secret) password on all devices. When NETLAB+ performs an automated operation, it will try this password to gain access to privileged exec mode. Some automated operations may abort if the device's enable password is not set to this value.
- **E-mail Configs/Logs:** After a reservation has completed, a copy of the final configuration files and session logs can be automatically e-mailed to lead instructors.
- **Please Note:** E-mail can be unreliable. This option will only work if the lead instructors have a valid e-mail address set in their profiles. System settings, port filters and/or anti-spam software may interfere with e-mail from NETLAB+ (even if other e-mail from the NETLAB+ site may be working). Alternatively, you can access configuration and log data using the archive feature.
- **Retain Configs/Logs:** After a reservation has completed, a copy of the final configuration files and session logs can be retained in the NETLAB+ archive. Since this information consumes disks space and increases the size of backups, please retain only the data you need.
- **Instructor-led reservations:** If checked, NETLAB+ will retain configs and logs from instructor-led class reservations.
- **Individual or team reservations:** If checked, NETLAB+ will retain configs and logs from student or team reservations.
- **Retention Period** This pull down lets you control the length of time NETLAB+ will retain configuration files and session logs in the archive for this class. Since

this information consumes disks space and increases the size of backups, please retain the data only as long as needed.

After entering information on the page, select **OK**. A confirmation message will be displayed. You may now choose lead instructors for the class (see section [2.16.6](#)), or select **Exit** if you prefer to enter this information at a later time.



If you complete the process to choose lead instructors, you will then be prompted to add learners to the class roster (see section [2.16.3](#)).



You may also choose to add learners to the roster at another time.

### 2.16.2 Edit Class Information

Edit the information for an existing class by clicking on the class name displayed in the class list displayed on the class manager page. Here, we'll select the record for Jane's CCNP Class.

CLASS LIST COMMUNITY: XYZ Technical College						
CLASS NAME	LEAD INSTRUCTOR(S)	# ENROLLED	START DATE	END DATE	LABS	LAB HOURS
<a href="#">▶ CCNA Fall Class</a>	Jane Doe	3	None	None	26	21.4
<a href="#">▶ CCNP Fall Class</a>	Jane Doe	0	None	None	0	0.0
<a href="#">▶ CCNP Intro</a>	Ann Dole Jane Doe	3	Oct 14, 2011	Jan 31, 2012	23	17.0
<a href="#">▶ <b>Janes CCNP Class</b></a>	None	0	Oct 14, 2011	Jan 31, 2012	0	0.0
Total					49	38.4

A page displaying the current settings for the class will be displayed.

CLASS: <b>Janes CCNP Class</b>					
Class Name	Janes CCNP Class				
Lead Instructor(s)	Jane Doe				
Number Enrolled	0				
Global Labs	AE CCNA Pod Reservations (no labs) AE CCNP V6.0 ROUTE -MAP- English AE CCNPv6.0 ROUTE - BETA AE CCNPv6.0 SWITCH -CSP- BETA AE CCNPv6.0 SWITCH -MAP- BETA AE CCNPv6.0 SWITCH SBA - BETA AE CCNPv6.0 TSHOOT - BETA AE CCNPv6.0 TSHOOT SBA - BETA AE Multi-Purpose Academy Pod (no labs)				
Private Labs					
Start Date	Oct 14, 2011				
Ending Date	Jan 31, 2012				
Self Study Lab Access	Individuals, Teams				
Allow Multiple Labs in Same Reservation	Yes (student/team may change lab exercise)				
Predetermined Lab Time Limits	Enforce lab author's time limits (if any)				
Preferred Maximum Length of Reservations	no preference (community maximum is currently 4.0 hours)				
Preferred Minimum Time Between Reservations	no preference (community minimum is currently unlimited)				
Console Password	cisco				
Enable Secret Password	class				
E-mail Configs/Logs	No				
Retain Configs/Logs	ILT Class, Student or Team				
Retention Period	1 year				
Class Lab Usage		Instructor Led	Individual	Team	Total
	Labs	0	0	0	0
	Hours	0.0	0.0	0.0	0.0

Several function buttons are displayed below the class settings information.

<b>Done</b>	Return to class manager.
<b>Settings</b>	Change the class general settings.
<b>Roster</b>	View or make changes to the class roster.
<b>Teams</b>	Organize class members into teams.
<b>Leads</b>	Specify which instructors lead (teach) this class.
<b>Pod Assignment</b>	Assign pods to specific students or teams.
<b>Delete</b>	Delete this class.

Select the **Settings** button to make the information for the displayed class available for editing. The class edit page is identical to the add class page. Please see section [2.16.1](#) for a detailed description of each field on the page.



<b>Class Name</b>	Janes CCNP Class <span style="float: right;"><b>REQ</b></span>
<b>Global Labs</b>	<input checked="" type="checkbox"/> AE CCNP V6.0 ROUTE -MAP- English <input checked="" type="checkbox"/> AE CCNPv6.0 ROUTE - BETA <input checked="" type="checkbox"/> AE CCNPv6.0 SWITCH -CSP- BETA <input checked="" type="checkbox"/> AE CCNPv6.0 SWITCH -MAP- BETA <input checked="" type="checkbox"/> AE CCNPv6.0 SWITCH SBA - BETA <input checked="" type="checkbox"/> AE CCNPv6.0 TSHOOT - BETA <input checked="" type="checkbox"/> AE CCNPv6.0 TSHOOT SBA - BETA <input type="checkbox"/> AE Cisco Voice over IP and QoS (CVOICE) <input type="checkbox"/> AE FNS Combined V1.2 English <input type="checkbox"/> AE FNS PIX V1.2 English <input type="checkbox"/> AE FNS Router V1.2 English <input checked="" type="checkbox"/> AE Multi-Purpose Academy Pod (no labs)
<b>Private Labs</b>	<i>you have no installed private lab content to select</i>
<b>Starting Date</b>	<input type="radio"/> None <input checked="" type="radio"/> Date Oct 14 2011
<b>Ending Date</b>	<input type="radio"/> None <input checked="" type="radio"/> Date Jan 31 2012
<b>Self Study Lab Access</b>	<input checked="" type="checkbox"/> Allow individuals to schedule lab time <input checked="" type="checkbox"/> Allow teams to schedule lab time
<b>Allow Multiple Labs in Same Reservation</b> <small>(student or team reservations)</small>	<input type="radio"/> No (present only the scheduled exercise) <input checked="" type="radio"/> Yes (student/team may change lab exercise)
<b>Predetermined Lab Time Limits</b>	<input checked="" type="radio"/> Enforce lab author's time limits (if any) <input type="radio"/> Do not enforce lab author's time limits
<b>Preferred Maximum Length of Reservation</b>	no preference (community maximum is 4.0 hours)
<b>Preferred Minimum Time Between Reservations</b>	no preference (community minimum is unlimited)
<b>Console Password (Cisco devices)</b>	cisco
<b>Enable Secret Password (Cisco devices)</b>	class
<b>E-mail Configs/Logs</b>	<input checked="" type="radio"/> No <input type="radio"/> To lead instructors upon completion
<b>Retain Configs/Logs</b>	<input checked="" type="checkbox"/> Instructor-led reservations <input checked="" type="checkbox"/> Individual or team reservations
<b>Retention Period</b>	1 year
<input checked="" type="button"/> OK <input type="button"/> Cancel	

After updating information, select the **OK** button at the bottom of the page.

### 2.16.3 Add Learners to the Class Roster

A class *roster* is a list of members, which may include student accounts, instructor accounts, or both. All members must belong to the same community.

A class may contain one or more *lead instructors* (trainers). All other users in the roster (who are not leads) are *learners*. Select the **Roster** button on the class page to add learners.

CLASS: Cybersecurity Intro CNSS-4011					
Class Name	Cybersecurity Intro CNSS-4011				
Lead Instructor(s)	Jane Doe				
Number Enrolled	0				
Global Labs	CNSS 4011 Cybersecurity Labs - BETA				
Private Labs					
Start Date	None				
Ending Date	None				
Self Study Lab Access	Individuals				
Allow Multiple Labs in Same Reservation	No (present only the scheduled exercise)				
Predetermined Lab Time Limits	Enforce lab author's time limits (if any)				
Preferred Maximum Length of Reservations	no preference (community maximum is currently 4.0 hours)				
Preferred Minimum Time Between Reservations	no preference (community minimum is currently unlimited)				
Console Password	cisco				
Enable Secret Password	class				
E-mail Configs/Logs	No				
Retain Configs/Logs	ILT Class, Student or Team				
Retention Period	1 year				
Class Lab Usage		Instructor Led	Individual	Team	Total
	Labs	0	0	0	0
	Hours	0.0	0.0	0.0	0.0

A list of learners assigned to the class will be displayed, or a message stating that no learners have yet been added to the class.

**There are no learners in this class roster.**

Selecting **Add Learners** will display the **Add Learners to Roster** page. This page allows you to select from 3 methods to add learners to the class.

The first method, Select from a list of all existing users in this community is an ideal choice when:

- You will be selecting learners for which accounts already exist.
- The list of all existing users in your community is relatively small. (Since this option displays all the accounts, from which you can make your roster selections).

**Select** from list of all existing users in this community.

**Create** new user accounts and add to class.

**Search** for and select existing users in the account manager, then invoke *Add to Class* from the action menu at the bottom of the search results page.

Select the learners you wish to add to the class roster from the list displayed. Notice also that the list shows that instructor Jane Doe has already been selected as a class lead (see section 2.16.6).

COMMUNITY: XYZ Technical College		
NAME	USER ID	SELECT
Ann Dole	adole41	<input checked="" type="checkbox"/>
Anna Devane	adevane63	<input type="checkbox"/>
Bob Miller	bmiller	<input type="checkbox"/>
Jane Doe	janeexyz	already class lead
John Smith	jsmith23	<input type="checkbox"/>
Mary Smith	msmith42	<input type="checkbox"/>
Robert A. Scorpio	rscorpio62	<input checked="" type="checkbox"/>
Sam Drucker	sdrucker65	<input checked="" type="checkbox"/>
Sebastian Sunshine	sunshine64	<input type="checkbox"/>
Ted Barnes	tbarnes24	<input type="checkbox"/>
Todd Garmin	tgarmin22	<input type="checkbox"/>

Click the **Add Selected Learners** button to add the learners to the class roster.

The second method, **Create new user accounts and add to class** is an ideal choice when:

- You need to add learners to a class and have not yet set up accounts for them (typically, if this is a group of first-time users of your NETLAB+ system).
- You prefer to do this process in one-step rather than first adding the accounts using the Account Manager (see section 2.15.22.15.2).

**Select** from list of all existing users in this community.  
 **Create** new user accounts and add to class.  
 **Search** for and select existing users in the account manager, then invoke *Add to Class* from the action menu at the bottom of the search results page.

Enter the new account information for each user (see section 2.15.2).

### Enter New Account Information

**Add to Community** XYZ Technical College

**Initial Password** [.....]

**Retype Initial Password** [.....]

**Automatic Name Generation Options:**

**Enable Auto-Generation**  (auto-generate select name field(s) during data entry)

**Name Generation Type** Generate Display Name from Given/First and Family/Last Names

**Display Name Format** Given/First Family/Last

	User ID	Given/First Name	Family/Last Name	Display Name	Type	E-mail Address (optional)
1	adole41	Ann	Dole	Ann Dole	instructor	adole@xyztech.edu
2	msmith42	Mary	Smith	Mary Smith	student	msmith@xyztech.edu
3	bmiller	Bob	Miller	Bob Miller	student	bmiller@xyztech.edu
4					student	

The third method, Search for and select existing users in the account manager, then invoke *Add to Class* from the action menu at the bottom of the search results page is an ideal choice when:

- You will be selecting learners for which accounts already exist.
- The options on the account search page will allow you to select conveniently a subset of the accounts from which you may make your selections. This may allow you to avoid scrolling through a long list if there are a large number of accounts in your community.

**Select** from list of all existing users in this community.

**Create** new user accounts and add to class.

**Search** for and select existing users in the account manager, then invoke *Add to Class* from the action menu at the bottom of the search results page.

Here, we will use the **show** option to display only student accounts.

**Account Search**

**Community** XYZ Technical College ▼

**Show**

all account types

instructors only

students only

users that have never logged in

users that have been inactive for 1 year or more

**Match User ID or Name**

(partial name OK, leave blank to match all)

**Search**

The result of the account search displays all of the student accounts in the community. Select the students you wish to add to the class roster. (Notice that student Ida Lerner has been selected, although she is already indicated to be a member of the class. For the purpose of this example, let's imagine that this record was selected in error). Select the **Add to Class Roster** action and click **Go**.

Users matched: 8 Community: XYZ Technical College Showing: students only Matching: (any)

USER ID	NAME	COMMUNITY	CLASSES	LAST LOGIN	SELECT
<a href="#">adevane63</a>	Anna Devane	XYZ Technical College		never	<input type="checkbox"/>
<a href="#">bmiller</a>	Bob Miller	XYZ Technical College	CCNP Route Class	never	<input checked="" type="checkbox"/>
<a href="#">jsmith23</a>	John Smith	XYZ Technical College		Jun 25, 2012	<input type="checkbox"/>
<a href="#">msmith42</a>	Mary Smith	XYZ Technical College	CCNA Security 101 CCNP Route Class	Jun 25, 2012	<input type="checkbox"/>
<a href="#">rscorpio62</a>	Robert A. Scorpio	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input checked="" type="checkbox"/>
<a href="#">sdrucker65</a>	Sam Drucker	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input checked="" type="checkbox"/>
<a href="#">sunshine64</a>	Sebastian Sunshine	XYZ Technical College	CCNP Route Class CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
<a href="#">tbarnes24</a>	Ted Barnes	XYZ Technical College	CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>

Perform Action on Selected Accounts: Add to Class Roster Go Select All Unselect All

Next, you will be prompted to select the class to which you wish to add learners. Here, we'll select the CCNP Route Class

CLASS LIST

CLASS NAME	LEAD INSTRUCTOR(S)	# ENROLLED	START DATE	END DATE
<a href="#">CCNA Security 101</a>	Ann Dole Jane Doe	5	None	None
<a href="#">CCNP Route Class</a>	Jane Doe	3	Jun 1, 2012	Aug 31, 2012
<a href="#">Cybersecurity Intro CNSS-4011</a>	Jane Doe	0	None	None

The status of the accounts added is shown. Notice that Bob Miller is flagged as already in the roster, thus illustrating that selecting accounts more than once to add to a roster will not result in duplicates on the roster.

ADDING TO CLASS ROSTER: CCNP Route Class

USER ID	NAME	STATUS
bmiller	Bob Miller	already in roster
rscorpio62	Robert A. Scorpio	added to roster
sdrucker65	Sam Drucker	added to roster

To view the class roster, select the button.

CLASS ROSTER: CCNP Route Class						
NAME	USER ID	TEAM	LAST LOGIN	E-MAIL ADDRESS	LABS	LAB HOURS
Bob Miller	bmiller	A	never	bmiller@xyztech.edu	0	0.0
Mary Smith	msmith42	A	Jun 25, 2012	msmith@xyztech.edu	0	0.0
Robert A. Scorpio	rscorpio62	A	Jun 25, 2012		0	0.0
Sam Drucker	sdrucker65	A	Jun 25, 2012	samdrucker@xyztech.edu	0	0.0
Sebastian Sunshine	sunshine64	A	Jun 25, 2012	sebby@xyz.edu	0	0.0
Usage by Deleted Accounts					0	0.0
Total Individual Lab Usage *					0	0.0

\* Individual totals do not include team labs.

If your class roster will consist of both new users (for which you need to create a new account) along with previous users, (already having an account on your NETLAB+ system) you will need to use more than one of the methods described above to add all of the learners to your class roster.

In addition, you can add learners to a class by moving or copying a class roster from one class to another (see section [2.16.4](#)).

### 2.16.4 Manage a Class Roster

As students join and withdraw from a class, you will need to make periodic changes to the class roster. Select the class record for the class whose roster you need to update (see section 2.16.2). You may also wish to review the statistics on lab usage provided for each member of the class roster.

CLASS: CCNP Fall Class					
Class Name	CCNP Fall Class				
Lead Instructor(s)	Jane Doe				
Number Enrolled	2				
Global Labs	AE CCNA 1 English V3.1 AE CCNA 2 English V3.1 AE CCNA 3 English V3.1 AE CCNA Pod Reservations (no labs) AE CCNP ONT V5.0 English AE CCNP Pod Reservations (no labs) AE FNS PIX V1.2 English AE FNS Router V1.2 English				
Private Labs					
Start Date	None				
Ending Date	None				
Self Study Lab Access	Individuals				
Predetermined Lab Time Limits	Enforce lab author's time limits (if any)				
Preferred Maximum Length of Reservations	3.0 hours				
Preferred Minimum Time Between Reservations	4 hours between reservations				
Console Password	cisco				
Enable Password	class				
E-mail Configs/Logs	No				
Retain Configs/Logs	ILT Class, Student or Team				
Retention Period	1 year				
Class Lab Usage		Instructor Led	Individual	Team	Total
	Labs	14	6	5	25
	Hours	42.0	4.5	2.5	49.0

Done
 Settings
 Roster
 Teams
 Leads
 Delete



Select the **Roster** button to display the class roster, the option to add learners, the manage accounts option and the manage roster option.

CLASS ROSTER: CCNP Route Class						
NAME	USER ID	TEAM	LAST LOGIN	E-MAIL ADDRESS	LABS	LAB HOURS
Bob Miller	bmiller	A	never	bmiller@xyztech.edu	<a href="#">0</a>	0.0
Mary Smith	msmith42	A	Jun 25, 2012	msmith@xyztech.edu	<a href="#">0</a>	0.0
Robert A. Scorpio	rscorpio62	A	Jun 25, 2012		<a href="#">3</a>	3.0
Sam Drucker	sdrucker65	A	Jun 25, 2012	samdrucker@xyztech.edu	<a href="#">1</a>	0.5
Sebastian Sunshine	sunshine64	A	Jun 25, 2012	sebby@xyz.edu	<a href="#">2</a>	1.0
Usage by Deleted Accounts					0	0.0
Total Individual Lab Usage *					6	4.5

\* Individual totals do not include team labs.

By selecting the link next to the count of the labs attended for a learner, a list of the labs will be displayed including the status of the reservation. Notice that lab hours are not accumulated for lab reservations that are not attended.

CLASS	NAME	USER ID	LAST LOGIN
CCNP Route Class	Robert A. Scorpio	rscorpio62	Mon Jun 25, 2012 3:35PM

Lab List: Bob Miller				
DATE/TIME	LAB NAME	STATUS	LAB HOURS	
<a href="#">Tue Apr 26, 2011 9:12PM</a>	2.2.1 Router Configuration Using Setup	not attended		
<a href="#">Tue Apr 19, 2011 7:00PM</a>	1.2.5 Verifying RIP v2 Configuration	completed	1.0	
<a href="#">Thu Apr 7, 2011 11:00PM</a>	6.2.5 Configuring Port Security	not attended		
<a href="#">Thu Apr 7, 2011 9:00PM</a>	2.2.9 Command Line Fundamentals	completed	1.0	
<a href="#">Thu Apr 7, 2011 6:00PM</a>	2.2.1 Router Configuration Using Setup	completed	1.0	
<b>Total (completed)</b>		<b>3 labs</b>	<b>3.0</b>	

[← Back](#)

Returning back to the Class Roster page, you may continue by selecting **Manage Roster**. Actions on the **Manage Roster** page may be performed on several selected accounts at one time.

CLASS ROSTER: CCNP Route Class				
NAME	USER ID	TEAM	LAST LOGIN	SELECT
Bob Miller	bmiller	A	never	<input checked="" type="checkbox"/>
Mary Smith	msmith42	A	Jun 26, 2012	<input type="checkbox"/>
Robert A. Scorpio	rscorpio62	A	Jun 25, 2012	<input type="checkbox"/>
Sam Drucker	sdrucker65	A	Jun 25, 2012	<input type="checkbox"/>
Sebastian Sunshine	sunshine64	A	Jun 25, 2012	<input checked="" type="checkbox"/>

Perform Action on Selected Members: Remove from Roster (retain accounts) ▼ Go Select All Unselect All

I'm Done Making Changes

- Remove from Roster (retain accounts)
- Copy to Another Class
- Move to Another Class

The **Remove from Roster** action results in the removal of the selected accounts from the class roster. The accounts remain on the system and may be added to other class rosters.

The **Copy to Another Class** action will add the selected accounts from the currently displayed class roster to another class roster. You will be prompted to select the class to which the accounts will be added.

Selecting the **Move to Another Class** action will remove the selected accounts from the currently displayed class roster and add them to another class roster. You will be prompted to select the class to which the accounts will be added.

The Manage Accounts option is also included on the class roster screen.

CLASS ROSTER: CCNP Route Class						
NAME	USER ID	TEAM	LAST LOGIN	E-MAIL ADDRESS	LABS	LAB HOURS
Bob Miller	bmiller	A	never	bmiller@xyztech.edu	0	0.0
Mary Smith	msmith42	A	Jun 25, 2012	msmith@xyztech.edu	0	0.0
Robert A. Scorpio	rscorpio62	A	Jun 25, 2012		3	3.0
Sam Drucker	sdrucker65	A	Jun 25, 2012	samdrucker@xyztech.edu	1	0.5
Sebastian Sunshine	sunshine64	A	Jun 25, 2012	sebby@xyz.edu	2	1.0
Usage by Deleted Accounts					0	0.0
Total Individual Lab Usage *					6	4.5

\* Individual totals do not include team labs.

Done  Add Learners  Manage Roster  Manage Accounts

Select **Manage Accounts** to display the accounts page, listing all the accounts assigned to the class roster. See section 2.15 for details on managing accounts.

Class: CCNP Route Class					
USER ID	NAME	COMMUNITY	CLASSES	LAST LOGIN	SELECT
<a href="#">sdrucker65</a>	Sam Drucker	XYZ Technical College	CCNA Security 101 CCNP Route Class	Jun 25, 2012	<input type="checkbox"/>
<a href="#">rscorpio62</a>	Robert A. Scorpio	XYZ Technical College	CCNA Security 101 CCNP Route Class	Jun 25, 2012	<input type="checkbox"/>
<a href="#">sunshine64</a>	Sebastian Sunshine	XYZ Technical College	CCNP Route Class CCNA Security 101	Jun 25, 2012	<input type="checkbox"/>
<a href="#">msmith42</a>	Mary Smith	XYZ Technical College	CCNA Security 101 CCNP Route Class	Jun 25, 2012	<input type="checkbox"/>
<a href="#">bmiller</a>	Bob Miller	XYZ Technical College	CCNP Route Class	never	<input type="checkbox"/>

Perform Action on Selected Accounts:

### 2.16.5 Group the Class Roster Into Teams

Classes can be configured to allow students to have Self Study Lab Access both as individuals and as part of an assigned team.

You may place class members into teams labeled A to Z. Teams allow students to work in groups for self-study resource reservations and share access to equipment at the same time. If teams are not used with the class, all students should be assigned to the default, team “A”. Students may not change their own team assignment; however, the lead instructor(s) can adjust team assignments as needed.

Lead instructors are not assigned to a team and may participate in the lab reservations for any team. Please see the *NETLAB+ Instructor Guide* for more information.

Here, we’ll group the 6 members of the CCNP Router class into 3 teams.

CLASS: CCNP Route Class					
Class Name	CCNP Route Class				
Lead Instructor(s)	Jane Doe				
Number Enrolled	6				
Global Labs	AE CCNPv6.0 ROUTE CRP AE CCNPv6.0 ROUTE MAP AE CCNPv6.0 ROUTE MAP/ASA AE CCNPv6.0 ROUTE SBA				
Private Labs					
Start Date	Jun 1, 2012				
Ending Date	Aug 31, 2012				
Self Study Lab Access	Individuals				
Allow Multiple Labs in Same Reservation	No (present only the scheduled exercise)				
Predetermined Lab Time Limits	Enforce lab author's time limits (if any)				
Preferred Maximum Length of Reservations	no preference (community maximum is currently 4.0 hours)				
Preferred Minimum Time Between Reservations	no preference (community minimum is currently unlimited)				
Console Password	cisco				
Enable Secret Password	class				
E-mail Configs/Logs	No				
Retain Configs/Logs	ILT Class, Student or Team				
Retention Period	1 year				
Class Lab Usage		Instructor Led	Individual	Team	Total
	Labs	0	0	0	0
	Hours	0.0	0.0	0.0	0.0

Select the **Teams** button. The current team assignments will be displayed. In this example, previous team assignments have been made. Otherwise, all team members would have been in the initial default assignment of Team “A”. The count of labs and lab hours per team are also displayed.

CLASS TEAMS: CCNP Route Class			
TEAM	CURRENT MEMBERS	LABS	LAB HOURS
A	Bob Miller Robert A. Scorpio Sam Drucker	3	1.5
B	Mary Smith Sebastian Sunshine Todd Garmin	1	0.5
Usage by Deleted Teams		1	0.5
Total Team Lab Usage *		5	2.5

\* Team totals do not include lab reservations made for individual users.

By selecting the link next to the count of the labs attended for a team, a list of the labs scheduled will be displayed including the status of the reservation

CLASS	TEAM	CURRENT MEMBERS
CCNP Route Class	A	Bob Miller Robert A. Scorpio Sam Drucker

Lab List:			
DATE/TIME	LAB NAME	STATUS	LAB HOURS
↻ Tue Apr 26, 2011 9:12PM	6.2.1 Verifying Default Switch Configuration	completed	0.5
↻ Tue Apr 19, 2011 7:00PM	Reserve Basic Router Pod Version 2 (no lab exercise)	completed	0.5
↻ Thu Apr 7, 2011 11:00PM	2.2.1 Router Configuration Using Setup	completed	0.5
<b>Total (completed)</b>		<b>3 labs</b>	<b>1.5</b>

After returning to the Class Teams list page, select the **Define Teams** button in order to modify the current team assignments. Notice also that this class roster happens to include an instructor who is enrolled as a learner. This instructor participates in the class identically to the other student learners. Use the pull-down box to the left of each user name to make team assignments.

**CLASS TEAMS: CCNP Route Class**

TEAM	USER NAME	USER ID
C	Bob Miller	bmillier
A	Robert A. Scorpio	rscorpio62
B	Sam Drucker	sdrucker65
C	Mary Smith	msmith42
D	Sebastian Sunshine	sunshine64
E	Todd Garmin	tgarmin22
F		
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		
Q		
R		
S		
T		

Apply Cancel

After selecting the **Apply** button, the class list will be sorted in team order.

**CLASS TEAMS: CCNP Route Class**

TEAM	USER NAME	USER ID
A	Robert A. Scorpio	rscorpio62
A	Sam Drucker	sdrucker65
B	Mary Smith	msmith42
B	Todd Garmin	tgarmin22
C	Bob Miller	bmillier
C	Sebastian Sunshine	sunshine64

OK Apply Cancel

Please Note: After initial team assignments have been made, you must return to the class edit screen and enable the option to allow teams to schedule lab time. You may select the option to allow team reservations for a class at the same time you add a class record to the system (see section [2.16.1](#)). You must also be certain to make team assignments, otherwise, all accounts will remain assigned to default team “A”.

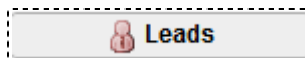
**Self Study Lab Access**

- Allow individuals to schedule lab time
- Allow teams to schedule lab time

### 2.16.6 Choose Lead Instructors for a Class

A lead instructor should be defined for each class. An instructor with Normal Privileges (see section 2.15.3.1) can create and manage classes for which they are the lead. Lead instructors may make reservations for instructor-led training sessions for the class. Lead instructors may make lab reservations for individual students or teams, or allow the students or teams to make reservations themselves depending on the settings selected for the class (see section 2.16.1). The lead instructor has the option to participate in any lab reservation associated with the class.

CLASS: CCNP Route Class					
Class Name	CCNP Route Class				
Lead Instructor(s)	Jane Doe				
Number Enrolled	6				
Global Labs	AE CCNPv6.0 ROUTE CRP AE CCNPv6.0 ROUTE MAP AE CCNPv6.0 ROUTE MAP/ASA AE CCNPv6.0 ROUTE SBA				
Private Labs					
Start Date	Jun 1, 2012				
Ending Date	Aug 31, 2012				
Self Study Lab Access	Individuals				
Allow Multiple Labs in Same Reservation	No (present only the scheduled exercise)				
Predetermined Lab Time Limits	Enforce lab author's time limits (if any)				
Preferred Maximum Length of Reservations	no preference (community maximum is currently 4.0 hours)				
Preferred Minimum Time Between Reservations	no preference (community minimum is currently unlimited)				
Console Password	cisco				
Enable Secret Password	class				
E-mail Configs/Logs	No				
Retain Configs/Logs	ILT Class, Student or Team				
Retention Period	1 year				
Class Lab Usage		Instructor Led	Individual	Team	Total
	Labs	0	0	0	0
	Hours	0.0	0.0	0.0	0.0



After selecting a class in the class manager, (see section 2.16) select the **Leads** option. The accounts for all instructors in the community will be displayed. You may select more than one lead instructor for a class.



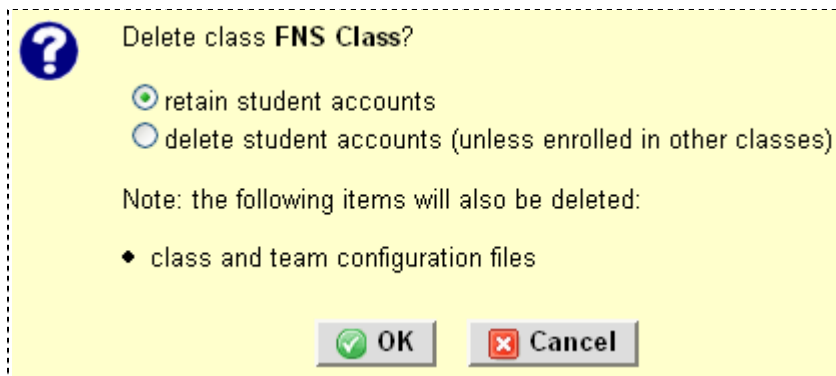
### 2.16.7 Delete Classes

To delete a class record, select a class in the class manager (see section 2.16) and select the **Delete** option, as shown in the picture in the previous section. Do not delete a class until determining that the information for the class is no longer needed.

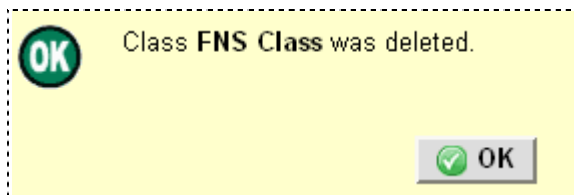


Keep in mind that you may want to edit (see section 2.16.2) and continue to use a class record. For example, if there will be a similar course with many of the same students the next semester, you can simply update the class record (see section 2.16.1) and the class roster (see section 2.16) as needed.

When deleting a class, you must choose to either retain or delete the student accounts on the class roster along with class and team configuration files. Accounts will not be deleted if the student is enrolled in other classes.



Select **OK** to proceed with the class deletion. A confirmation message will be displayed.










## 2.17 System Banners

Beginning with NETLAB+ version 2011.R2, all feature options to customize banners and headers are available on both NETLAB Professional Edition® and NETLAB Academy Edition® systems



Custom branding of your NETLAB+ system allows you to use your own logos and graphics to make your system uniquely identifiable and can serve as an asset for your marketing strategy. The administrator may customize the NETLAB+ user interface by modifying the settings for displaying banners and messages. The customized messages and banners will be displayed system-wide to all NETLAB+ users. The system will display the default system messages if no customized items are entered.

The areas that may be customized include the Login Banner, Login Box Colors, Login System Name, Login Text, System Page Banner, System MyNETLAB Welcome message and the System MyNETLAB News and Announcements.

Banner Name	Location on Page	Description
Login Banner		Upload a custom image file to appear on the top of the login page.
Login Box Colors		Change the box colors on the left side of the login page.
Login System Name		Specify an optional system name to appear on the login page.
Login Text		Add custom text to the body of the login page.
System Page Banner		Specify custom images and colors that appear at the top of each page.
System MyNETLAB Welcome Message		Specify the system wide welcome message that appears on top of the MyNETLAB page.
System MyNETLAB News and Announcements		Specify the system wide news and announcements that appear on top of the MyNETLAB page.

NETLAB+ messages support embedded markup tags that can be used to apply special formatting to your text. Many of the tags are similar to their HTML counterparts, except curly braces are used instead of angle brackets.

NETLAB EMBEDDED MARKUP TAGS		
Begin Tag	End Tag	Effect
{p}	<i>none</i>	Start a new paragraph.
{br}	<i>none</i>	Start a new line.
{b}	{/b}	Text between {b} and {/b} is <b>bolded</b> .
{i}	{/i}	Text between {i} and {/i} is <i>italicized</i> .
{r}	{/r}	Text between {r} and {/r} appears in <b>red</b> .
{a http://URL}	{/a}	Text between begin and end tag is hyperlinked. If clicked, the specified URL is opened in a new window.
{reg}	<i>none</i>	Displays the registered trademark symbol &reg.
{tm}	<i>none</i>	Displays the trademark symbol <sup>TM</sup> .

### 2.17.1 Login Banner



The login banner is a static image or Adobe Flash<sup>®</sup> animation that appears on the top of the login page. The administrator may upload a custom image file to appear at the top of the login page to replace the default image.

The picture below shows the default login banner that will reside on systems that have been updated to NETLAB+ version 2011.R2 or later.



Select the change banner button. Follow the instructions on the upload image page. As shown, selecting the **show help tips** option will display information on each field. For best results, the image file should be optimized for smallest file size and the width of your image should be no more than 600 pixels.

### Upload Image

To upload a custom login banner, specify the path of a GIF, JPEG, PNG or Adobe Flash® SWF file on your PC or workstation, or click the browse/choose button.

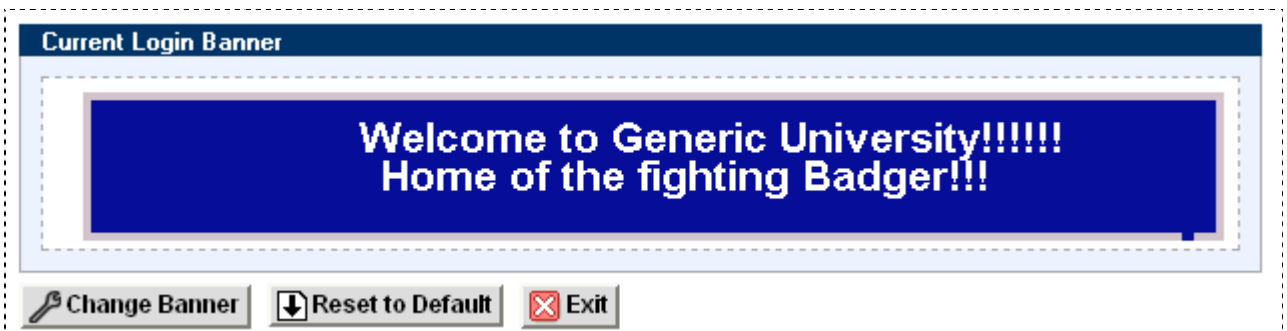
For best results, the width of a login should by optimized for smallest file size and should not exceed 600 pixels in width.

**File Type**  GIF, PNG, or JPEG  
 SWF (Flash)  
The type of file you want to upload.

**Path to File** This field is required  
   
The path to the image file on your PC. Click browse to navigate.

show help tips

Select OK to replace the banner image file, by uploading the file name you have specified. The new login banner will be displayed.



This new banner will be displayed on the login page for all users of your NETLAB+ system. To reset the banner to the default setting, select the **Reset to Default** button, or replace the banner by selecting **Change Banner**.

### 2.17.2 Login Box Colors



The login box appears on the left side of the login page. The colors of the boxes, borders, and labels can be customized in NETLAB<sub>PE</sub>. Color settings may be applied to the Outer Box, Inner Box, Border and Text by selecting the appropriate button.

Color selections may be made by entering an HTML hex code in the format of `#rrggbb` (see example in the picture below) in the box marked **New** or by manipulating the saturation of red, green and blue using the slider controls.



The login box on the left side of the page will display a preview of the selected color modifications.

You may select **Update** to apply your new color selections, or **Cancel** to keep the current selections. Use **Reset** to return to the default selections.

### 2.17.3 Login System Name



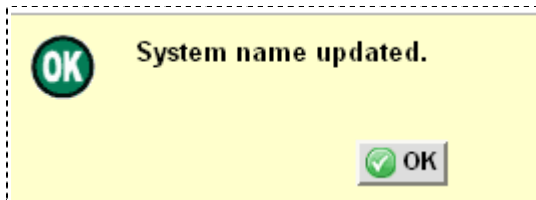
You may set a system name that appears at the top of the login page. This optional field may be left blank. Setting a system name allows users to identify the system easily. This can be particularly helpful to users that have several different NETLAB+ systems available to them.

Simply enter the system name into the field and select **OK**.

**Optional System Name**

Generic University NETLAB System One

A confirmation message will be displayed.



The system name will now be displayed on the login screen for all users.

**Username**

janedoe

**Password**

\*\*\*\*\*

**Generic University NETLAB System One**

This system is available to all **currently enrolled** students.

**Personal firewall software** can interfere with connectivity. TCP ports 80 and 23 must be open between your computer and this web site. If you experience login failures or lab connection problems, please disable your firewall software to determine if this is causing the problem.

### 2.17.4 Login Text



Login text appears in the body of the login page, below the system name and above the required system text. You may apply NETLAB+ embedded markup (see section 2.17) to the text.

In this example, the default login text is being replaced with custom text NETLAB+ embedded markup has been applied to bold two words in the text.

NETLAB+ provides remote access to lab equipment and curriculum. To access, you need a user ID and password, assigned by your instructor or local system administrator.

**Default Login Text**

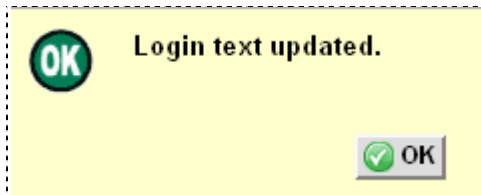
NETLAB+{reg} provides remote access to lab equipment and curriculum. To access, you need a user ID and password, assigned by your instructor or local system administrator.

**Custom Login Text** (leave blank to use default)

This system is available to all {b}currently enrolled{/b}students.

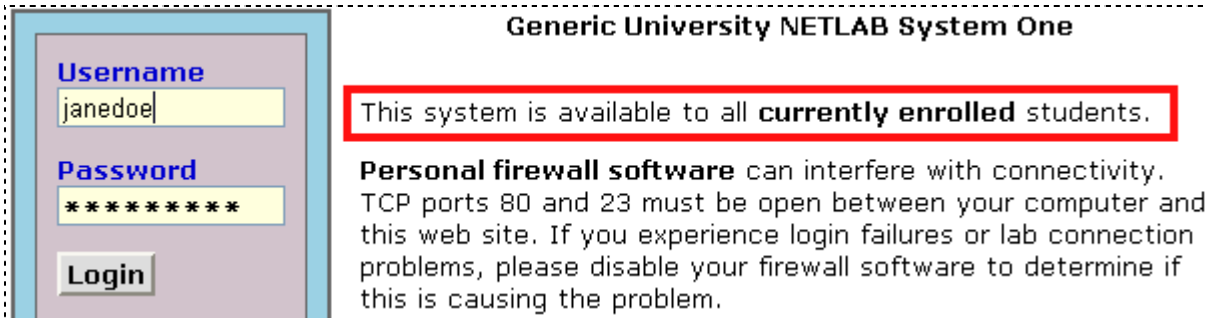
OK  Cancel

The system will be updated to include the custom login text once the **OK** button is selected. A confirmation message will be displayed.





The updated login text will now be displayed on the login screen for all users. Notice also that a bold effect was applied to the words “currently enrolled” using the NETLAB+ embedded markup.

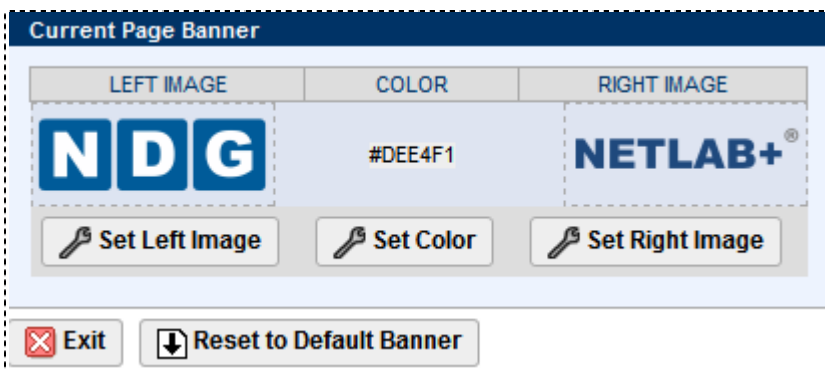


### 2.17.5 System Page Banner

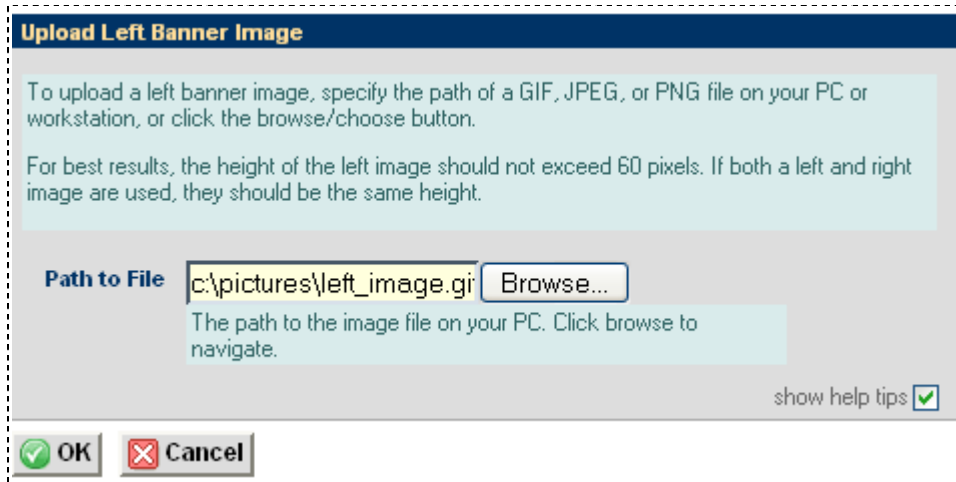


This customization option allows you to adapt your system to identify your organization and branding uniquely using custom images and colors added to the top of each page of your system . You may select a banner background color and upload custom images for the left and right sides of the page.

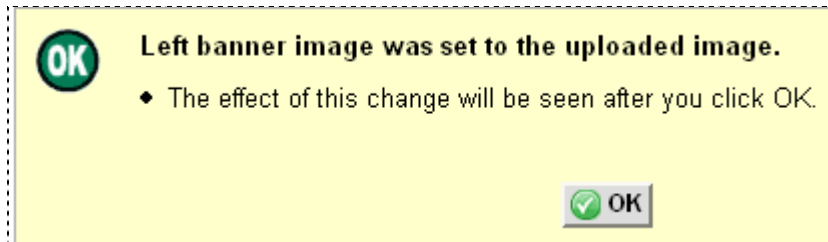
Separate banner images for the left and right side of the page allow the display to adapt easily to varying sizes of users’ web browser windows. Uploading banner images is optional, and you may choose to upload images for the left, right or both sides.



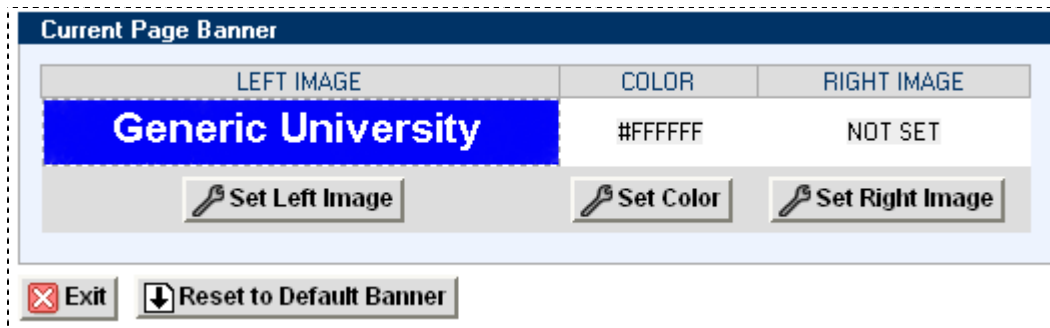
To set an image for the left side of the page, select the **Set Left Image** button. Follow the instructions on the upload image page. As shown, selecting the **show help tips** option will display information on each field. For best results, the left image file should have a height of no more than 60 pixels.



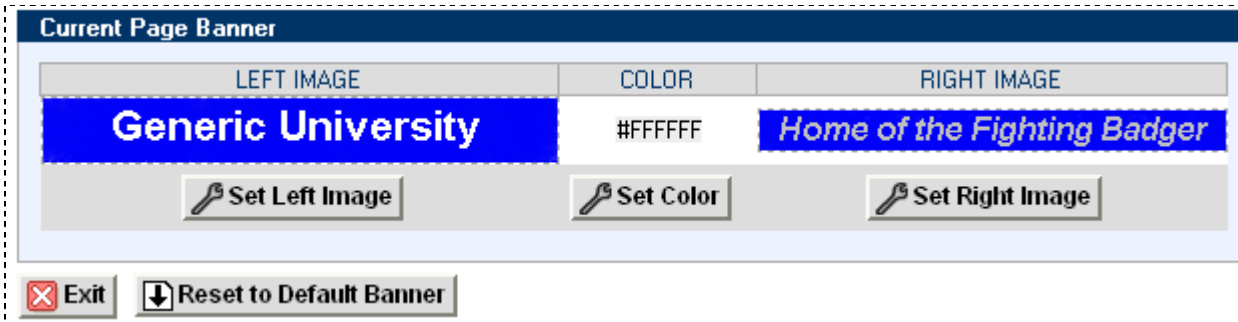
A confirmation message will be displayed.



Select OK to proceed with the upload. The current page banner is now set with the uploaded image.

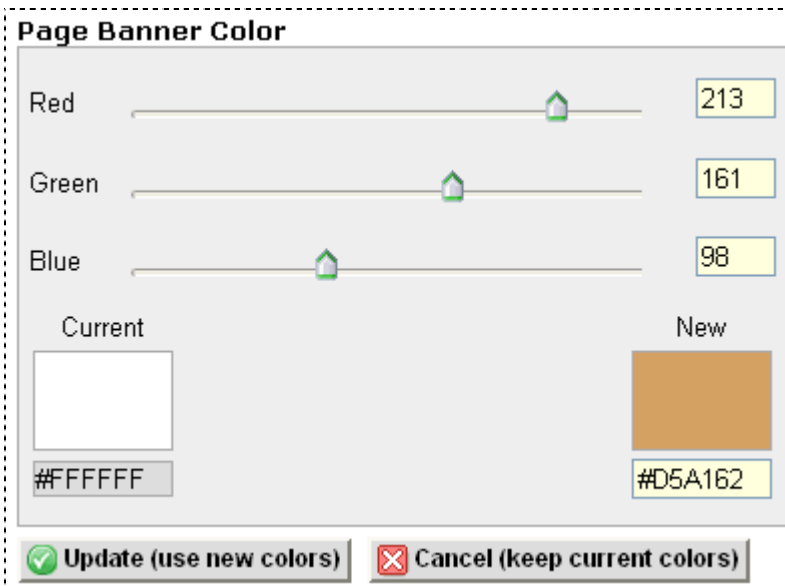


Follow the same procedure to set the right-side image, this time selecting the **Set Right Image** button. After the image file for the right side has been uploaded, the image will be displayed as the current right banner image.

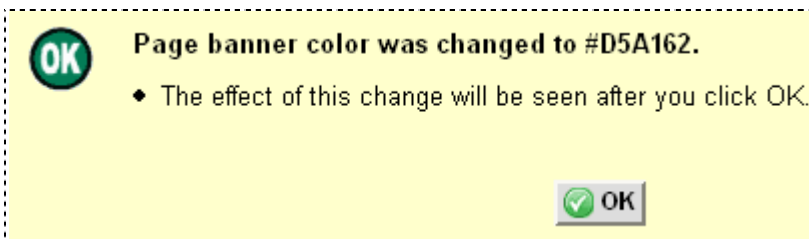


Notice that the right image is smaller than the left; this will help us illustrate our next example, setting a background color. To set a banner background color, select the **Set Color** button.

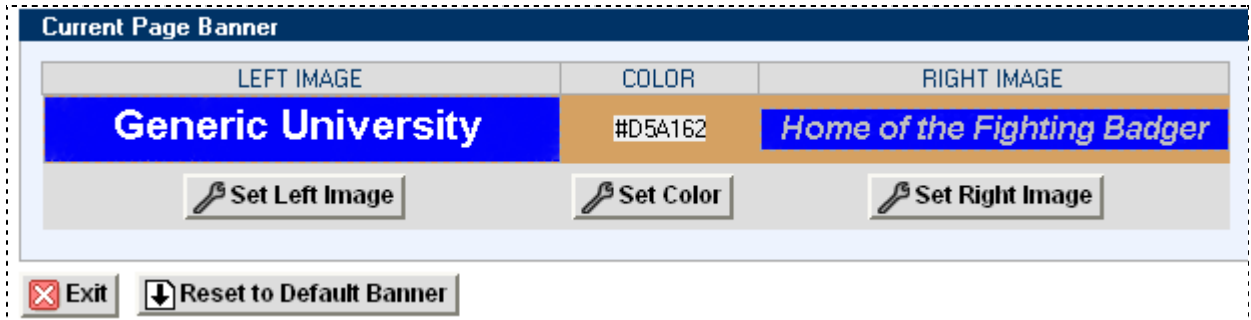
Color selections may be made by entering an HTML hex code in the format of *#rrggbb* (see example in the picture below) in the box marked **New** or by manipulating the saturation of red, green and blue using the slider controls.



Select Update to apply the new banner background color, a confirmation message will be displayed.



After selecting OK, the banner background color will be displayed on the custom page banner. Notice that the banner background color is visible around the smaller right side banner.



### 2.17.6 System MyNETLAB Welcome Message



You may set the system welcome message that appears on top of the MyNETLAB page. Each community may have its own welcome message (see section 2.14) which if specified, overrides the system welcome message. You may apply NETLAB+ embedded markup (see section 2.17) to the text.

To substitute your own welcome message for the default welcome message, enter your message into the text box.

**Default Welcome Message**

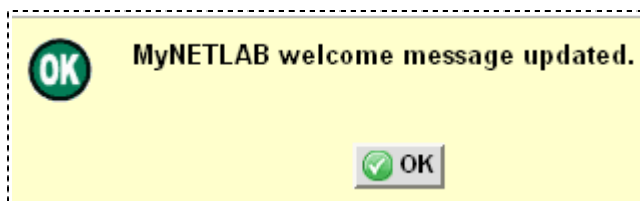
Welcome to NETLAB Professional Edition{reg}.

---

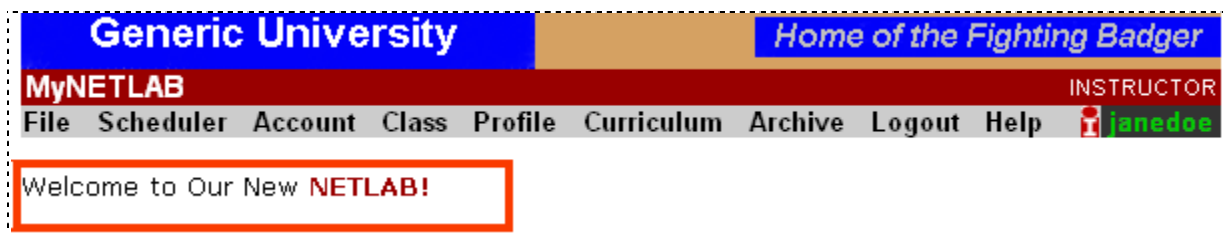
**System MyNETLAB Welcome Message** (leave blank to use default)

Welcome to Our New {r}{b}NETLAB!{/r}{/b}

A confirmation message will be displayed.



The MyNETLAB page for all users will now display the custom welcome message.



### 2.17.7 System MyNETLAB News and Announcements



System news and announcements appear on top of the MyNETLAB page, below the welcome message. Each community may have its own new and announcements, which if specified, override the system-wide setting (see section 2.14). NETLAB+ embedded markup (see section 2.17) may be applied to the text.

To substitute your own news and announcements for the default news and announcements (which is blank) enter the information into the text box.

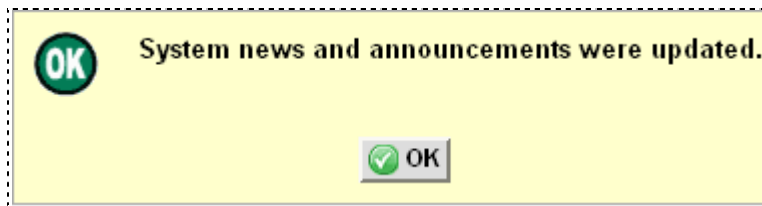
**Default News and Announcements**

---

**System MyNETLAB News and Announcements** (leave blank to use default)

Our system currently has two **Basic Router Pods** and one **Cuatro Router Pod**.

After selecting **OK**, a confirmation message will be displayed.



Select OK to proceed with the update. The updated news and announcements will now be displayed for all users on the MyNETLAB page.

Generic University
*Home of the Fighting Badger*

MyNETLAB
INSTRUCTOR

File Scheduler Account Class Profile Curriculum Archive Logout Help
janedoe

Welcome to Our New **NETLAB!**

**News and Announcements**

Our system currently has two **Basic Router Pods** and one **Cuatro Router Pod**.

## 2.18 Enable/Disable User Logins



This page allows the administrator to suspend temporarily all student and instructor account access. Access should be disabled while performing disruptive administrative tasks such as swapping hardware, recabling or re-configuring lab equipment. The administrator may enter a message that will be displayed to a user when they attempt to login while the system is disabled.

User logins are currently: **enabled**

To disable logins: provide a message that will be displayed to users when they access NETLAB, then click Disable Logins.

REASON FOR DISABLING LOGIN (USER MESSAGE)

Adding additional hardware to the system. Logins will be re-enabled Feb. 10 at 6 a.m.

When users attempt to login to the disabled system, the disable message will be displayed.


### Login failed.

- User logins have been disabled by the administrator: Adding additional hardware. Logins will be re-enabled May 15 at 6 a.m.






When user logins have been disabled, a message is displayed, directing the administrator to the option of re-enabling user logins.

 **User logins are globally disabled.** Click [here](#) to re-enable instructor and student logins.

The administrator may re-enable the system by selecting Enable Logins.

**User Logins**
NETLAB+ 2009.R1 (beta 9)

Admin Logout
administrator



Student and instructor logins are currently: **disabled**

Reason given: **Adding additional hardware. Logins will be re-enabled May 15 at 6 a.m.**

To re-enable logins, click the Enable Logins button.

Enable Logins
Return to Admin Page

## 2.19 Pod Assignment



Pod Assignment is a pod resource management feature, which allows pods to be assigned and visible only to those who have been granted access. The flexibility of pod assignment allows pods to be assigned at the community, class, instructor, student and student team level. Pod assignment is initiated at the system level by the Administrator. Community and class level assignments may be delegated to instructors.

Please refer to the [NETLAB+ Pod Assignment Guide](#) for details on selecting and implementing the appropriate pod resource management features for your system.

## 2.20 Pod Rules



Pod rules can be established to restrict equipment pod access by community and time of day. This is useful in a sharing arrangement where a community (or Academy) is contributing towards cost recovery in return for guaranteed access to one or more pods.

This feature can be used to grant dedicated access to one or more communities at certain times. It can also be used to limit a community's access to specific times.

### Elements of a Pod Rule

- **Pod:** Each rule may target a single pod, or all pods.
- **Community:** Each rule targets a single community. Multiple communities can be targeted by creating an overlapping rule for each.
- **Days of Week:** The days of the week to apply the rule.
- **Start/End Time:** The start and end time to apply the rule, relative to the specified time zone.
- **Time Zone:** The time zone of the specified start and end time. Pod rules are automatically adjusted on the scheduling calendar for users in different time zones. We recommend setting each rule to the same time zone, such as the local time zone of the system or administrator. The time zone may be subject to daylight savings time - please see below for further explanation.

**Scope.** A rule scope can be *limited* or *unlimited*. Limited scope times are not bound by a rule. See below for further explanation:

### Understanding Pod Rules

- Pod rules apply to communities. To limit pod access, users and classes must first be organized into communities. By default, there is only one default community.
- Without a pod rule, a user in any community may reserve the pod at any time of day (unless restricted by a class profile). This is the default behavior.
- When a pod rule is applied, a pod becomes dedicated to users in the specified community during the specified times. In other words, the community specified in the rule is permitted, while all other communities are denied. By creating overlapping rules, you may grant access to several communities.
- Each rule has one start and end time. Multiple pod rules can be created if more than one contiguous block of time is required. For example, suppose the default community should be allowed access to pod 1 every day from 9am to 11am, and also from 7pm to 11pm. Two rules are needed to achieve this, one for each time range.
- The scope of a pod rule can be limited or unlimited.
- A limited scope allows a community to access the pod **ONLY** on the specified days and times. Use this scope if you want the community to have pod access only at designated times.
- An unlimited scope allows a community to access the pod on the specified days and times, **AND** all other times not restricted by a pod rule. Use this scope type if you want to dedicate pod access to a community at certain times, but not restrict them during other times.

The pod rule shown below indicates that XYZ Tech’s access to the Basic Router Pod is limited to the time period 0000-0400 on Sunday, Monday, Tuesday, Friday and Saturday.

	13	POD 1 Basic Router Pod (Version 2)	XYZ Technical College	Sun Mon Tue Fri Sat	(GMT-05:00) Eastern Time (US & Canada)	0000	0400	Limited
--	----	---------------------------------------	-----------------------------	---------------------------------	--	------	------	---------

When users are scheduling lab reservations, time periods that are unavailable to the user’s community according to the currently established pod rules will be indicated **RESERVED** and are not available for selection.

**MyNETLAB Logout** jdoe2006

February 2006						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

Now Showing

**Tuesday**

**February**

**21**

**2006**

Today's Date and Local Time

[February 14, 2006](#)

**11:13 AM**

Eastern Time (US & Canada)

Select a pod and reservation time for class **CCNP Fall Class** by clicking on a

<p><b>POD 1</b></p> <p><b>BASIC ROUTER POD v2</b></p> <p>3 Routers PC Support</p>	
12am	+
	+
1am	+
	+
2am	+
	+
3am	+
	+
4am	RESERVED
	RESERVED
5am	RESERVED
	RESERVED

### 2.20.1 Add a Pod Rule

A list of the current pod rules (if any) will be displayed on the pod rules page.

POD RULES								
GO	RULE #	POD	COMMUNITY	DAYS	TIME ZONE	START	END	SCOPE
	8	POD 2 Basic Switch Pod (Version 2)	default	Mon	(GMT+00:00) Greenwich Mean Time	0000	2400	Limited
	7	POD 1 Basic Router Pod (Version 2)	XYZ Technical College	Thu Fri	(GMT-08:00) Pacific Time (US & Canada)	0800	1200	Unlimited

To add a rule to the pod rules list, select the **Add Rule** button at the bottom of the pod rule list. The pod rule add/edit page will be displayed.

**Pod** POD 1 - Basic Router Pod (Version 2) ▼

**Community** XYZ Technical College ▼

**Days of Week**

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

**Time Zone** (GMT-08:00) Pacific Time (US & Canada) ▼

**Start Time** 0800 ▼ (hhmm)

**End Time** 1200 ▼ (hhmm)

**Scope**

- unlimited (do not restricted to specified time)
- limited (restrict community to specified time)

After completing all the fields on the form (see section 2.20), select **OK** to save the pod rule. In this example, XYZ Tech has dedicated access to the Basic Router Pod during the specified times on Thursday and Friday. No other community will be able to access the pod during that time unless a pod rule is set to specify dedicated access at that time as well. Since the scope is unlimited, XYZ is also able to use the pod during other times without restrictions.


POD RULE: 7	
Pod	POD 1 Basic Router Pod (Version 2)
Community	XYZ Technical College
Days of Week	Thursday Friday
Time Zone	(GMT-08:00) Pacific Time (US & Canada)
Start Time	0800
End Time	1200
Scope	unlimited (do not restrict community to specified time)
<div style="display: flex; justify-content: space-around;"> <span> Done</span> <span> Edit</span> <span> Delete</span> </div>	



Review the pod rule you have created. You may select **Done** to return to the pod rule list.

Select **Delete** if you wish to remove the pod rule.




You may edit a pod rule by selecting the Edit button from the pod rule record page or by selecting the button to the left of the pod rule on the pod rule list.

## 2.20.2 Edit a Pod Rule

To edit a pod rule, select the  button to the left of the pod rule on the pod rule list.

POD RULES								
GO	RULE #	POD	COMMUNITY	DAYS	TIME ZONE	START	END	SCOPE
	8	POD 2 Basic Switch Pod (Version 2)	default	Mon	(GMT+00:00) Greenwich Mean Time	0000	2400	Limited
	7	POD 1 Basic Router Pod (Version 2)	XYZ Technical College	Thu Fri	(GMT-08:00) Pacific Time (US & Canada)	0800	1200	Unlimited

The pod rule record will be displayed.

POD RULE: 7	
Pod	POD 1 Basic Router Pod (Version 2)
Community	XYZ Technical College
Days of Week	Thursday Friday
Time Zone	(GMT-08:00) Pacific Time (US & Canada)
Start Time	0800
End Time	1200
Scope	unlimited (do not restrict community to specified time)
<div style="display: flex; justify-content: space-around; align-items: center;"> <span> Done</span> <span> Edit</span> <span> Delete</span> </div>	

To proceed to the edit screen, select the **Edit** button.

**Pod** POD 1 - Basic Router Pod (Version 2) ▼

**Community** XYZ Technical College ▼

**Days of Week**

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

**Time Zone** (GMT-08:00) Pacific Time (US & Canada) ▼

**Start Time** 0800 ▼ (hhmm)

**End Time** 1200 ▼ (hhmm)


**Scope**



- unlimited (do not restricted to specified time)
- limited (restrict community to specified time)

Edit the information on the page as needed, see section [2.20](#) for details on how the pod rules operate.






### 2.20.3 Delete a Pod Rule

To delete a pod rule, select the  button to the left of the pod rule on the pod rule list.

POD RULES									
GO	RULE #	POD	COMMUNITY	DAYS	TIME ZONE	START	END	SCOPE	
	8	POD 2 Basic Switch Pod (Version 2)	default	Mon	(GMT+00:00) Greenwich Mean Time	0000	2400	Limited	
	7	POD 1 Basic Router Pod (Version 2)	XYZ Technical College	Thu Fri	(GMT-08:00) Pacific Time (US & Canada)	0800	1200	Unlimited	

The pod rule record will be displayed.

POD RULE: 7	
Pod	POD 1 Basic Router Pod (Version 2)
Community	XYZ Technical College
Days of Week	Thursday Friday
Time Zone	(GMT-08:00) Pacific Time (US & Canada)
Start Time	0800
End Time	1200
Scope	unlimited (do not restrict community to specified time)
<div style="display: flex; justify-content: space-around;"> <span> Done</span> <span> Edit</span> <span> Delete</span> </div>	

Select the **Delete** button to delete the pod rule.

## 2.21 Lab Designer

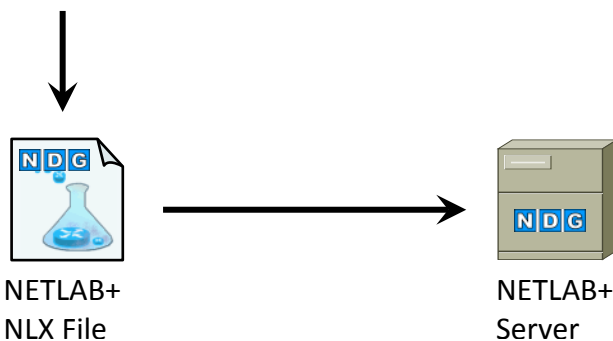
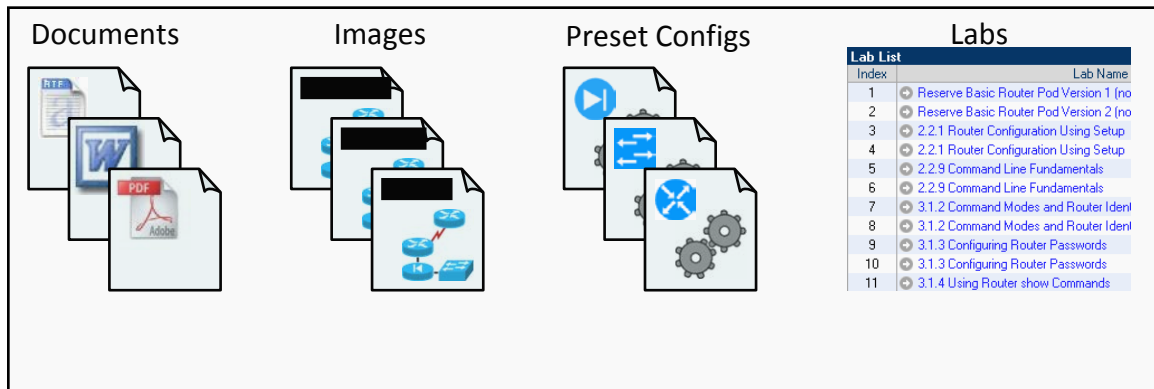


The *Lab Designer* provides a means of creating a series of custom laboratory exercises that may be made available for class use.

A lab design is a set of labs and related reference material that may include documents, images and preset configuration files for each lab exercise. This data is stored in a *Lab Design File*. Lab design files are portable. They can be shared, exported, and installed on other NETLAB+ systems. A set of options and passwords control how the lab design can be used.

Please refer to the *NETLAB+ Lab Design Guide* for more information on creating your own custom lab exercises.

NETLAB+ Lab Design



## 2.23 Managing Global Lab Authorization Options

As of version 4.0.24, global lab designs are authorized per community. Systems with multiple communities must manage access to global lab designs using the Global Lab Authorization Options. The Global Lab Authorization Options influence the default authorization behavior for new communities and new global lab designs. Global Lab Authorization Options may only be set using the Administrator account.

When a NETLAB+ system is purchased by a customer who is a participant in the Cisco Networking Academy and also provides training independently of the Cisco Networking Academy, certain restrictions apply.

These restrictions must be followed to preserve the separation of access to copyrighted Cisco Networking Academy curriculum content and labs.

Adhering to these restrictions is mandatory as indicated in the *Academy Content Rider for Multi-Purpose NETLAB+ Systems*. Purchasers are required to indicate their agreement to the terms of the rider on a form that is provided.

Please refer to [Appendix D](#) for instructions on managing global labs on a multi-purpose NETLAB+ system.

To access the Global Lab Authorization Options, select the Manage Installed Labs option on the main Administrator page. The Manage Installed Labs page may also be reached by selecting Lab Designer and then selecting the Show Installed Lab Designs button.

Global Installed Lab Designs		
NAME	BUILD	GLOBAL ID
➔ AE CCNA 1 English V3.1	3	AECCNA1V310_00C0_F06B_B5E7_
➔ AE CCNA 2 English V3.1	4	AECCNA2V310_00C0_F06B_B5E7_
➔ AE CCNA 3 English V3.1	2	AECCNA3V310_00C0_F06B_B5E7_
➔ AE CCNA 4 English V3.1	2	AECCNA4V310_00C0_F06B_B5E7_
➔ AE CCNA Bridge Exams 3.0	1	AECCNABA30_00C0_F06B_B5E7_4
➔ AE CCNA English V2.1 (retired)	2	AECCNAxV210EN_00C0_F06B_B5E7_
➔ CCNA Exploration ILT	1	CCNAEXPILT_0003_47F1_75D5_46
➔ Microcomputer Fundamentals	2	MFUN_0003_47F1_75D5_44ED_F1
➔ Novell Network Administration	2	ITCN_0003_47F1_75D5_44ED_F93

**Global Lab Authorization Options**

Selecting the appropriate preference for global lab authorization determines how the system will handle authorization of global lab designs when additional communities are created and when new global lab designs are installed.

Global Lab Authorization Preferences		
Option	When a new community is created...	When a global lab design is installed...
<input checked="" type="radio"/> ALL	All existing global lab designs are automatically authorized for use by the new community.	All communities are automatically authorized to use the labs.
<input type="radio"/> DEFAULT	Existing global lab designs must be manually authorized for the new community.	The default community is automatically authorized to use the labs. All other communities must be manually authorized.
<input type="radio"/> MANUAL	Existing global lab designs must be manually authorized for the new community.	All communities must be manually authorized.

- **All**

When a new community is created, all existing global lab designs are automatically authorized for use by the new community. When new global lab designs are added, all communities are automatically authorized for all communities. No intervention from the Administrator is required to make newly installed global lab designs available to all communities. This option is also appropriate for all single community systems.

Do not use the ALL option for a multi-purpose NETLAB+ system. This choice is not appropriate for multi-purpose systems due to the licensing issues discussed above. Please see [Appendix D](#) for instructions.

- **Default**

When a new community is created, existing global lab designs must be manually authorized for the new community. When new global lab designs are added, only the default community is authorized to access the global lab design. For all other communities, the Administrator must authorize access to allow the communities to access the new global lab designs.

- **Manual**

When a new community is created, existing global lab designs must be manually authorized for the new community. For all communities, the Administrator must authorize access to allow the communities to access the new global lab designs.

Select the name of a global lab design to view a list of communities currently authorized to access the lab design.

Global Installed Lab Designs		
NAME	BUILD	GLOBAL ID
<a href="#">AE CCNA 1 English V3.1</a>	3	AECCNA1V310_00C0_F06B_B5E7
<a href="#">AE CCNA 2 English V3.1</a>	4	AECCNA2V310_00C0_F06B_B5E7
<a href="#">AE CCNA 3 English V3.1</a>	2	AECCNA3V310_00C0_F06B_B5E7
<a href="#">AE CCNA 4 English V3.1</a>	2	AECCNA4V310_00C0_F06B_B5E7
<a href="#">AE CCNA Bridge Exams 3.0</a>	1	AECCNABA30_00C0_F06B_B5E7_4
<a href="#">AE CCNA English V2.1 (retired)</a>	2	AECCNAxV210EN_00C0_F06B_B5E7
<a href="#">CCNA Exploration ILT</a>	1	CCNAEXPILT_0003_47F1_75D5_4C
<a href="#">Microcomputer Fundamentals</a>	2	MFUN_0003_47F1_75D5_44ED_F1
<a href="#">Novell Network Administration</a>	2	ITCN_0003_47F1_75D5_44ED_F9S

The details of the installed lab design include a list of the communities currently authorized to use the lab design.

Installed Lab Design	
Name	CCNA Exploration Lab Exercises
Build	1
Author ID	JDOE2008
Global ID	0003_47F1_75D5_47C6_FCA6
Description	ILT Labs
Author	Jane Doe
Organization	NDG
Copyright	
Support URL	
Note / Comment	
Access	Global
Authorized Communities	1: default 2: Iowa Pod 1 3: Iowa Pod 2 4: Iowa Pod 3 5: Bogotá, Colombia 6: Lima, Perú 7: Buenos Aires, Argentina <div style="text-align: right;"><a href="#">Authorize Communities</a></div>
Trustee	administrator <a href="#">Change Trustee</a>
Can Uninstall	Yes, administrator only <a href="#">Uninstall</a>

Select **Authorize Communities** to authorize or revoke authorization to the global lab design for any community by selecting the checkboxes next to the communities listed and selecting either the **Authorize Selected** or the **Revoke Selected** button.

Global Lab Design			
Name	CCNA Exploration Lab Exercises		
Global ID	0003_47F1_75D5_47C6_FCA6		

Community Authorization			
COMMUNITY ID	NAME	AUTHORIZED	SELECT
1	default	YES	<input type="checkbox"/>
2	Iowa Pod 1	YES	<input type="checkbox"/>
3	Iowa Pod 2	YES	<input type="checkbox"/>
4	Iowa Pod 3	YES	<input type="checkbox"/>
5	Bogotá, Colombia	YES	<input type="checkbox"/>
6	Lima, Perú	YES	<input type="checkbox"/>
7	Buenos Aires, Argentina	YES	<input type="checkbox"/>
8	Test	NO	<input checked="" type="checkbox"/>
9	ABC Technical School	NO	<input type="checkbox"/>

No Change
 Authorize Selected
 Revoke Selected

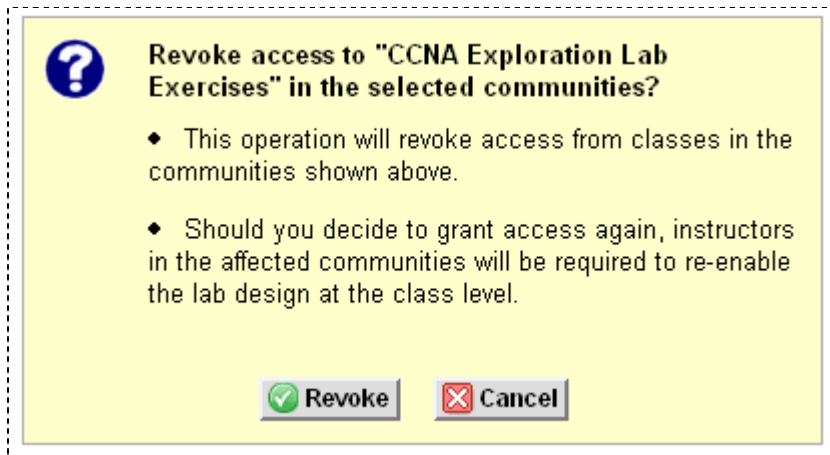
Prior to authorizing a community, you will be prompted to verify that this action is appropriate for your organization.

**Authorize communities?**

- ◆ By authorizing the selected communities, you certify that ALL members of the communities have the legal right to use the lab content provided in this lab design.
- ◆ You also certify that your organization is in compliance with all copyrighted material provisions and addendums to the NETLAB+ license agreement.

Yes, all members of the communities are authorized
 No

Prior to revoking access for a community, you will be prompted to verify that this action is appropriate for your organization.



As noted in the picture above, revoking authorization to the labs will affect all classes in the community. Should you decide to grant access again, it would be necessary for instructors to select the lab in the global labs setting for the class. See the *NETLAB+ Instructor Guide* for information on editing class settings.

If lab reservations exist that reference global labs to which access has subsequently has been revoked, the lab content will still be available during the lab reservation.

## 2.24 Pod Designer



*Pod Designer* is used to create a custom pod layout. A *pod design* is a template used to create one or more actual pods on a NETLAB+ system.

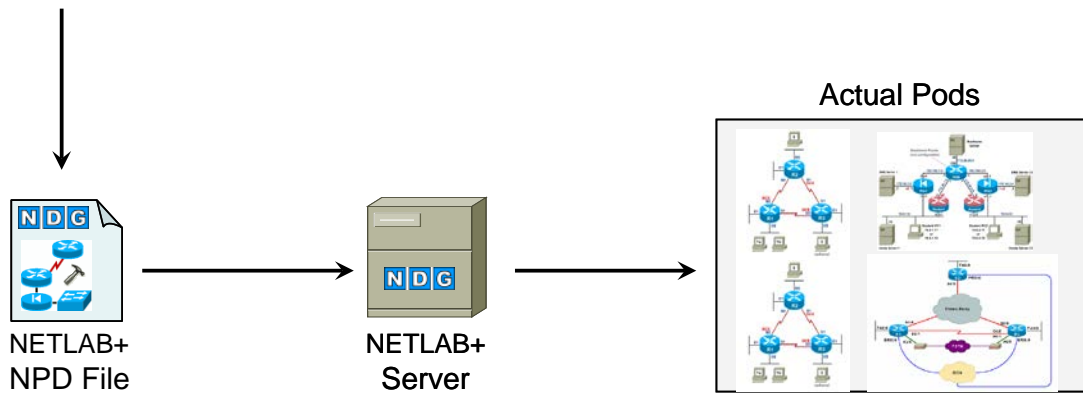
Each NETLAB Professional Edition<sup>®</sup> pod may be a custom pod, and each custom pod may use a unique pod design. The NETLAB<sub>PE</sub> license allows custom pods to be used for commercial training.

NETLAB Academy Edition<sup>®</sup> allows you to stand up **two** custom pods, each of which may use the same pod design, or two unique pod designs.

The Pod Designer tool is used to gather the required information about routers, switches, firewalls, PCs, control device requirements, and images. This data is stored in a *Pod Design File*. Pod design files are portable. They can be shared, exported, and installed on other NETLAB+ systems. A set of options and passwords control how the pod design can be used. Please refer to the *NETLAB+ Pod Design Guide* for more details.

### NETLAB+ Pod Design

General Settings	Images	Control Settings	Lab Devices	Remote PCs
<p>Name: Stanly Client Server Pod (Win)</p> <p>Description: Stanly Custom PE Pod 1</p> <p>Author:</p> <p>Organization: Stanly Community College</p> <p>Copyright:</p> <p>Support URL: http://</p> <p>Role / Comment:</p> <p>Cloning: <input type="checkbox"/> This pod design may be cloned</p>				





## 2.25 Equipment Pods



Equipment pods contain the lab devices that are accessed by others. The equipment pods depicted in this guide may not be available at your site.

NETLAB+ includes a variety of supported content options with available topologies. To view information on the latest available, select one of the supported content options, then, select Topologies in the menu on the right to see the topologies specific to the content:

<http://www.netdevgroup.com/content/>.

If you are using your NETLAB+ system to teach Cisco Networking Academy courses, you may refer to the guide written specifically for the pod-type you plan to install. Pod-specific guides include:

- [NETLAB+ Multi-Purpose Academy Pod \(MAP\)](#)
- [NETLAB+ Network Fundamentals Pod \(NFP\)](#)
- [NETLAB+ Basic Router Pod Version 2 \(BRPv2\)](#)
- [NETLAB+ Basic Router Pod Version 1 \(BRPv1\)](#)
- [NETLAB+ Cuatro Router Pod \(CRP\)](#)
- [NETLAB+ Cuatro Switch Pod \(CSP\)](#)
- [NETLAB+ LAN Switching Pod \(LSP\)](#)
- [NETLAB+ Network Security Pod \(NSP\)](#)
- [NETLAB+ Basic Switch Pod Version 2 \(BSPv2\)](#)
- [NETLAB+ Basic Switch Pod Version 1 \(BSPv1\)](#)
- [NETLAB+ Advanced Router Pod \(ARP\)](#)
- [NETLAB+ Advanced Switch Pod \(ASP\)](#)
- [NETLAB+ Security Router Pod \(SRP\)](#)
- [NETLAB+ Security PIX Pod \(SPP\)](#)

EXISTING PODS (click on the GO buttons to manage a pod)					
GO	ID	POD TYPE	POD NAME	STATUS	ACTIVITY
	<a href="#">1</a>	<b>BASIC ROUTER POD</b> 3 Routers	POD 1	OFFLINE	IDLE
	<a href="#">2</a>	<b>BASIC ROUTER POD</b> 3 Routers	POD 2	OFFLINE	IDLE
	<a href="#">3</a>	<b>BASIC SWITCH POD</b> 1 Router 2 Switches	POD 3	OFFLINE	IDLE
	<a href="#">4</a>	<b>ADVANCED ROUTER POD</b> Frame / ISDN / Dial	POD 4	OFFLINE	IDLE
	<a href="#">5</a>	<b>SECURITY PIX POD</b> 2 PIX Firewalls PCs & Servers	Apollo	OFFLINE	IDLE
	<a href="#">6</a>	<b>SECURITY ROUTER POD</b> 2 Firewall Routers PCs & Servers	Starbuck	OFFLINE	IDLE


Add a Pod
 Take All OFFLINE
 Bring All ONLINE
 Back

New pods may be added to the system by following the steps detailed in the next section.

### 2.25.1 Adding New Pods

The instructions for this section should be followed for each pod the administrator wishes to add to the NETLAB+ system.

Please complete the tasks in the sub-sections below in order. Do not physically connect your pod to a control switch until the pod has been added to your NETLAB+ system by following the instructions below. This is necessary in order for the control switch to be programmed with the proper VLANs.

Select  Take All OFFLINE if any of the pods are online.

Select  Add a Pod.



The network and hardware settings depicted here are intended to provide an example only. Your system requirements may differ according to your specific hardware selections.

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

Before you begin:

- Review any relevant pod-specific documentation.
- Setup the [control devices](#) that will be used with this pod.
- Upload the [software images](#) that will be used with lab routers and lab firewalls in this pod.

---

 Next
 Cancel

You may select the pod type to add to your NETLAB+ system from the list of pod types provided. The pod types available on your system will vary, depending on your school's participation in various programs with NETLAB+ supported content.

The pod types shown in this picture are just a small sample of NETLAB+ pod types (availability on your system will vary).

POD TYPES (select one)			
SELECT	POD TYPE	DESCRIPTION	NOTES
<input type="radio"/>	<b>CUATRO ROUTER POD</b> 4 routers, PCs	AE Cuatro Router Pod 4 routers, PCs	Applicable to both CCNA and CCNP curricula.
<input type="radio"/>	<b>CUATRO SWITCH POD</b> 4 switches 4 PCs	AE Cuatro Switch Pod 4 Switches, PCs	Supports CCNP v5.0
<input type="radio"/>	<b>MULTI-PURPOSE ACADEMY POD WITH ASA</b>	AE Multi-purpose Academy Pod with ASA 3 Routers, 3 Switches, 3 PCs, 1 ASA	
<input type="radio"/>	<b>MULTI-PURPOSE ACADEMY POD</b> 3 Routers, 3 Switches	AE Multi-purpose Academy Pod 3 Routers, 3 Switches, 3 PCs	Supports over 200 Cisco Networking Academy labs
<input type="radio"/>	<b>vmware ICM POD</b>	VMware ICM Pod (2E1V) VMware IT Academy ICM Pod with 2 ESXi Servers and 1 vCenter Server	This pod supports automatic setup of VMs, vSwitch, and portgroups. NETLAB+ VM inventory and vCenter is required.
<input type="radio"/>	<b>1 CLIENT</b> <b>1 SERVER</b>	NDG 1 Client / 1 Server Pod 1 Client, 1 Server	Automatic networking enabled. Requires PCs from VM inventory or ABSENT.
<input type="radio"/>	<b>1 CLIENT</b> <b>2 SERVER</b>	NDG 1 Client / 2 Server Pod 1 Client, 2 Servers	Automatic networking enabled. Requires PCs from VM inventory or ABSENT.
<input type="radio"/>	<b>1 CLIENT</b> <b>3 SERVER</b>	NDG 1 Client / 3 Server Pod 1 Client, 3 Servers	Automatic networking enabled. Requires PCs from VM inventory or ABSENT.
<input type="radio"/>	<b>CNSS</b> <b>4011</b>	CNSS 4011 Cybersecurity Pod Virtual machine pod for CAE Information Assurance CNSS 4011	Pod supports automatic networking.

### 2.25.1.1 Select Control Switch

Next, NETLAB+ will present a list of the control switches on your system. Only selections that meet your port requirements can be made.

CONTROL SWITCHES				
SELECT	ID	SWITCH TYPE	PORTS THAT ARE FREE	COMMENT
INELIGIBLE	1	Catalyst 2950-24	PORT 16-17	NOT ENOUGH CONSECUTIVE PORTS
<input checked="" type="radio"/>	3	Catalyst 2950-24	PORT 4-16	OK TO USE

Next, select the ports you want to use.

A AE Multi-purpose Academy Pod requires 8 consecutive control switch ports.

Which free 8-port range would you like to use?

Ports 4 to 11

Ports 4 to 11

Ports 5 to 12

Ports 6 to 13

Ports 7 to 14

Ports 8 to 15

Ports 9 to 16

### 2.25.1.2 Select Access Server(s) and Lines

This section is only applicable if there are lab devices in your topology that require asynchronous console access. Such connections are provided by access servers.

Line Number is now used as a unique identifier for access server ports. Beginning with NETLAB+ version 2010.R3, NETLAB+ supports an expanded selection of access servers. Since several models include multiple modules, port number is no longer a unique identifier. Please refer to section [2.26.2](#) for details.

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

NETLAB+ allows you to choose consecutive lines on one access server, or you can choose “Let me pick” to select an access server and line for each router.

ACCESS SERVERS		
ID	TYPE	LINES THAT ARE FREE
1	Cisco 2511-RJ	4-5, 9-10, 14-16
2	Cisco 2811 + NM-16A + 3 HWIC-16A (Lines 18-81)	18-49, 53-81
3	Cisco 2811 + NM-16A + 2 HWIC-16A (Lines 34-81)	34-81

A AE Multi-purpose Academy Pod requires **6** access server lines.

Use 6 consecutive lines on access server 1 starting at Line 1  
 Let me pick the access server and lines for each device

➔ Next
⬅ Back
✖ Cancel

Line 1  
 Line 2  
 Line 3  
 Line 4  
 Line 5  
 Line 6  
 Line 7  
 Line 8  
 Line 9  
 Line 10  
 Line 11  
 Line 12  
 Line 13  
 Line 14  
 Line 15  
 Line 16

“Let me pick”, allows you to make granular selections. For access servers using octal cables, both the line number and the cable label are displayed.

**SELECT AN ACCESS SERVER AND LINE FOR EACH LAB DEVICE**

LAB DEVICE	ACCESS SERVER (ID)	LINE
R1	2	Line 18   HWIC-16A 0/1/0   CAB-HD8-ASYNC P0
R2	1	Line 18   HWIC-16A 0/1/0   CAB-HD8-ASYNC P0
R3	1	Line 19   HWIC-16A 0/1/1   CAB-HD8-ASYNC P1
S1	1	Line 20   HWIC-16A 0/1/2   CAB-HD8-ASYNC P2
S2	1	Line 21   HWIC-16A 0/1/3   CAB-HD8-ASYNC P3
S3	1	Line 22   HWIC-16A 0/1/4   CAB-HD8-ASYNC P4

Line 23 | HWIC-16A 0/1/5 | CAB-HD8-ASYNC P5  
 Line 24 | HWIC-16A 0/1/6 | CAB-HD8-ASYNC P6  
 Line 25 | HWIC-16A 0/1/7 | CAB-HD8-ASYNC P7  
 Line 26 | HWIC-16A 0/1/8 | CAB-HD8-ASYNC P0  
 Line 27 | HWIC-16A 0/1/9 | CAB-HD8-ASYNC P1  
 Line 28 | HWIC-16A 0/1/10 | CAB-HD8-ASYNC P2  
 Line 29 | HWIC-16A 0/1/11 | CAB-HD8-ASYNC P3  
 Line 30 | HWIC-16A 0/1/12 | CAB-HD8-ASYNC P4  
 Line 31 | HWIC-16A 0/1/13 | CAB-HD8-ASYNC P5  
 Line 32 | HWIC-16A 0/1/14 | CAB-HD8-ASYNC P6  
 Line 33 | HWIC-16A 0/1/15 | CAB-HD8-ASYNC P7  
 Line 34 | HWIC-16A 0/2/0 | CAB-HD8-ASYNC P0  
 Line 35 | HWIC-16A 0/2/1 | CAB-HD8-ASYNC P1  
 Line 36 | HWIC-16A 0/2/2 | CAB-HD8-ASYNC P2  
 Line 37 | HWIC-16A 0/2/3 | CAB-HD8-ASYNC P3

Next Back Done

Select a line number for each device.

**SELECT AN ACCESS SERVER AND LINE FOR EACH LAB DEVICE**

LAB DEVICE	ACCESS SERVER (ID)	LINE
R1	2	Line 18   HWIC-16A 0/1/0   CAB-HD8-ASYNC P0
R2	2	Line 19   HWIC-16A 0/1/1   CAB-HD8-ASYNC P1
R3	2	Line 20   HWIC-16A 0/1/2   CAB-HD8-ASYNC P2
S1	2	Line 21   HWIC-16A 0/1/3   CAB-HD8-ASYNC P3
S2	2	Line 22   HWIC-16A 0/1/4   CAB-HD8-ASYNC P4
S3	2	Line 23   HWIC-16A 0/1/5   CAB-HD8-ASYNC P5

Next Back Cancel

### 2.25.1.3 Select Switched Outlet Devices

This section is only applicable if there are lab devices in your topology that require managed electrical power. Such connections are provided by switched outlet devices

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.

SWITCHED OUTLET DEVICES (SOD)		
ID	TYPE	OUTLETS THAT ARE FREE
1	APC 7900 Switched Rack PDU	4-5
2	APC 9211 MasterSwitch	2, 5-8
3	APC 7900 Switched Rack PDU	4-8

A AE Multi-purpose Academy Pod requires **6** switched outlets.

Use 6 consecutive outlets on switched outlet device  starting at outlet 
  
 Let me pick select outlets for each device manually

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

SELECT A SWITCHED OUTLET FOR EACH LAB DEVICE		
LAB DEVICE	SOD	OUTLET
R1	<input type="text" value="1"/>	<input type="text" value="4"/>
R2	<input type="text" value="1"/>	<input type="text" value="5"/>
R3	<input type="text" value="2"/>	<input type="text" value="5"/>
S1	<input type="text" value="2"/>	<input type="text" value="6"/>
S2	<input type="text" value="2"/>	<input type="text" value="7"/>
S3	<input type="text" value="2"/>	<input type="text" value="8"/>



### 2.25.1.4 Select Device Types

This section is only applicable if there are network devices in your lab topology. Please specify a device model for each device displayed. Statically configured lab devices do not appear in the selection process.

Your selections are used to assign the appropriate NETLAB+ device driver. Improper selections may cause errors.

NETLAB+ may offer selections that meet the port requirements, but do not support your curriculum.

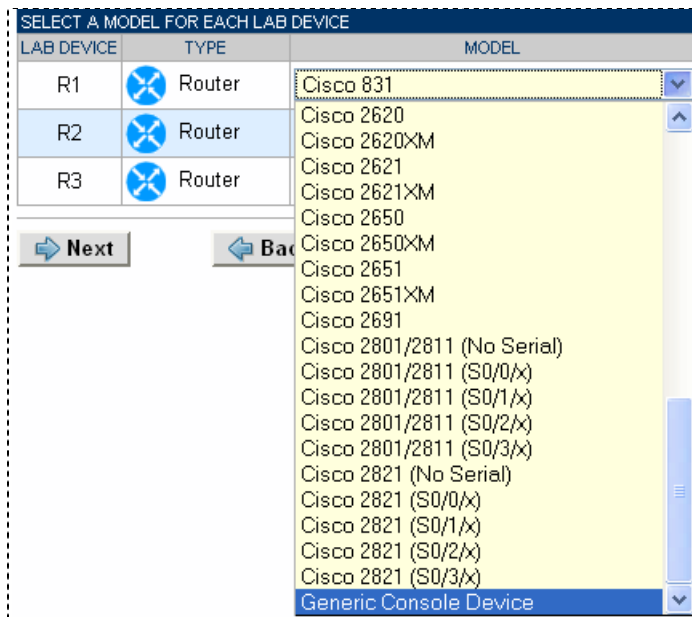
SELECT A MODEL FOR EACH LAB DEVICE		
LAB DEVICE	TYPE	MODEL
R1	Router	Cisco 1841 (S0/0/x) ▼
R2	Router	Cisco 1841 (S0/0/x) ▼
R3	Router	Cisco 1841 (S0/0/x) ▼
S1	Switch	Cisco 3560 ▼
S2	Switch	Cisco 2960 ▼
S3	Switch	Cisco 3560 ▼

If the device model you wish to install is not available for selection, proceed to the next section for guidance on installing generic console devices.

### 2.25.1.5 Generic Console Devices

This section is only applicable if there are network devices in your lab topology. NETLAB+ supports a wide range of devices. Selecting the appropriate device type is important to ensure that the full range of NETLAB+ features is available to users. Automation drivers have been created for all supported lab devices that enable the use of NETLAB+'s automation features.

If however, you wish to install a device in your pod that is not included among the supported devices (for example, an older model that has reached EOL and is no longer supported by the vendor) you may do so by selecting **Generic Console Device** as the device model.



Generic Console Devices have the following limited capabilities:

- Console access
- Ability to share connections to CLI devices.
- Powered off at the end of a lab reservation (if connected to a switched outlet device).
- Powered on at the beginning of a lab reservation (if connected to a switched outlet device.).
- Automation options available for user selection during a lab reservation include power on, power off and power recycle (if connected to a switched outlet device).

There are several considerations to keep in mind when adding a generic console device to a pod:

- Automation features such as such as scrubbing the device and password recovery are not available for use on generic console devices.
- Since password recovery is not supported on the device, you must use discretion in allowing user access to the pod. It is recommended allowing use by only a trusted group of users who will not perform password changes or other actions that may render the pod unavailable for subsequent reservations without intervention.
- Use of the NETLAB+ CLI Terminal with a generic console device will function only with devices using a command line interface. The applet does not provide terminal emulation such as VT100. You do have the option of using an alternate terminal application of your choice, if your selection is compatible with the device.

### 2.25.1.6 Select Software Images and Recovery Options

This section is only applicable if there are network devices in your lab topology. NETLAB+ scrubs the routers at the end of lab reservations or upon request. During a scrub, NETLAB+ can recover an IOS image if it has been erased from flash.

SELECT AN IMAGE AND RECOVERY OPTIONS FOR EACH LAB DEVICE			
DEVICE	TYPE	SOFTWARE IMAGE	RECOVER USING SPECIFIED IMAGE
R1	Cisco 1841 (S0/0/x)	c1841-advipservicesk9-mz.124-10a.bin	if specified image not in flash
R2	Cisco 1841 (S0/0/x)	c1841-advipservicesk9-mz.124-10a.bin	if specified image not in flash if no image in flash (erased) never (device may become unusable)
R3	Cisco 1841 (S0/0/x)	c1841-advipservicesk9-mz.124-10a.bin	if specified image not in flash
S1	Cisco 3560	N/A	N/A
S2	Cisco 2960	N/A	N/A
S3	Cisco 3560	N/A	N/A

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+ will take no action if the flash does not contain a bootable image. In this case, NETLAB+ 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.

There is an additional image management setting for routers to support Pagent IOS images. A license key must be entered in order for NETLAB+ automation to function with routers using Pagent IOS. This setting does not appear in the New Pod Wizard and must be made separately from a new pod installation. Please see section [2.25.2.2](#) for details.

For information on upgrading a router to use Pagent IOS, please see [Appendix B](#).

If you select a Cisco ASA security device, additional management options become available in the device manager. These additional settings do not appear in the New Pod Wizard and must be made separately from a new pod install. Please see section [2.25.2.3](#) for details..

### 2.25.1.7 Select a Pod ID

Each pod is assigned a unique numeric ID.

Please select a Pod ID.

Pod ID:

### 2.25.1.8 Select a Pod Name

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

Pod Name:

### 2.25.1.9 Verify Your Settings

At this point NETLAB+ has added the pod to its database. However, the pod has not been brought online yet. You will need to cable up the pod and run a pod test. Next, If your topology includes PCs, the PCs must be configured, followed by a second pod test. These tasks are discussed in the next sections.

**New Pod Wizard**
NETLAB+

The New Pod Wizard has added the pod.
 

- ◆ New pods are not brought online automatically.
- ◆ You should cable the pod and run a pod test before bringing the pod online.
- ◆ Additional management options can be set for Cisco ASA security appliances.

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+ will display the status of the pod and the high-level settings for each device, PC, and control switch. Notice the PCs currently have a type of “ABSENT”. The PCs will be implemented in section [2.25.1.12](#).

POD 4 - STATUS				
POD ID	POD NAME	STATUS	ACTIVITY	POD TYPE
4	Galactica	OFFLINE	IDLE	 MULTI-PURPOSE ACADEMY POD 3 Routers, 3 Switches

POD 4 - ROUTERS, SWITCHES, AND FIREWALLS (click on the GO buttons to reconfigure devices)					
GO	NAME	TYPE	ACCESS LINES	SWITCHED OUTLETS	SOFTWARE IMAGE
	R1	Cisco 831	AS 2 LINE 3 (tty 0/0/0)	SOD 2 OUTLET 2	n/a
	R2	Cisco 831	AS 2 LINE 4 (tty 0/0/1)	SOD 2 OUTLET 3	n/a
	R3	Cisco 831	AS 2 LINE 5 (tty 0/0/2)	SOD 2 OUTLET 4	n/a
	S1	Cisco 1912EN	AS 2 LINE 6 (tty 0/0/3)	SOD 2 OUTLET 5	n/a
	S2	Cisco 1912EN	AS 2 LINE 7 (tty 0/0/4)	SOD 2 OUTLET 6	n/a
	S3	Cisco 1912EN	AS 2 LINE 8 (tty 0/0/5)	SOD 2 OUTLET 7	n/a

POD 4 - PCs AND SERVERS (click the GO buttons to reconfigure)					
GO	NAME	PC ID	STATUS	TYPE / VM	OPERATING SYSTEM
	PC A	4197	ONLINE	ABSENT	
	PC B	4198	ONLINE	ABSENT	
	PC C	4199	ONLINE	ABSENT	

POD 4 - CONTROL SWITCH				
SWITCH ID	POD PORT RANGE	BASE VLAN	VLAN POOL	
2	9-16	130	130-137	

### 2.25.1.10 Cable the Pod

NETLAB+ has a 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.

**Pod 4 -- Management Options**

**Online** Bring this pod ONLINE and make it available for reservations.

**Test** Tell me if this pod is working properly.

**Cable** Show me how to cable this pod.

**Delete** Remove this pod from NETLAB.




CABLE CHART FOR POD 4			
<b>R1 (Cisco 1841 (S0/1/x))</b>			
CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet0/0	CAT-5 Straight Through	C/S 3	Port 1
FastEthernet 0/1	CAT-5 Straight Through	SW1	FastEthernet 0/5
Console	Console Cable	A/S 2	Port 0
Power	Power Cord	SOD 3 APC	Outlet 1
Serial0 DCE	Back-to-back serial cables	R2	Serial0 DTE
Serial1 DTE	Back-to-back serial cables	R3	Serial0 DCE
<b>R2 (Cisco 1841 (S0/1/x))</b>			
CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet0/0	CAT-5 Straight Through	C/S 3	Port 2
FastEthernet0/1	CAT-5 Straight Through	C/S 3	Port 3
Console	Console Cable	A/S 2	Port 1
Power	Power Cord	SOD 3 APC	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.



<b>R3 (Cisco 1841 (S0/1/x))</b>			
CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet0/0	CAT-5 Straight Through	C/S 3	Port 4
FastEthernet 0/1	CAT-5 Straight Through	SW3	FastEthernet 0/5
Console	Console Cable	A/S 2	Port 2
Power	Power Cord	SOD 3	Outlet 3
Serial0 DCE	Back-to-back serial cables	R1	Serial1 DTE
Serial1 DTE	Back-to-back serial cables	R2	Serial1 DCE
<b>S1 (Cisco 2960)</b>			
CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet 0/1	CAT-5 Crossover	SW2	FastEthernet 0/1
FastEthernet 0/2	CAT-5 Crossover	SW2	FastEthernet 0/2
FastEthernet 0/3	CAT-5 Crossover	SW3	FastEthernet 0/3
FastEthernet 0/4	CAT-5 Crossover	SW3	FastEthernet 0/4
FastEthernet 0/5	CAT-5 Straight Through	R1	FastEthernet 0/1
FastEthernet 0/6	CAT-5 Crossover	C/S 3	Port 5
Console	Console Cable	A/S 2	Port 3
Power	Power Cord	SOD 3	Outlet 4
<b>S2 (Cisco 2960)</b>			
CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet 0/1	CAT-5 Crossover	SW1	FastEthernet 0/1
FastEthernet 0/2	CAT-5 Crossover	SW1	FastEthernet 0/2
FastEthernet 0/3	CAT-5 Crossover	SW3	FastEthernet 0/1
FastEthernet 0/4	CAT-5 Crossover	SW3	FastEthernet 0/2
FastEthernet 0/11	CAT-5 Crossover	C/S 3	Port 6
FastEthernet 0/18	CAT-5 Crossover	C/S 3	Port 7
Console	Console Cable	A/S 2	Port 4
Power	Power Cord	SOD 3	Outlet 5

The cable chart is continued on the next page.

S3 (Cisco 2960)			
CONNECT FROM	USING CABLE	CONNECT TO	
FastEthernet 0/1	CAT-5 Crossover	SW2	FastEthernet 0/3
FastEthernet 0/2	CAT-5 Crossover	SW2	FastEthernet 0/4
FastEthernet 0/3	CAT-5 Crossover	SW1	FastEthernet 0/3
FastEthernet 0/4	CAT-5 Crossover	SW1	FastEthernet 0/4
FastEthernet 0/5	CAT-5 Straight Through	R3	FastEthernet 0/1
FastEthernet 0/18	CAT-5 Crossover	 C/S 3	Port 8
Console	Console Cable	 A/S 2	Port 5
Power	Power Cord	 SOD 3	Outlet 6

Virtual machine information will not appear on the cable chart.

The Ethernet interface names shown 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.




### 2.25.1.11 Testing the Pod

We recommend that you run a pod test at this point in the installation process in order to verify that your pod is working. The pod test will detect common configuration and cabling problems.

As of NETLAB+ version 2014.R2.Beta.1, the pod test has been redesigned and upgraded to provide a robust interface with comprehensive diagnostic feedback including test history, which allows you to review the results of previous tests run on the pod, please refer to section [2.25.1.14](#) for details.

If the pod contains PCs, additional implementation steps will be necessary as discussed in the next sections. Running a pod test prior to configuring the PCs is recommended so that any issues with lab devices can be resolved before proceeding. After the PCs are configured, you should run a second pod test, as noted in section [2.25.1.14](#).

**Pod 5 -- Management Options**

 <b>Online</b>	Bring this pod ONLINE and make it available for reservations.
 <b>Test</b>	Tell me if this pod is working properly.
 <b>Cable</b>	Show me how to cable this pod.

Some tests may take a long time. During the BOOT IOS test, NETLAB+ may have to load the specified IOS image if it is not in flash. IOS images can be very large and can take up to 30 minutes to program into flash memory.

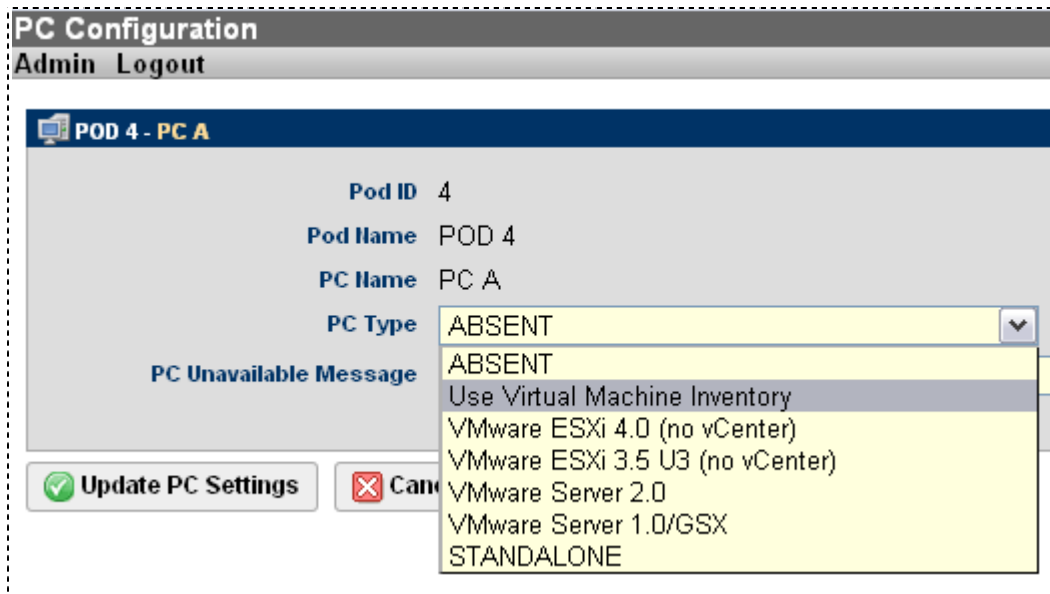
See section [2.25.1.14](#) for additional information on running a pod test, including an example.

If you do not have any PCs in your topology, you may proceed to section [2.25.2](#) after completing the pod test.

### 2.25.1.12 Select PC Type

This section is only applicable if there are PCs in your lab topology.

At the time that the pod was created, the PC Type for each PC in the pod was given the default setting of ABSENT (NETLAB+ version 2011.R1 and later). The appropriate PC options must be set for each remote PC, depending on your selection of virtualization options. The PC configuration screen is displayed by selecting the PC on the pod status page.



#### PC/Virtual Type

1. **ABSENT** When new pods are created, the PC Type for each PC is initially set to ABSENT. This indicates the PC is not implemented in the pod. A “PC Unavailable” message can be set to display so that users will get a popup message if they try to connect to it, informing them that the PC is not implemented.
- **Use Virtual Machine Inventory** (available in NETLAB+ version 2011.R1 and later): Use a virtual machine defined in the NETLAB+ Virtual Machine Inventory (VMI). The VMI offers the most advanced VM configuration and automation capabilities available in NETLAB+. VMware ESX version 4.01/4/1 with vCenter is required, as discussed in [NETLAB+ Remote PC Guide for VMware Implementation Using ESXi versions 4.01 and 4.1 with vCenter](#). The Remote PC Guide includes a section, *Assigning Virtual Machines to Pods*, which provides step-by-step guidance in the process of assigning a virtual machine in the VMI to a pod.

- Basic virtualization options using VMware products. These options offer basic 'no frills' VM automation.
  - [VMWARE ESXi 4.0 \(no vCenter\)](#) provides direct access to a VMware virtual machine and enables automation through the VMware API. Select this option if you are using ESXi 4.0.
  - [VMWARE ESXi 3.5 U3 \(no vCenter\)](#) provides direct access to a VMware virtual machine and enables automation through the VMware API. . Select this option if you are using ESXi 3.5.
  - [VMWARE Server 2.0](#) provides direct access to a VMware virtual machine and enables automation through the VMware API. This is the correct setting if you are using VMware Server version 2.x.
  - [VMWARE Server 1.0/GSX](#) provides direct access to a VMware virtual machine and enables automation through the VMware API. This is the correct setting for VMware virtual machines if you are using VMware Server version 1.x or GSX.

You will be prompted to enter additional information for VMware specific settings. These settings are discussed in the next section.

2. [STANDALONE](#) provides indirect access to a real PC or server resource. This legacy option is no longer supported.

### 2.25.1.13 VMware Settings

This section is only applicable if there are PCs in your lab topology.

If you are using any of the basic virtualization options (see previous section), you will be prompted to enter VMware-specific settings. Please refer to the *NETLAB+ Remote PC Guide* specific to your VMware server virtualization product selection for version-specific details regarding these settings

Here, we show an example where VMware ESXi 3.5 U3 (no vCenter) is the virtualization option selected. The settings are described below.

<b>Pod ID</b>	2
<b>Pod Name</b>	MAP
<b>PC Name</b>	PC A
<b>PC Type</b>	VMware ESXi 3.5 U3 (no vCenter) ▼
<b>VMware Host IP Address</b>	10.0.0.26 (required)
<b>VMware Host Username</b>	NETLAB (required)
<b>VMware Host Password</b>	NETLAB (required)
<b>VMware Guest Configuration File</b>	C:\Virtual Machines\NETLAB_VM_01\Windows XP Professional.vmx
<b>Guest Operating System</b>	Windows XP ▼
<b>Options</b>	<input checked="" type="checkbox"/> enable remote access to keyboard, video, and mouse <input type="checkbox"/> revert to snapshot during scrub operation
<b>Admin Status</b>	ONLINE ▼
<b>VMware Advanced Settings</b>	RemoteDisplay.vnc.enabled = "true" RemoteDisplay.vnc.port = "6121"

**VMware Host IP Address** The IP address of the VMware host system and the address used to remotely access and control virtual machines.

**VMware Host Username:** Specifies an account on the VMware host system. NETLAB+ will use this account to login to the VMware host and control virtual machines through the VMware API. For ESXi, this is an account you create using the VMware client. For VMware Server or GSX, this is a Windows user account with administrator privileges.

**VMware Host Password:** The password associated with the host username.

**VMware Guest Configuration File:** The path of the virtual machine configuration file (.vmx) on the VMware host. For ESXi, this path begins with a datastore, such as "[datastore] Pod 1/winXpPro.vmx". For Server and GSX products, the path begins with a drive letter, such as "C:\Virtual Machines\Pod 1\winXpPro.vmx".

**Guest Operating System:** The operating system running on this virtual machine. The availability of a selection does not guarantee compatibility with all labs.

**Options:** Select the options according to your preference for this PC:

- Enable remote access to keyboard, video, and mouse
- Revert to snapshot during scrub operation
- Enable or disable automated features. See administrator guide for details.

**Admin Status:** Set admin status to ONLINE to enable this PC. You can temporarily disable this PC by setting the administrative status to OFFLINE.

**VMware Advanced Settings:** Depending on your VMware server type, it may be necessary manually enter advanced configuration settings. See the *NETLAB+ Remote PC Guide* specific to your VMware server virtualization product selection for version-specific details regarding these settings.

[Pod planning and installation guides](#) available on the NDG Website provide additional details regarding PC settings and other pod-specific configuration requirements. Additional resources can also be found in the [NETLAB+ supported content](#) section.

The additional information regarding remote PCs is available by referring to a *NETLAB+ Remote PC Guide*. *NETLAB+ Remote PC Guides* provide detailed, version-specific information on the implementation of VMware virtualization and virtual machines. Use the guide appropriate for the VMware virtualization product you have chosen to implement on your NETLAB+ system in order to support remote PCs in your pod.

For details on Remote PC Integration including resources to assist you in the selection of virtualization products, please see:

[http://www.netdevgroup.com/support/remote\\_pc.html](http://www.netdevgroup.com/support/remote_pc.html)

Currently available *NETLAB+ Remote PC Guides* include:

- [NETLAB+ Remote PC Guide for VMware Implementation Using ESXi versions 4.01 and 4.1 with vCenter](#)
- [NETLAB+ Remote PC Guide for VMware Implementation Using ESXi Version 3.5](#)

Please refer to the [NETLAB+ Documentation Page](#) for a complete list of Remote PC Guides, including the latest releases.

### 2.25.1.14 Testing the Pod (Test 2 after PC Implementation)

As of NETLAB+ version 2014.R2.Beta.1, the pod test has been redesigned and upgraded to provide a robust interface with comprehensive diagnostic feedback including test history, which allows you to review the results of previous tests run on the pod.

The pod test provides a detailed evaluation of the operational status of the equipment in the pod (both virtual and real hardware) and will identify configuration and cabling problems.

Select the option to perform a pod test. A pod must be offline in order to run the test.

#### Pod 1 -- Management Options

- Bring this pod ONLINE and make it available for reservation
- Tell me if this pod is working properly.
- Show me how to cable this pod.
- Rename this pod.
- View and change special options for this pod.
- Remove this pod from NETLAB.

The Pod Test window displays a summary of Test History. You may examine the results of previous pod tests by clicking on any Pod Test ID or select the option, **Start New Pod Test**.

**Pod Test**

Admin Logout

POD ID	POD NAME	POD TYPE
1	MAP ASA #1	AE Multi-purpose Academy Pod with ASA

Test History - Pod 1										
POD TEST ID	START TIME	ELAPSED	STATUS	TESTS	PASSED	FAILED	SKIPPED	ERRORS	WARNINGS	
<a href="#">MGRSNR</a>	2014-07-22 20:00:23 UTC	00:15:41	COMPLETED	34	28	3	3	3	6	
<a href="#">NWD RJW</a>	2014-07-15 15:08:18 UTC	00:10:38	COMPLETED	34	28	0	6	0	2	
<a href="#">XHAXWL</a>	2014-07-14 22:42:05 UTC	00:10:10	COMPLETED	34	28	0	6	0	2	
<a href="#">GHJYAG</a>	2014-07-14 22:31:36 UTC	00:10:05	COMPLETED	34	28	0	6	0	2	
<a href="#">SKJFFA</a>	2014-07-14 22:19:36 UTC	00:10:04	COMPLETED	34	28	0	6	0	2	
<a href="#">RENNSF</a>	2014-07-14 21:34:15 UTC	00:10:30	COMPLETED	34	28	0	6	0	2	
<a href="#">ZRAZZR</a>	2014-07-12 21:30:14 UTC	00:02:18	CANCELLED	34	6	0	28	0	1	
<a href="#">HMYBYC</a>	2014-07-12 20:47:25 UTC	00:03:50	COMPLETED	34	7	0	27	0	2	
<a href="#">WEHCJN</a>	2014-07-12 20:32:02 UTC	00:02:29	COMPLETED	34	6	1	27	1	1	



Some tests may take a long time to run. During the BOOT IOS test, NETLAB+ 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.

Excerpts of a pod test are shown below. Notice that some portions of the pod test may run simultaneously. Other portions will indicate that they are scheduled to run, meaning they will run once another, related portion of the test has completed.

### POD 1

POD TEST ID: TPSNHE  
 POD NAME: MAP ASA #1  
 POD TYPE: AE Multi-purpose Academy Pod with ASA  
 START TIME: 2014-08-06 19:42:51 UTC  
 END TIME:  
 STATUS: RUNNING

ELAPSED	COMPLETED	PASSED	FAILED	SKIPPED	ERRORS	WARNINGS
00:00:22	5 of 34	2	0	3	0	0

[Leave Page and Continue Running](#)
[Cancel Pod Test](#)

[LOG](#)

---

#### Control Switches

COMPLETED: 2 of 2  
PASSED: 2

**PING** | Ping pod's control switch (control switch 4, 169.254.1.14). [LOG](#) PASSED

5 pings, 5 replies, min/avg/max = 0.4/5.4/25.4 (ms)

**SETUP** | Setup control switches. [LOG](#) PASSED

Pod 1 using control switch VLAN 100 through 107.

Pod 1 using port(s) 1 through 9 on control switch 4.

---

#### R1

COMPLETED: 0 of 5

**CONSOLE** | Power up and receive console output. RUNNING

**BOOT** | Boot the IOS image. SCHEDULED TEST

**FLASH** | Check image and size of flash memory. SCHEDULED TEST

**NETWORK** | Check proper ethernet cabling between lab device and control switch. SCHEDULED TEST

**OUTLET** | Check that lab device is connected to correct PDU outlet. SCHEDULED TEST

---

#### R2

COMPLETED: 1 of 5  
PASSED: 1

**CONSOLE** | Power up and receive console output. [LOG](#) PASSED

CISCO1941/K9 platform with 524288 Kbytes of main memory

System Bootstrap, Version 15.0(1r)M9, RELEASE SOFTWARE (fc1)

✓ Device is powered on and receiving console output.

**BOOT** | Boot the IOS image. RUNNING

**FLASH** | Check image and size of flash memory. SCHEDULED TEST

**NETWORK** | Check proper ethernet cabling between lab device and control switch. SCHEDULED TEST

**OUTLET** | Check that lab device is connected to correct PDU outlet. SCHEDULED TEST

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You may view the log for the entire pod test by selecting **Log** in the lower-right corner of the top header of the test display, or view log portions specific to an individual device.

```
[2014-08-06 19:56:14 +1] main: task_system_network_ping_icmp init, XYEO-OJFN-UTYW/7062,
[2014-08-06 19:56:14 +2] main: ping host='169.254.1.14' count=5 resolve=0 packet_size=
[2014-08-06 19:56:18 +3] main: ping command: '/bin/ping -c 5 -n -s 56 169.254.1.14 2>&:
[2014-08-06 19:56:18 +4] main: OUTPUT -----]
[2014-08-06 19:56:18 +5] main: PING 169.254.1.14 (169.254.1.14) from 169.254.1.1 : 56(
64 bytes from 169.254.1.14: icmp_seq=0 ttl=255 time=0.5 ms
64 bytes from 169.254.1.14: icmp_seq=1 ttl=255 time=0.4 ms
64 bytes from 169.254.1.14: icmp_seq=2 ttl=255 time=60.7 ms
64 bytes from 169.254.1.14: icmp_seq=3 ttl=255 time=0.5 ms
64 bytes from 169.254.1.14: icmp_seq=4 ttl=255 time=0.4 ms
--- 169.254.1.14 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.4/12.5/60.7 ms
]
[2014-08-06 19:56:18 +6] main: -----]
[2014-08-06 19:56:18 +7] 5 pings, 5 replies, min/avg/max = 0.4/12.5/60.7 (ms)]
[2014-08-06 19:56:18 +8] , 5 pings, 5 replies, min/avg/max = 0.4/12.5/60.7 (ms)]
```

Portions of the log are color coded to allow you to easily spot key information regarding results, as shown in the log excerpt below.

```
[2014-08-06 20:06:40 +192] TestManager: done_list
+-----+-----+-----+-----+-----+-----+
| test_id | group_id | name | result_type | n_errors | n_warnings |
+-----+-----+-----+-----+-----+-----+
| BZLBAT_012 | remote_pc_26 | SETUP | SKIPPED | | |
| BZLBAT_013 | remote_pc_27 | SETUP | FAILED | | |
| BZLBAT_001 | avmi_host_7 | NETWORK SETUP | PASSED | | |
| BZLBAT_003 | remote_pc_23 | SETUP | PASSED | | |
| BZLBAT_006 | remote_pc_24 | SETUP | PASSED | | |
| BZLBAT_009 | remote_pc_25 | SETUP | PASSED | | |
| BZLBAT_004 | remote_pc_23 | BOOT | PASSED | | |
| BZLBAT_007 | remote_pc_24 | BOOT | PASSED | | |
| BZLBAT_010 | remote_pc_25 | BOOT | PASSED | | |
| BZLBAT_008 | remote_pc_24 | CLEANUP | PASSED | | |
| BZLBAT_011 | remote_pc_25 | CLEANUP | PASSED | | |
| BZLBAT_005 | remote_pc_23 | CLEANUP | PASSED | | |
| BZLBAT_002 | avmi_host_7 | NETWORK TEARDOWN | PASSED | | |
+-----+-----+-----+-----+-----+-----+
```

You can continue to review logs and watch the test progress or select **Leave Page and Continue Running**.

Only one pod test may be run at a time. If you want to test another equipment pod, you must wait for the current test to end.

Here is an excerpt of a pod test in progress for a pod that includes virtual machines.

Please note that the pod test provides information on the virtual machines (VMs) that have been implemented in the Virtual Machine Inventory only. VMs that have been configured using earlier versions of virtualization products no longer supported by VMware will continue to function in the pod, but no information will be displayed for them in the pod test. You can review information on [Virtualization Product Support Status](#) on the Remote PC support page.

### POD 11

POD TEST ID: **BZLBAT**

POD NAME: **POD 11**

POD TYPE: **VMware ICM Pod (2E1V)**

START TIME: **2014-08-06 20:04:20 UTC**

END TIME:

STATUS: **RUNNING**

ELAPSED	COMPLETED	PASSED	FAILED	SKIPPED	ERRORS	WARNINGS
00:01:14	5 of 13	3	1	1	1	0

Leave Page and Continue Running
 Cancel Pod Test

[LOG](#)

---

**VM Host 10.0.0.38**

COMPLETED **1 of 2**

PASSED **1**

**NETWORK SETUP** | Setup pod networking on the virtual machine host. [LOG](#) PASSED

- Created virtual switch 'NETLAB001\_POD11\_ICM\_VSWITCH' (12 ports).
- Created pod virtual network 'management' port group 'NETLAB001\_POD11\_ICM\_MGT\_PG' (VLAN 1)
- Created pod virtual network 'production' port group 'NETLAB001\_POD11\_ICM\_PROD\_PG' (VLAN 10)
- Created pod virtual network 'vmotion' port group 'NETLAB001\_POD11\_ICM\_VMOTION\_PG' (VLAN 20)

**NETWORK TEARDOWN** | Teardown pod networking on the virtual machine host. SCHEDULED TEST

---

**vclient**

COMPLETED **1 of 3**

PASSED **1**

**SETUP** | Setup the remote PC (virtual machine). [LOG](#) PASSED

- PC 'vclient' using virtual machine 'N3 ICM Pod\_8 vclient' in datacenter 'NETLAB'.
- Configured remote display using TCP port 10023 on host '10.0.0.38'.
- Bound 1 virtual network adapter to its port group.

**BOOT** | Power on and boot the virtual machine. RUNNING

**CLEANUP** | Shutdown and cleanup the virtual machine. SCHEDULED TEST

---

**vcenter-1**

COMPLETED **1 of 3**

PASSED **1**

**SETUP** | Setup the remote PC (virtual machine). [LOG](#) PASSED

- PC 'vcenter-1' using virtual machine 'N3 ICM Pod\_8 vcenter' in datacenter 'NETLAB'.
- Configured remote display using TCP port 10024 on host '10.0.0.38'.
- Bound 1 virtual network adapter to its port group.

**BOOT** | Power on and boot the virtual machine. RUNNING

<p><b>esxi-1</b></p> <p>COMPLETED <b>3 of 3</b></p> <p>PASSED <b>3</b></p>	<p><b>SETUP</b>   Setup the remote PC (virtual machine). <a href="#">LOG</a> <b>PASSED</b></p> <ul style="list-style-type: none"> <li>PC 'esxi-1' using virtual machine 'N3 ICM Pod_8 esxi-1' in datacenter 'NETLAB'.</li> <li>Reverted virtual machine image to snapshot 'poppa_john'.</li> <li>Configured remote display using TCP port 10025 on host '10.0.0.38'.</li> <li>Configured nested virtual machine support (pre 5.1).</li> <li>Bound 3 virtual network adapters to port groups.</li> </ul> <p><b>BOOT</b>   Power on and boot the virtual machine. <a href="#">LOG</a> <b>PASSED</b></p> <ul style="list-style-type: none"> <li>Virtual machine is running on host '10.0.0.38'.</li> </ul> <p><b>CLEANUP</b>   Shutdown and cleanup the virtual machine. <a href="#">LOG</a> <b>PASSED</b></p> <ul style="list-style-type: none"> <li>Reverted virtual machine image to snapshot 'poppa_john'.</li> <li>Virtual machine state is POWERED_OFF.</li> </ul>
<p><b>esxi-2</b></p> <p>COMPLETED <b>1 of 1</b></p> <p>SKIPPED <b>1</b></p>	<p><b>SETUP</b>   Setup the remote PC. <a href="#">LOG</a> <b>SKIPPED</b></p> <ul style="list-style-type: none"> <li>This PC is not implemented in this pod (configured as ABSENT).</li> </ul>
<p><b>san</b></p> <p>COMPLETED <b>1 of 1</b></p> <p>FAILED <b>1</b></p> <p>ERRORS <b>1</b></p>	<p><b>SETUP</b>   Setup the remote PC. <a href="#">LOG</a> <b>FAILED</b></p> <ul style="list-style-type: none"> <li>PC type STANDALONE is not supported by this pod design.</li> <li>Supported PC type(s) for this pod design are AVMI,ABSENT</li> </ul>

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

### 2.25.2 Modifying Device Settings

If it is necessary to make modifications to device settings that were selected during the pod installation, select the appropriate pod on the Equipment Pods page.

EXISTING PODS (click on the GO buttons to manage a pod)					
GO	ID	POD TYPE	POD NAME	STATUS	ACTIVITY
	<u>1</u>	AE Cuatro Router Pod 4 routers, PCs	POD 1	ONLINE	IDLE
	<u>3</u>	ASA Testing	POD 3	ONLINE	IDLE

In order to modify settings, the pod must be offline. You have the option to select **Take All OFFLINE** to bring all the pods offline or select a single pod and take the pod offline on the pod specific page.

The network and hardware settings depicted here are intended to provide an example only. Your system requirements may differ according to your specific hardware selections.

Select the pod, which contains the device(s) requiring setting modifications using the magnify button to the left of Pod Id. In this example, we have selected, Pod 1.

POD 1 - STATUS				
POD ID	POD NAME	STATUS	ACTIVITY	POD TYPE
1	POD 1	ONLINE	IDLE	AE Cuatro Router Pod 4 routers, PCs

POD 1 - ROUTERS, SWITCHES, AND FIREWALLS (click on the GO buttons to reconfigure devices)					
GO	NAME	TYPE	ACCESS PORTS	SWITCHED OUTLETS	SOFTWARE IMAGE
	R1	Cisco 1841 (S0M/x)	AS 1 LINE 1	SOD 1 OUTLET 1	c1841-advipservicesk9-mz.124-10a.bin
	R2	Cisco 2801/2811 (S0M/x)	AS 1 LINE 2	SOD 1 OUTLET 2	c2801-advipservicesk9-mz.124-10a.bin
	R3	Cisco 2801/2811 (S0M/x)	AS 1 LINE 3	SOD 1 OUTLET 3	c2801-advipservicesk9-mz.124-10a.bin
	R4	Cisco 2801/2811 (S0M/x)	AS 1 LINE 4	SOD 1 OUTLET 4	n/a

POD 1 - PCs AND SERVERS (click the GO buttons to reconfigure)							
GO	NAME	PC ID	STATUS	TYPE	ACCESS	CONTROL IP	OPERATING SYSTEM
	PC1a	101	ONLINE	VMWARE	VNC	10.0.0.25	Linux
	PC1b	102	ONLINE	VMWARE	VNC	10.0.0.25	Windows XP
	PC2	103	ONLINE	VMWARE	VNC	10.0.0.25	Windows XP
	PC3	104	ONLINE	VMWARE	VNC	10.0.0.25	Windows XP
	PC4	105	ONLINE	ABSENT	NULL		

POD 1 - CONTROL SWITCH				
SWITCH ID	POD PORT RANGE	BASE VLAN	VLAN POOL	
1	1-8	100	100-107	

### Pod 1 -- Management Options

- Offline** Take this pod OFFLINE.
- Test** Tell me if this pod is working properly.
- Cable** Show me how to cable this pod.
- Delete** Remove this pod from NETLAB.

### 2.25.2.1 Modifying Device Settings for Routers, Switches and Firewalls

Select a device to modify using the magnify button to the left of the device name. In this example, we are examining the settings for R3.

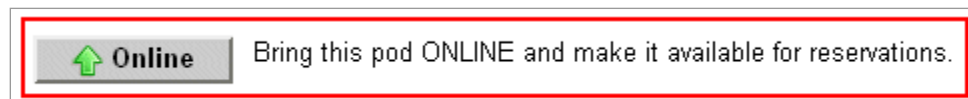
POD 5 DEVICE R3	
Device Name	R3
Device Type	Cisco 1841 (S0/0/x) <input type="button" value="v"/>
Automation	shared console, automated actions, image recovery
Software Image	c1841-advipservicesk9-mz.124-10a.bin <input type="button" value="v"/>
Image Recovery Option	recover if the specified image (above) is not in flash <input type="button" value="v"/>
Image Recovery Local Interface	FastEthernet0/0
Image Recovery Control Port	CONTROL SWITCH PORT 3 7
Access Server	ACCESS SERVER LINE 2 20 (tty 0/1/2)
Switched Outlet	S.O. DEVICE OUTLET 2 5
Activation Key (optional)	<input type="text"/>

See sections [2.25.1.4](#) and [0](#) for details on making device-setting selections for your equipment.

There is an additional image management setting for routers to support Pagent IOS images. A license key must be entered in order for NETLAB+ automation to function with routers using Pagent images. Please see section [2.25.2.2](#) for details.

There are additional image management settings for Cisco ASA devices and Generic Console Devices that can be set after pod installation has been completed. Please see section [2.25.2.3](#) and [0](#) for details.

Please note that the pod must be offline in order to modify these settings. After completing modifications, remember to select the management option to bring the pod online and make it available for reservations.



### 2.25.2.2 Modifying Device Settings for Routers Using Pagent IOS

If your device selections include routers using Pagent IOS, it will be necessary to enter the license key for these devices after the pod installation has been completed. This additional management option becomes available for selection when the device is selected on the Equipment Pods page.

POD 1 - ROUTERS, SWITCHES, AND FIREWALLS (click on the GO buttons to reconfigure devices)					
GO	NAME	TYPE	ACCESS PORTS	SWITCHED OUTLETS	SOFTWARE IMAGE
	R4	Cisco 2801/2811 (S0/1/x)	AS 1 LINE 4	SOD 1 OUTLET 4	c2801-tpgen_adventerk9-mz.4.3.0.bin

Select the router to display the management options.

POD 1 DEVICE R4			
Device Name	R4		
Device Type	Cisco 2801/2811 (S0/1/x) <input type="button" value="v"/>		
Automation	shared console, automated actions, image recovery		
Software Image	c2801-tpgen_adventerk9-mz.4.3.0.bin <input type="button" value="v"/>		
Image Recovery Option	recover if the specified image (above) is not in flash <input type="button" value="v"/>		
Image Recovery Local Interface	FastEthernet0/0		
Image Recovery Control Port		CONTROL SWITCH 1	PORT 7
Access Server		ACCESS SERVER 1	LINE 4
Switched Outlet		S.O. DEVICE 1	OUTLET 4
Activation Key (optional)	407554012371		

A license key must be entered into the Activation Key field for all routers using Pagent IOS in order for NETLAB+ automation features to function.

For information on upgrading a router to use Pagent IOS, please see [Appendix B](#).

This optional field may be left blank for routers not using Pagent IOS.



### 2.25.2.3 Modifying Device Settings for Cisco ASA Security Devices

If your device selections include Cisco ASA security appliances, it will be necessary to select device settings for these devices after the pod installation has been completed. These additional management options become available for selection when the device is selected on the Equipment Pods page.

POD 3 - ROUTERS, SWITCHES, AND FIREWALLS (click on the GO buttons to reconfigure devices)					
GO	NAME	TYPE	ACCESS LINES	SWITCHED OUTLETS	SOFTWARE IMAGE
	FOO	Cisco ASA 5510	AS 1 LINE 13	SOD 2 OUTLET 1	asa706-k8.bin

Select the device to display the management options.

POD 3 DEVICE FOO							
Device Name	FOO						
Device Type	Cisco ASA 5510						
Automation	shared console, automated actions, image recovery						
Software Image	asa706-k8.bin						
Image Recovery Option	recover if the specified image (above) is not in flash						
Image Recovery Local Interface	Ethernet0/0						
Image Recovery Control Port	<table border="0"> <tr> <td></td> <td>CONTROL SWITCH</td> <td>PORT</td> </tr> <tr> <td></td> <td>1</td> <td>13</td> </tr> </table>		CONTROL SWITCH	PORT		1	13
	CONTROL SWITCH	PORT					
	1	13					
Access Server	<table border="0"> <tr> <td></td> <td>ACCESS SERVER</td> <td>LINE</td> </tr> <tr> <td></td> <td>1</td> <td>13</td> </tr> </table>		ACCESS SERVER	LINE		1	13
	ACCESS SERVER	LINE					
	1	13					
Switched Outlet	<table border="0"> <tr> <td></td> <td>S.O. DEVICE</td> <td>OUTLET</td> </tr> <tr> <td></td> <td>2</td> <td>1</td> </tr> </table>		S.O. DEVICE	OUTLET		2	1
	S.O. DEVICE	OUTLET					
	2	1					
Security Device Manager Image	asdm506.bin						
Security Device Manager Options	recover if the specified image is not in flash						
Activation Key (optional)	760e3b57 ccd72811 18d00d8c 86b004a0 4728d0a1						

Here, we describe the options that are available for selection for ASA devices, in addition to the other device option settings referred to in the previous section.

**Image Recovery Local Interface:** This setting must match the port, which is connected to the cable, which is connected to the control switch that is defined as the Image Recovery Control Port. The correct setting for this interface is set during pod installation and should not require modification.

**Security Device Manager Image:** The software image providing the Security Device Manager software. In order for these image files to be available for selection, they must first be uploaded to the system. Note that the SDM image is tied to specific versions of the ASA software image. NETLAB+ does not check for compatibility between the two

images. Administrators should check the vendor’s release notes specific to their selected device to insure compatibility.

Security Device Manager Image	asdm506.bin	
Security Device Manager Options	asdm-522.bin	recovered image is not in flash
Activation Key (recommended)	asdm506.bin	1 18d00d8c 86b004a0 4728d0a1
	asdm512.bin	
	asdm521.bin	

**Security Device Manager Options.** This option determines when the SDM image is recovered. A selection of "never" means that the SDM image will not be managed by NETLAB+.

Security Device Manager Image	asdm506.bin	
Security Device Manager Options	recovered image is not in flash	
Activation Key (recommended)	recovered image is not in flash	
	recovered if there is no image in flash	
	never recover image (device may become unusable)	

**Activation Key.** Cisco ASA software requires an activation key. If specified, NETLAB+ will configure the activation key during the scrub process.

As a precaution, administrators should write down their activation keys prior to installing Cisco ASA or PIX devices in NETLAB+.

Activation Key (recommended)	760e3b57 ccd72811 18d00d8c 86b004a0 4728d0a1
------------------------------	--

Please note that the pod must be offline in order to modify these settings. After completing modifications, remember to select the management option to bring the pod online and make it available for reservations.

**Pod 5 -- Management Options**

Bring this pod ONLINE and make it available for reservations.

### 2.25.2.4 Modifying Device Settings for Generic Console Devices

If you would like to use a lab device that is not supported by NETLAB+, it may be possible by selecting Generic Console Device option in the Device Type pull down menu. This option provides user console access to an unsupported device during a lab reservation. This option also supports the console-sharing feature; therefore, several users could access the console at the same time.

A generic console device has several limitations:

Automated scrub, password recovery, and configuration management are not performed. The device will not be reset to a clean configuration between lab reservations. If a user changes a password to an unknown value, a manual password recovery will be necessary.

The NETLAB+ CLI Terminal is designed for command line interfaces and do not provide terminal emulation. If your device requires terminal emulation (such as VT100), users must use a terminal application that supports the required terminal emulation (this can be set in their profile settings). Because terminal emulation uses screen formatting and invisible control codes, the NETLAB+ console sharing and archive features may exhibit unpredictable behavior.

Generic console devices may be controlled by a switched outlet. This is determined by the pod design. See below for details.

Generic console devices are unmanaged. Due to the limitations outlined above, you should only deploy this option in environments where users are experienced and trusted. Users should be briefed on these limitations and the proper procedures for using the device without causing problems for others.

#### Configuring a Generic Console Device

**Step 1.** Select the desired device from the Equipment Pods page, and click the GO button.

POD 2 - ROUTERS, SWITCHES, AND FIREWALLS (click on the GO buttons to reconfigure devices)					
GO	NAME	TYPE	ACCESS LINES	SWITCHED APC OUTLETS	SOFTWARE IMAGE
	LWAP	Generic Console Device <i>Cisco 1240 LWAPP</i>	AS 1 LINE 11	SOD 2 OUTLET 3	n/a
	WLC	Generic Console Device <i>WLC2006 Controller</i>	AS 1 LINE 12	SOD 2 OUTLET 4	n/a



If this is a custom pod and you have access to the pod design, you may control whether or not a switched outlet is allocated. This setting is a function of pod design. Please refer the *NETLAB+ Pod Design Guide* for details.

If you are using a NETLAB+ standard pod, or you do not have access to the pod design, you may plug the device into an uncontrolled outlet if you do not want switched outlet behavior. However, if a switched outlet is allocated, it cannot be reclaimed.

### 2.25.2.5 Modifying PC Settings

In order to modify the settings for a PC that has been installed in the pod, Select the PC using the magnify button to the left of the PC name. In this example, we are examining the settings for PC A.

**Pod ID** 2

**Pod Name** MAP

**PC Name** PC A

**PC Type** VMware ESXi 3.5 U3 (no vCenter) ▼

**VMware Host IP Address** 10.0.0.26 (required)

**VMware Host Username** NETLAB (required)

**VMware Host Password** NETLAB (required)

**VMware Guest Configuration File** C:\Virtual Machines\NETLAB\_VM\_01\Windows XP Professional.vmx

**Guest Operating System** Windows XP ▼

**Options**

- enable remote access to keyboard, video, and mouse
- revert to snapshot during scrub operation

**Admin Status** ONLINE ▼

**VMware Advanced Settings** RemoteDisplay.vnc.enabled = "true"  
RemoteDisplay.vnc.port = "6121"

Please note that the pod must be offline in order to modify these settings. After completing modifications, remember to select the management option to bring the pod online and make it available for reservations.

**Pod 5 -- Management Options**

**Online**

Bring this pod ONLINE and make it available for reservations.

## 2.26 Control Devices



Control devices are equipment required for NETLAB+ to function, but these devices are not accessible to students and instructors. Control switches provide NETLAB+ with internal connections. Access servers provide console access to lab devices. Switched outlet devices are automated power management units.

### 2.26.1 Control Switches



Control switches perform several functions in NETLAB+ including, Ethernet connections for the NETLAB+ server, access server, and switched outlet device. Control switches can provide a temporary TFTP path for automated management of IOS images in lab devices. Control switches function as virtual Ethernet hubs in lab topologies when the lab is active.

Control switches are not accessible by lab users. The number and type of control switches required for a NETLAB+ system is dependent on the number and type of equipment pods that are hosted.

EXISTING CONTROL SWITCHES (click the GO buttons to manage)					
GO	ID	Switch Type	IP Address	Ports Assigned to Pods	Reserved Ports
	<a href="#">1</a>	Catalyst 2950-24	169.254.1.11	1-3, 5-7, 9-11, 13-15	17-24
	<a href="#">2</a>	Catalyst 2950-24	169.254.1.12	None	17-24
	<a href="#">3</a>	Catalyst 3550-24	169.254.1.13	1-14	17-24
	<a href="#">4</a>	Catalyst 3550-48	169.254.1.14	1-10	37-48

Add a Control Switch
 Back to Admin

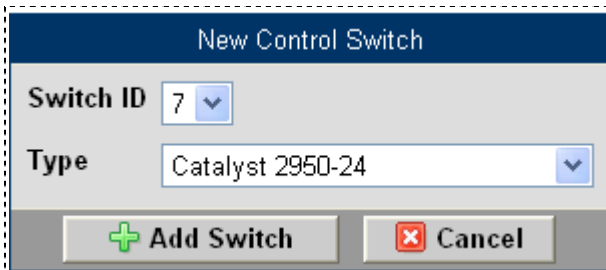


Select to manage an existing control switch. (See section [2.26.1.2](#))

### 2.26.1.1 Adding a Control Switch

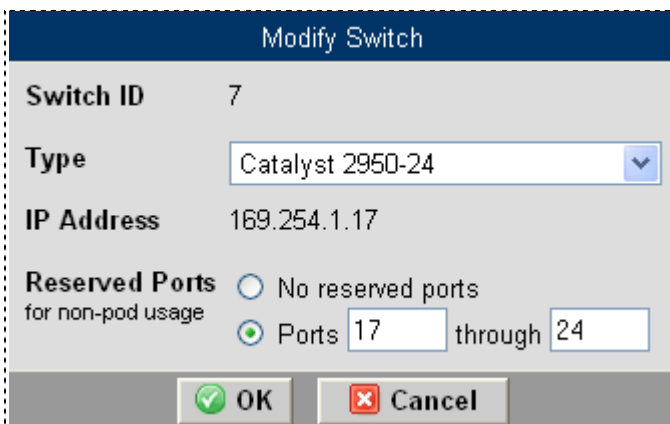
Select the option to **Add a control switch**, from the Configure Control Switches screen. The Add Control Switch Screen will be displayed.

Select a switch ID and switch type, then click Add Switch. Based on your selections, you will be able to view and set other parameters for the switch on the next screen.



Edit the information for this control switch as needed, and then click **OK**. Some of the values cannot be changed. Normally NETLAB+ reserves port 17 to 24 on a 24-port control switch. To meet your specific port requirements, (see the Installing The Control Plane Section of the *NETLAB+ Installation Guide*) you may change the range of reserved ports being used on the switch.

The Control Switch Management screen will be displayed. Proceed to the next section for information on Control Switch Management.



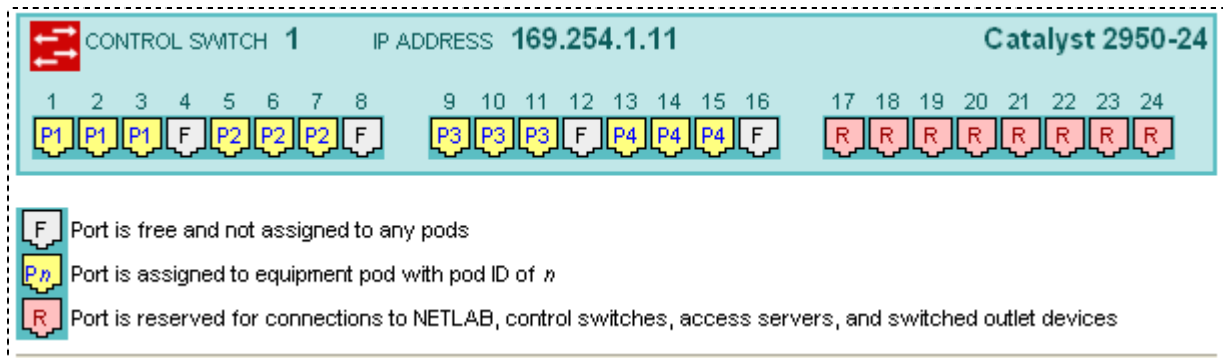
NETLAB+ automatically sets control switch passwords as shown. You will need to enter these passwords if you wish to access the command line interface of the device at a later time.

Console Password: **router**  
 Enable Password: **cisco**

### 2.26.1.2 Control Switch Management

The Control Switch Management screen displays a diagram showing the port assignments for the selected switch.

The specific settings depicted here may differ from the settings at your site.



Several management options are accessed from this screen.

#### # Configure

You must configure the IOS software on the control switch before it can be used by NETLAB+. To perform this task, we assume that:

- Your NETLAB+ server and control switches are turned on
- Everything is cabled correctly, see section [2.25.1.10](#)
- All ports in the path between the control switch and the NETLAB+ server are up (green)
- You have connected a PC or terminal to the console port of the control switch and you are at the Switch> prompt

Carefully follow the steps listed on the configure control switch screen.


The specific settings depicted may differ from the settings for your site.



### Step 1 -- Check IOS Version

```
Switch> show ver
Cisco Internetwork Operating System Software
IOS (tm) nnn Software (nnn), Version nnn, RELEASE SOFTWARE
```

Images for Catalyst 2950-24	
<b>Recommended</b> These images have been tested	12.1(22)EA2
<b>Defective</b> These images will not work	All 12.1(13) or earlier

The recommended software images listed above will work with NETLAB. Please do not use the defective images listed above -- they contain known bugs that will cause problems in NETLAB. If you need to upgrade the software image, you can [use NETLAB as your TFTP server](#). 

### Step 2 -- Start Clean

Cisco IOS acts upon existing configuration files. If you are installing this control switch for the first time, make sure you start with a blank configuration:

```
Switch> enable
Switch# write erase
Switch# reload
```

### Step 3 -- Assign the IP Address

The correct IP address for control switch 1 is **169.254.1.11**. The subnet mask is **255.255.255.0**.

```
Switch# conf term
Switch(config)# snmp-server community netlab rw
Switch(config)# interface VLAN1
Switch(config-if)# ip address 169.254.1.11 255.255.255.0
Switch(config-if)# no shutdown
Switch(config-if)# exit
Switch(config)# exit
```

### Step 4 -- Check Connectivity

Verify that you can ping the NETLAB server:

```
Switch# ping 169.254.1.1
Sending 5, 100-byte ICMP Echos to 169.254.1.1, time out is 2 seconds:
!!!!!
```

If you can ping the NETLAB server, proceed to Step 5. Otherwise:

- recheck your cables
- all ports in the path between control switch 1 and the NETLAB server should be up (green)
- UTP connection between switches require crossover Ethernet cables
- Trunking options between control switches must match, or disabling trunking and place ports in VLAN 1
- see the NETLAB install guide or admin guide for additional troubleshooting tips

### Step 5 -- Configuration

NETLAB can use SNMP to automatically complete the remaining configuration tasks. Click Continue to proceed.



### Performing Configuration Tasks for Control Switch 1

```
pinging the switch..... OK
checking the IOS version..... OK [12.1(22)EA2]
setting the switch name..... OK [netlab-cs1]
setting up VLANs..... OK
loading the basic config..... OK
copy running to startup..... OK
```

**Basic configuration of control switch 1 was successful.**

Some pod types may require additional control switch configuration. Please refer to the specific documentation for the pod types that you are connecting to this switch.



Tell me if the switch is configured and working properly.

**Testing Control Switch 1**

```

pinging the switch.....  OK
checking the IOS version.....  OK [12.1(22)EA2]
setting the switch name.....  OK [netlab-cs1]
setting up VLANs.....  OK
    
```

**Control switch 1 looks good.**

**Modify** Edit the information for this control switch, and then click **OK**. Some of the values cannot be changed. After editing the information as needed, select **OK**.

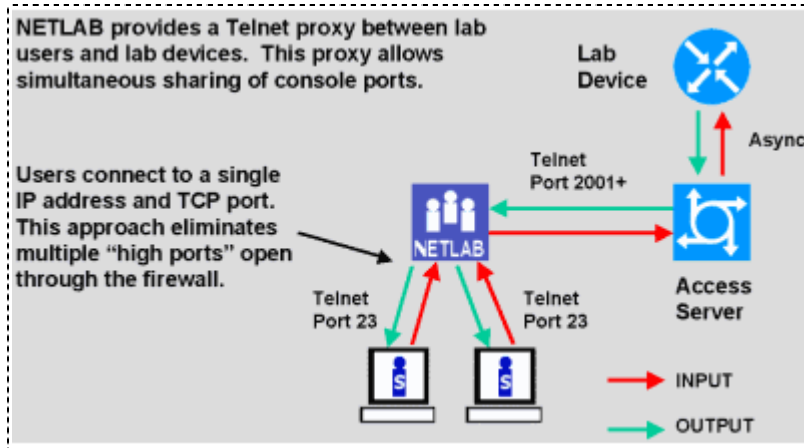
Modify Switch	
<b>Switch ID</b>	1
<b>Type</b>	Catalyst 2950-24
<b>IP Address</b>	169.254.1.11
<b>Reserved Ports</b> for non-pod usage	<input type="radio"/> No reserved ports <input checked="" type="radio"/> Ports <input type="text" value="17"/> through <input type="text" value="24"/>
<div style="display: flex; justify-content: space-around;"> <span> OK</span> <span> Cancel</span> </div>	

**Delete** Remove this Switch from NETLAB+.

### 2.26.2 Access Servers



An access server provides console connections to lab equipment. Using this approach, users can access lab gear even when no configurations have been loaded in the lab devices. NETLAB+ proxies all connections through the access server. This special proxy allows simultaneous sharing of console ports and allows all users to access the lab environment using a single IP address and single remote access port.



Line Number is now used as a unique identifier for access server ports. Beginning with NETLAB+ version 2010.R3, NETLAB+ supports an expanded selection of access servers. Since several models include multiple modules, port number is no longer a unique identifier. Instructions for adding/modifying pods and access servers throughout this guide use access server line numbers for identification.

You can easily view the line number of any access server port. Please see section [2.26.2.2](#) for details.

Details on supported access server configurations and general usage guidelines can be found at: [http://www.netdevgroup.com/support/control\\_devices.html#access\\_server](http://www.netdevgroup.com/support/control_devices.html#access_server)

EXISTING ACCESS SERVERS (click on the GO buttons to manage)				
GO	ID	Type	IP Address	Lines in Use
	<a href="#">1</a>	Cisco 2511-RJ	169.254.1.21	9
	<a href="#">2</a>	Cisco 2811 + NM-16A + 3 HWIC-16A (Lines 18-81)	169.254.1.22	9
	<a href="#">3</a>	Cisco 2811 + NM-16A + 2 HWIC-16A (Lines 34-81)	169.254.1.23	0

**Add Access Server**      **Back to Admin**

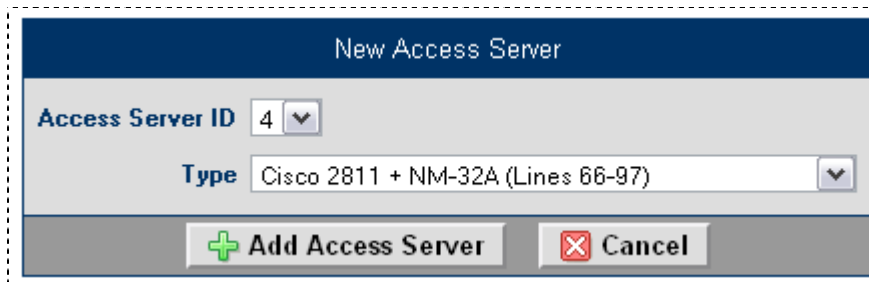
Select to manage an existing access server. (See [2.26.2.2](#))

**Add Access Server** Select to add an access server, proceed to the next section.

### 2.26.2.1 Adding an Access Server

Select Add an Access Server from the Configure Access Server screen. The New Access Server screen will be displayed.

Select an access server ID and type, and then click Add Access Server.



You may change the access server's type as needed, only if the same line numbers in use exist on the new access server. Proceed to the next section for information on Access Server Management.

NETLAB+ automatically sets access server passwords as shown. You will need to enter these passwords if you wish to access the command line interface of the device at a later time.

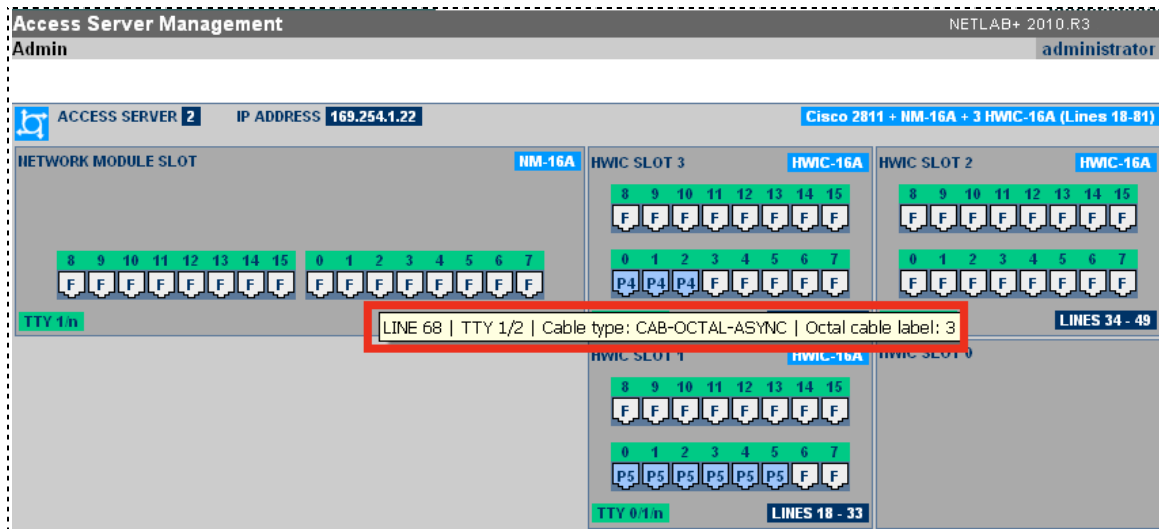
Console Password: **router**  
 Enable Password: **cisco**

### 2.26.2.2 Access Server Management

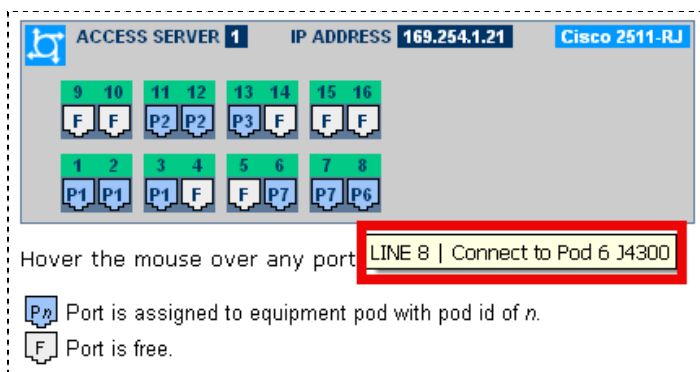
The Access Server Management screen displays a diagram showing the port assignments and line numbers for the selected access server. As shown below, you can easily view the line number by hovering your mouse over any port.

The specific settings depicted here may differ from the settings at your site.

For access servers using octal cables, the octal cable label is displayed with the line number.



Another example of viewing line numbers by hovering the mouse over a port.



Several management options are accessed from this screen.

**# Configure** You must configure the IOS software on the access server before it can be used by NETLAB+. To perform this task, it is assumed that:

Your NETLAB+ server, access server, and control switches are turned on  
Everything is cabled correctly, see section 2.25.1.10.

All control switch ports in the path between the access server and the NETLAB+ server are up (green)

You have connected a PC or terminal to the console port of the access server and you are at the Router> prompt


Carefully follow the steps listed on the configure access server screen:

The specific settings depicted may differ from the settings for your site.

### Step 1 -- Check IOS Version

```
Switch> show ver
Cisco Internetwork Operating System Software
IOS (tm) nnn Software (nnn), Version nnn, RELEASE SOFTWARE
```

Images for Cisco 2511-RJ	
<b>Recommended</b> These images should work.	12.0(5)T
<b>Defective</b> These images will not work.	

The recommended software images listed above will work with NETLAB. Please do not use the defective images (if any) listed above -- they contain known bugs that will cause problems in NETLAB. If you need to upgrade the software image, you can [use NETLAB as your TFTP server](#).

### Step 2 -- Start Clean

Cisco IOS acts upon existing configuration files. If you are installing this access server for the first time, make sure you start with a blank configuration:

```
Router> enable
Router# write erase
Router# reload
```

### Step 3 -- Assign the IP Address

The correct IP address for access server 1 is **169.254.1.21**. The subnet mask is **255.255.255.0**.

```
Router# conf term

Router(config)# interface Ethernet0
Router(config-if)# ip address 169.254.1.21 255.255.255.0
Router(config-if)# no shutdown
Router(config-if)# exit
Router(config)# snmp-server community private rw
Router(config)# exit
```

#### Step 4 -- Check Connectivity

Verify that you can ping the inside interface of the NETLAB server at 169.254.1.1:

```
Router# ping 169.254.1.1
Sending 5, 100-byte ICMP Echos to 169.254.1.1, time out is 2 seconds:
!!!!!
```

If you can ping the NETLAB server, proceed to Step 5. Otherwise:

- Recheck your cables.
- All control switch ports in the path between access server 1 and the NETLAB server should be up (green).
- UTP connection between control switches require crossover Ethernet cables.
- Trunking options between control switches must match, or disabling trunking and place ports in VLAN 1.
- See the NETLAB install guide or admin guide for additional troubleshooting tips.

#### Step 5 -- Autoconfiguration

NETLAB will now connect to the access server and complete the remaining configuration tasks automatically. Click Continue to proceed.

**This step must be completed before the access server is usable.**





### Performing Configuration Tasks for Access Server 1

```

pinging the access server..... OK
checking the IOS version..... OK [12.0(6)]
setting the access server name..... OK [netlab-as1]
loading the basic config..... OK [config loaded via TFTP]
copy running to startup..... OK [config saved]
logging into server..... OK
checking async line 1..... OK [line exists]
checking async line 2..... OK [line exists]
checking async line 3..... OK [line exists]
checking async line 4..... OK [line exists]
checking async line 5..... OK [line exists]
checking async line 6..... OK [line exists]
checking async line 7..... OK [line exists]
checking async line 8..... OK [line exists]
checking async line 9..... OK [line exists]
checking async line 10..... OK [line exists]
checking async line 11..... OK [line exists]
checking async line 12..... OK [line exists]
checking async line 13..... OK [line exists]
checking async line 14..... OK [line exists]
checking async line 15..... OK [line exists]
checking async line 16..... OK [line exists]
configuring async line 1..... OK [configured]
configuring async line 2..... OK [configured]
configuring async line 3..... OK [configured]
configuring async line 4..... OK [configured]
configuring async line 5..... OK [configured]
configuring async line 6..... OK [configured]
configuring async line 7..... OK [configured]
configuring async line 8..... OK [configured]
configuring async line 9..... OK [configured]
configuring async line 10..... OK [configured]
configuring async line 11..... OK [configured]
configuring async line 12..... OK [configured]
configuring async line 13..... OK [configured]
configuring async line 14..... OK [configured]
configuring async line 15..... OK [configured]
configuring async line 16..... OK [configured]
copy running to startup..... OK [config saved]

```



**Configuration of access server 1 was successful.**



Tell me if this access server is configured and working properly.

### Testing Access Server 1

```

pinging the access server..... OK
checking the IOS version..... OK [12.0(6)]
setting the access server name..... OK [netlab-as1]
logging into server..... OK
checking async line 1..... OK [line exists]
checking async line 2..... OK [line exists]
checking async line 3..... OK [line exists]
checking async line 4..... OK [line exists]
checking async line 5..... OK [line exists]
checking async line 6..... OK [line exists]
checking async line 7..... OK [line exists]
checking async line 8..... OK [line exists]
checking async line 9..... OK [line exists]
checking async line 10..... OK [line exists]
checking async line 11..... OK [line exists]
checking async line 12..... OK [line exists]
checking async line 13..... OK [line exists]
checking async line 14..... OK [line exists]
checking async line 15..... OK [line exists]
checking async line 16..... OK [line exists]

```

Access server 1 looks good.

#### Modify

Change the access server type. You may change the access server's type only if the same line numbers in use exist on the new access server.

Modify Access Server

**Access Server ID 1**

<b>Type</b>	<div style="border: 1px solid #ccc; padding: 2px;"> <div style="background-color: #e0e0e0; padding: 2px;">Cisco 2511-RJ</div> <div style="padding: 2px;">Cisco 2811 + NM-32A (Lines 66-97)</div> <div style="padding: 2px;">Cisco 2811 + NM-32A + 1 HWIC-16A (Lines 50-97)</div> <div style="padding: 2px;">Cisco 2811 + NM-32A + 2 HWIC-16A (Lines 34-97)</div> <div style="padding: 2px;">Cisco 2811 + NM-32A + 3 HWIC-16A (Lines 18-97)</div> <div style="padding: 2px;">Cisco 2811 + NM-32A + 4 HWIC-16A (Lines 2-97)</div> <div style="padding: 2px;">Cisco 2811 + NM-16A (Lines 66-81)</div> <div style="padding: 2px;">Cisco 2811 + NM-16A + 1 HWIC-16A (Lines 50-81)</div> <div style="padding: 2px;">Cisco 2811 + NM-16A + 2 HWIC-16A (Lines 34-81)</div> <div style="padding: 2px;">Cisco 2811 + NM-16A + 3 HWIC-16A (Lines 18-81)</div> <div style="padding: 2px;">Cisco 2811 + NM-16A + 4 HWIC-16A (Lines 2-81)</div> <div style="padding: 2px;">Cisco 2811 + 1 HWIC-16A (Lines 50-65)</div> <div style="padding: 2px;">Cisco 2811 + 2 HWIC-16A (Lines 34-65)</div> <div style="padding: 2px;">Cisco 2811 + 3 HWIC-16A (Lines 18-65)</div> <div style="padding: 2px;">Cisco 2811 + 4 HWIC-16A (Lines 2-65)</div> <div style="padding: 2px;">Cisco 2801 + 1 HWIC-16A (Lines 50-65)</div> <div style="padding: 2px;">Cisco 2801 + 2 HWIC-16A (Lines 18-33, 50-65)</div> <div style="padding: 2px;">Cisco 26xx + NM-32A (Lines 33-64)</div> <div style="padding: 2px;">Cisco 26xx + NM-16A (Lines 33-48)</div> <div style="background-color: #e0e0e0; padding: 2px;">Cisco 2511-RJ</div> <div style="padding: 2px;">Cisco 2511 (octal cables)</div> </div>
-------------	---

**Delete**

Remove the access server from NETLAB+.

### 2.26.3 Switched Outlets



The power of each managed device in a NETLAB+ equipment pod is connected to a switched outlet device.

The device provides three functions:

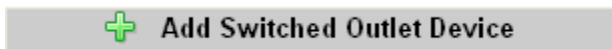
- Reboot devices during NETLAB+ automated operations.
- Allow users to control power of a lab device (making password recovery possible).
- Power off devices when not in use to reduce energy and cooling requirements.

Details on supported switched outlet devices and general usage guidelines can be found at: [http://www.netdevgroup.com/support/control\\_devices.html#switched\\_outlet](http://www.netdevgroup.com/support/control_devices.html#switched_outlet)

Existing Switched Outlet Devices (click on the Go buttons to manage a device)					
Go	ID	Type	IP Address	Outlets	Outlets in Use
	<a href="#">1</a>	APC 9211 MasterSwitch	169.254.1.91	8	1-3, 5-7
	<a href="#">2</a>	APC 9211 MasterSwitch	169.254.1.92	8	1-7
	<a href="#">3</a>	APC 9211 MasterSwitch	169.254.1.93	8	1-5
	<a href="#">4</a>	APC 7900 Switched Rack PDU	169.254.1.94	8	None
	<a href="#">5</a>	APC 7920 Switched Rack PDU	169.254.1.95	8	None



Select to manage a device. (See section [2.26.3.2](#))



Select to add a switched outlet device.

Proceed to the next section.

### 2.26.3.1 Add Switched Outlet Device

Select Add Switched Outlet device, from the Configure Switched Outlet Device Screen. Select an ID and Type, and then click Add Device.

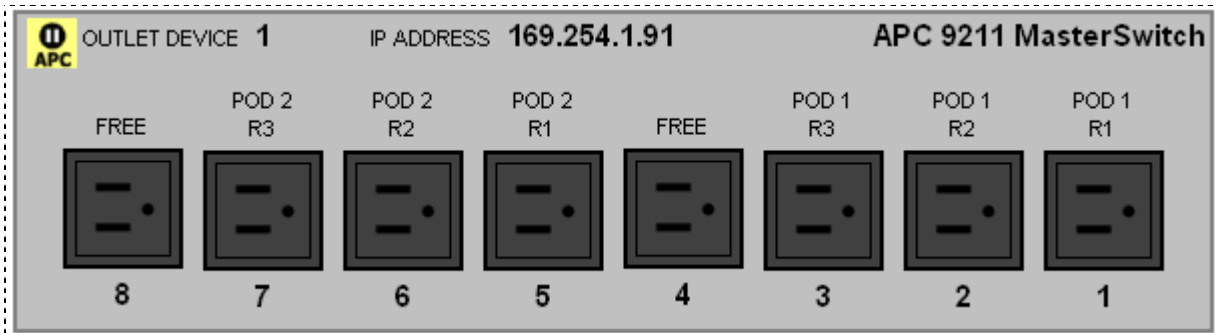
The dialog box titled "New Switched Outlet Device" contains two dropdown menus. The "Device ID" dropdown is set to "5". The "Type" dropdown is set to "APC 7900 Switched Rack PDU". At the bottom, there are two buttons: "Add Device" with a green plus icon and "Cancel" with a red X icon.

You may change the switched outlet device's type. Proceed to the next section for information on Switched Outlet Device Management.

The dialog box titled "Modify Switched Outlet Device" shows the "Device ID" as "5" and the "Type" as "APC 7900 Switched Rack PDU". At the bottom, there are two buttons: "OK" with a green checkmark icon and "Cancel" with a red X icon.

### 2.26.3.2 Switched Outlet Device Management

The Switched Outlet Device Management screen displays a diagram showing the assignments to each outlet.



Several management options are accessed from this screen.



You must configure the TCP/IP settings on a switched outlet device before it can be used by NETLAB+. To perform this task, we assume that:

- Your NETLAB+ server, switched outlet device, and control switches are turned on
- Everything is cabled correctly, see section [2.25.1.10](#)
- All control switch ports in the path between the switched outlet device and the NETLAB+ server are up (green)

Carefully follow the steps listed on the Configure Switched Outlet Device screen.

The specific settings depicted may differ from the settings for your site.

**Step 1 -- Connect to Control Console**

1a) **Serial Interface.** To access the unit's Control Console, use the supplied null-modem cable to connect the serial port of a PC or laptop to the serial port on switched outlet device 1. Using a terminal emulation program (such as Hyperterm), set the terminal port to the following communication settings:

Bit Rate	9600
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None
Local Echo	Off
Terminal Type	ANSI (VT100)

1b) **Logging on.** To log on to the Control Console, respond to the user name and password prompts. The default for both the Administrator user name and the Administrator password is **apc** (lowercase).

```
User Name : apc
Password  : apc
```

**Step 2 -- Configure TCP/IP**

2a) Navigate to the TCP/IP settings menu:

```
Control Console > 2-Network > 1-TCP/IP
```

2b) Change the Boot Mode setting to **Manual**.

2c) Configure the manual TCP/IP settings exactly as shown:

```
* Changes will take effect on Logout.

1- System IP       : 169.254.1.91
2- Subnet Mask    : 255.255.255.0
3- Default Gateway: 169.254.1.1
4- Boot Mode      : Manual
5- Advanced...
```

2d) **Logout** for the changes to take effect. This option is on the top-level Control Console menu.

### Step 3 -- Check Connectivity

3a) Wait **60 seconds** after logging out (the last step) for the unit to reload and new settings to take effect.

3b) Reconnect to the Control Console.

3b) Navigate to the ping utility and ping the NETLAB server.

```
Control Console > Network > Ping Utility
```

```
Ping Address,  
<ENTER> = "169.254.1.1": ENTER
```

```
Reply from 169.254.1.1: icmp_seq=0  
Reply from 169.254.1.1: icmp_seq=1  
Reply from 169.254.1.1: icmp_seq=2  
Reply from 169.254.1.1: icmp_seq=3  
Reply from 169.254.1.1: icmp_seq=4
```

### Step 4 -- Network Test

NETLAB will now verify connectivity and attempt to control this switched outlet device using SNMP.



### Testing Switched Outlet Device 1

```
pinging the device.....  OK  
reading software version.....  OK
```

```
APC Web/SNMP Management Card (MB:v3.2.0 PF:v2.5.4 PN:aos254.bin AF1:v2.1.0  
AN1:ms210.bin MN: AP9606 HR: G9 SN: WA0104010137 MD: 01/24/2001)
```

```
testing outlet 1.....  OK  
testing outlet 2.....  OK  
testing outlet 3.....  OK  
testing outlet 4.....  OK  
testing outlet 5.....  OK  
testing outlet 6.....  OK  
testing outlet 7.....  OK  
testing outlet 8.....  OK
```

**Switched outlet device 1 looks good.**



Tell me if this device is configured and working properly.



**Testing Switched Outlet Device 1**

pinging the device..... OK  
 reading software version..... OK

APC Web/SNMP Management Card (MB:v3.2.0 PF:v2.5.4 PN:aos254.bin AF1:v2.1.0 AN1:ms210.bin MN: AP9606 HR: G9 SN: WA0104010137 MD: 01/24/2001)

testing outlet 1..... OK  
 testing outlet 2..... OK  
 testing outlet 3..... OK  
 testing outlet 4..... OK  
 testing outlet 5..... OK  
 testing outlet 6..... OK  
 testing outlet 7..... OK  
 testing outlet 8..... OK

**Switched outlet device 1 looks good.**

**Modify** Modify the switched outlet device type.

Modify Switched Outlet Device

Device ID 1

Type

OK Cancel

**Delete** Remove this device from NETLAB+.

## 2.27 Lab Device Software Repository



Use this utility to manage lab device software images (i.e. Cisco IOS, SDM, etc) in NETLAB+'s image repository. Certain automated operations will install the specified images on lab devices via TFTP, as needed. All files must have a **.bin** extension.

File	Size	Uploaded	Delete
c1700-ny-mz.122-8.YM.bin	4,925,568	2002-10-20 16:39:00 UTC	<b>in use</b>
c1700-y-mz.120-5.T1.bin	2,825,388	2002-03-13 16:03:11 UTC	<input type="checkbox"/>
c1700-y-mz.122-2.XJ.bin	3,930,812	2002-08-01 18:29:51 UTC	<input type="checkbox"/>
c1700-y-mz.122-8.YM.bin	4,725,664	2002-10-20 16:36:33 UTC	<input type="checkbox"/>
c2500-c-1.121-5.T9.bin	7,569,360	2001-10-08 20:38:48 UTC	<b>in use</b>
c2500-c-1.122-1.bin	7,630,296	2001-06-04 17:03:40 UTC	<input type="checkbox"/>
c2500-d-1.120-5.T.bin	8,225,736	2001-05-24 17:15:21 UTC	<b>in use</b>
c2500-p-1.121-22.bin	7,981,620	2004-04-05 19:30:43 UTC	<b>in use</b>
c2600-advipservicesk9-mz.123-7.T7.bin	25,046,420	2005-02-08 13:21:32 UTC	<b>in use</b>
c2600-advsecurityk9-mz.123-7.T7.bin	14,507,076	2005-02-08 13:25:51 UTC	<input type="checkbox"/>
c2600-c-mz.122-1.bin	5,002,788	2001-06-02 14:26:45 UTC	<input type="checkbox"/>
c2600-d-mz.122-19.bin	6,222,812	2004-07-01 17:28:54 UTC	<input type="checkbox"/>
c2600-j1s3-mz.123-6c.bin	15,707,432	2005-02-11 00:47:01 UTC	<input type="checkbox"/>

**Delete Selected Files** Select to delete image files that you have selected in the Delete column.

**Refresh List** Refresh the list after deleting files.

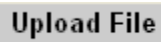
Files marked in use cannot be deleted because they have been chosen as images to be used for devices in the pod(s). NETLAB+ depends on these images during a scrub operation. To enable deletion of these images, you must eliminate the dependency by assigning different images to be used with the devices in the pod.

You can upload system images with a .bin extension from your local machine to NETLAB+'s TFTP Directory.

In order to upload a system image to NETLAB+, the image must exist on your local PC. If the image is not on your PC, you will need to obtain it from the appropriate source (i.e. log into Cisco CCO and go to the Software Center)

Do not rename Cisco software images! NETLAB+ examines the file name to determine compatibility during pod configuration.

Specify the file name on your PC machine (example: C:\My Documents\c2500-d-l.120-5.T.bin) or click the Browse button to bring up a file dialog box.

A rectangular button with a light gray background and a thin border, containing the text "Upload File" in a bold, black, sans-serif font.

Select after you have specified a file name.

## 2.28 Network Configuration




The Network Configuration utility displays detailed statistics pertaining to the inside and outside network interfaces and allows these settings to be updated where appropriate. **General Network Settings** include hostname, default gateway, primary DNS, alternate DNS, remote access ports and web server port configuration.








**Starting with NETLAB+ version 2014.R2.Beta.1**, NETLAB+ provides several options for web server port configuration. This includes the option to configure connectivity through SSL, which is preferred and in some cases required, according to the security policy for many organizations.

Settings to the interface status may also be updated, details on updating these settings are provided in the subsections below. This utility also includes the option to **Test Outbound Access** page (see section 2.28.5).

### 2.28.1 General Network Settings

The top portion of the Network Configuration page displays the General Network Settings. To modify a setting, select the  button to the right. Each field is described below.

Use caution when changing network configuration settings. Under some circumstances, if you enter an incorrect value, the erroneous setting may result in your system no longer being accessible using the configuration utility. It would then be necessary to make corrections through the physical console.

General Network Settings	
Hostname	netlab.fictionaluniversity.edu 
Default Gateway	
Primary DNS	
Alternate DNS	Not Configured 
Remote Access Ports	2201 
Active SSL Certificate	not used (HTTP only) 
Webserver Ports	<div style="border: 2px solid red; padding: 5px; display: inline-block; text-align: center;"> <p style="color: red; font-weight: bold; margin: 0;">HTTP</p> <p style="color: red; font-weight: bold; margin: 0;">80</p> </div> 

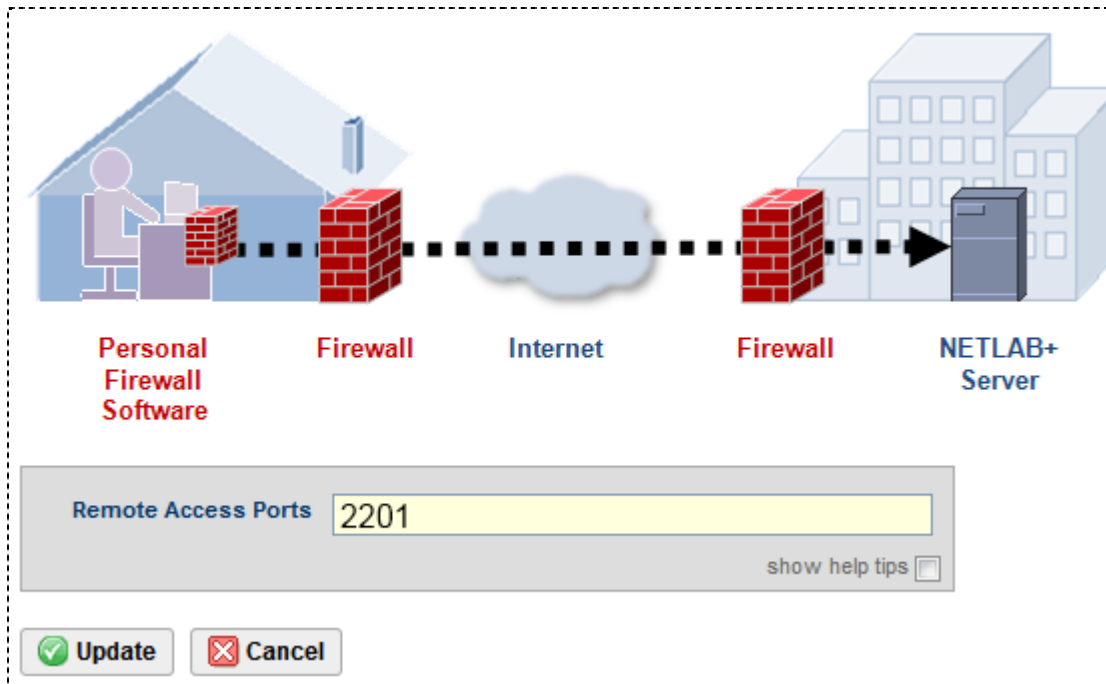
- Hostname:** It is recommended that you change the host name for your system. The value should be either a valid hostname or fully-qualified domain name. To prevent your NETLAB+ server from being flagged as an e-mail spam source, you should enter a fully qualified domain name that is also registered in your DNS server (both forward lookup and reverse IP entries).

When making changes to an IPV4 address in any of the fields below, keep in mind that all IPV4 address octets must be between 0 and 255. Neither the network or host portion of the address may be all 0s or all 1s.

- Default Gateway:** The IPv4 address of the default gateway. The gateway address should be on the same IPV4 network as one of the externally facing Ethernet interfaces. The inside network (eth1) is not routable.

- Primary DNS:** Enter the IPV4 address of the primary Domain Name Server NETLAB+ should use. This server is consulted first for all name-to-IP lookups.
- Alternate DNS:** Enter the IPV4 address of the alternate Domain Name Server NETLAB+ should use. When either Primary DNS or Alternate DNS is selected, both fields will be displayed and available to modify.

- Remote Access Port:** Configure the specified TCP port(s) that will be used for remote device access, remote PC access, and chat functions. Enter a list of TCP ports separated by commas, in the order they should be tried by the user client. Each port may be a number from 1 to 65535. Ports 22, 80, and 443 are reserved for other functions. The factory default port is 2201. **All of these ports MUST be opened in the firewall at the NETLAB+ site.** One of these ports must be open between the client and NETLAB+ for client connections to succeed.



- Active SSL Certificate:** Beginning with NETLAB+ version 2014.R2.Beta.1, HTTPS connections may be configured for the NETLAB+ web server, which requires an active SSL certificate. Details are provided in the next section.
- Webserver Ports:** NETLAB+ is shipped with the default http port 80 set. Webserver port configuration options are discussed in the next section.

## 2.28.2 Web Service Port Configuration - SSL is Available

Starting with NETLAB+ version 2014.R2.Beta.1, NETLAB+ provides several options for web server port configuration. This includes the option to configure connectivity through SSL, which is preferred and in some cases required, according to the security policy for many organizations.

NETLAB+ is shipped with the default HTTP port 80 set.

The screenshot shows a configuration panel titled "Web Service Port Configuration". On the left, there is a grey box labeled "Ports/Protocols". To its right is a large red rounded square containing the text "HTTP" above "80". Below this panel is a button with a wrench icon labeled "Change Port Configuration".

You may continue to use your NETLAB+ system through port 80 (HTTP only). Please be aware that future versions of NETLAB+ may require an SSL connection be configured.

Notice that an active SSL certificate is displayed. This self-signed certificate is included for the purposes of allowing you to perform administrative functions and manage updates to certificates as needed (as discussed later in this section, this self-signed certificate must be replaced if you enable HTTPS).

The screenshot shows a table titled "Active SSL Certificate" with the following details:

Name	netlabgroup.com
Subject DN	C=US, CN=netlabgroup.com
Issuer DN	C=US, CN=netlabgroup.com
Valid Not Before	Jun 23 15:05:02 2014 GMT
Valid Not After	Jun 28 15:44:54 2017 GMT
Private Key Length	2048 bit

Below the table are two buttons: "View Certificate" (with an information icon) and "Manage Certificates" (with a wrench icon).

You may see the certificate by selecting **View Certificate**.

To update the Web Service Port Configuration, select **Change Port Configuration**.

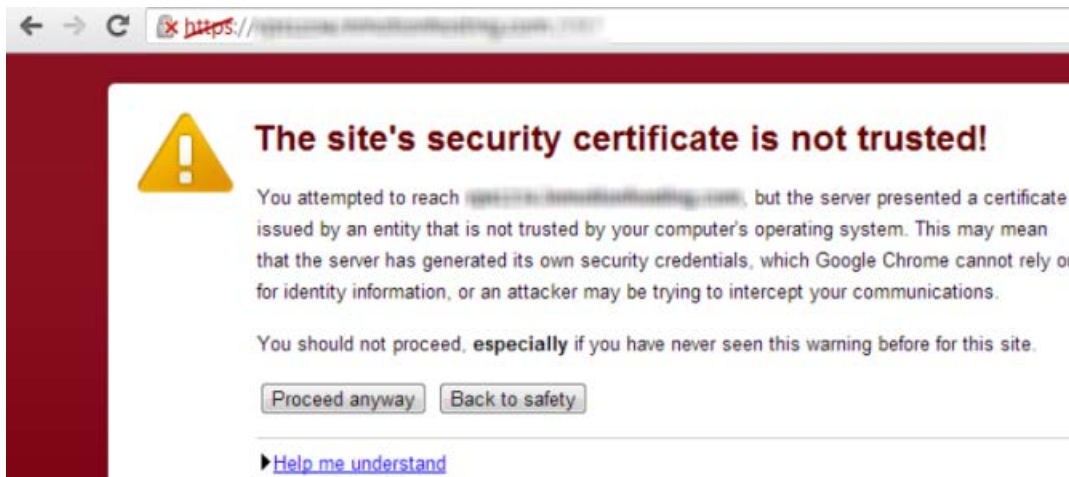
**Warning:** Changing this setting may result in an unreachable user interface and/or system if the TCP port(s) you enable are blocked at the site firewall. Avoid changing this setting remotely because recovery may require physical console access. Before proceeding, NDG recommends that you enable remote access for NDG support. Either open SSH (port 22) at the site firewall, or enable Technical Support Over Remote Access Port(s). Do this before changing your settings.

If you opt to change your Web Service Port Configuration to enable HTTPS, consider using the redirect option (shown below). This allows your an SSL connection to your system regardless of if users specify "HTTP" or "HTTPS" when entering the hostname or address into their browser. This does, however, require you to open both port 443 and port 80.

**Ports/Protocols**

- enable HTTP on port 80 only
- enable HTTPS on port 443, redirect HTTP on port 80 to HTTPS on port 443
- enable both HTTP on port 80 and HTTPS on port 443
- enable HTTPS on port 443 only

If you enable HTTPS, you must have a signed certificate. If you do not configure an active signed certificate, your NETLAB+ users will be interrupted with browser security warnings each time they access the NETLAB+ system. The warnings will be similar to the picture below (warnings vary depending on browser/version).



To add a signed certificate to your NETLAB+ system, proceed with one of the following methods, depending on if you have already have a certificate or need to obtain a certificate.



- **If you do not have a certificate:** You will generate a certificate request through NETLAB+ and send the request to the Certificate Authority (CA) of your choice. Once you receive a signed version from the CA you will update the certificate in NETLAB+. See section [2.28.2.1](#) for details.
- **If you already have a signed certificate and private key for your organization:** (This can be a domain-level certificate). You will proceed by adding the certificate and private key to your NETLAB+ system as described in section [2.28.2.2](#).

### 2.28.2.1 Generate a Certificate Request and Replace an Unsigned Certificate with a Signed Certificate

First, you will generate a certificate request and submit it to the CA of your choice.

1. Navigate to **Network Configuration > Webserver Ports > Manage Certificates**. You will see the self-signed certificate that is included with NETLAB+.

Manage Certificates							
Name	Active	Certificate	Valid From / To	Private Key	Signing Request	Manage	
SYSTEM_DEFAULT		self-signed	Mar 10 14:39:09 2014 GMT Mar 10 14:39:09 2019 GMT	2048 bit	none		

2. Click **Add Certificate**.
3. Select the option to generate a certificate signing request, temporary certificate and new private key and press Next.

Generate a certificate signing request, temporary certificate, and new private key  
 I have an existing certificate and private key

4. Fill in the fields on the form with the information appropriate for your site and Press OK.

**Generate New SSL Certificate and Signing Request**

<b>Entry Name</b>	netlab.fictionaluniversity.edu	The name used to manage this certificate. The hostname is recommended. Can contain characters 'a-z 0-9 . _ -'. Letter must be lower case. No spaces are permitted. Example: netlab.myschool.edu
<b>Common/Server Name</b>	netlab.fictionaluniversity.edu	The fully qualified domain name (FQDN) of your server. This must match exactly what you type in your web browser or you will receive a name mismatch error. Wildcard certificates cannot be generated by NETLAB+. Example: netlab.myschool.edu
<b>Organization</b>	Fictional University of Anytown USA	The legal name of your organization. This should not be abbreviated and should include suffixes such as Inc, Corp, or LLC. Example: Digitech College of Southern California
<b>Organizational Unit</b>	IT Department	The division of your organization handling the certificate. Example: Computer Science Department
<b>City</b>	Anytown	The city where your organization is located. Example: Los Angeles
<b>State/Region</b>	NC	The state or region where your organization is located. This should not be abbreviated. Example: North Carolina
<b>Country</b>	United States ▼	The country where your organization is located. Example: United States
<b>Email Address</b>	janedoe@fictionaluniversity.edu	An email address used to contact your organization. Esxample: support@myschool.edu
<b>Private Key Length (bits)</b>	2048 ▼	The length of the private key to generate in bits. 2048 is recommended and now required by most certificate authorities.

OK
 Cancel

NETLAB+ has generated a new private key, certificate signing request, and self-signed certificate.

5. Select the option, **Download Certificate Signing Request**.

**SSL Certificate Summary - netlab.fictionaluniversity.edu**

Name	netlab.fictionaluniversity.edu ✓ (certificate is active)
Subject DN	C=US, ST=NC, L=Anytown, O=Fictional University of Anytown USA, OU=IT Department, CN=netlab.fictionaluniversity.edu/emailAddress=janedoe@fictionaluniversity.edu
Issuer DN	same as subject (certificate is self-signed)
Valid Not Before	Aug 5 20:37:50 2014 GMT
Valid Not After	Aug 5 20:37:50 2019 GMT
Private Key Length	2048 bit

[← Back to Admin](#)
[↓ Download Certificate Signing Request](#)
[☀ Replace Certificate](#)
[✖ Delete Certificate](#)

6. A file with an extension of .csr has been generated and should be accessible via the list of downloaded files in your web browser. You may submit this file to the Certificate Authority (CA) of your choice. Typically, a small annual fee is charged by the CA for this service.

After you receive a signed version of your certificate from the CA, you will use it to replace the unsigned version.

1. Navigate to **Network Configuration > Webserver Ports > Manage Certificates**.
2. You will be replacing the self-signed certificate that you created. Notice that the SYSTEM\_DEFAULT certificate is indicated to be the active certificate, this is necessary since you cannot replace an active certificate. (If the SYSTEM\_DEFAULT is not currently the active certificate, select it and the option to Make Active before proceeding).
3. Select the self-signed certificate you created.

Manage Certificates						
Name	Active	Certificate	Valid From / To	Private Key	Signing Request	Manage
SYSTEM_DEFAULT	✓	self-signed	Mar 10 14:39:09 2014 GMT Mar 10 14:39:09 2019 GMT	2048 bit	none	
netlab.fictionaluniversity.edu		self-signed	Aug 5 20:37:50 2014 GMT Aug 5 20:37:50 2019 GMT	2048 bit	pending	

- The SSL Certificate Summary is displayed. Select **Replace Certificate**.

**SSL Certificate Summary - netlab.fictionaluniversity.edu**

Name	netlab.fictionaluniversity.edu
Subject DN	C=US, ST=NC, L=Anytown, O=Fictional University of Anytown USA, OU=IT Department, CN=netlab.fictionaluniversity.edu/emailAddress=janedoe@fictionaluniversity.edu
Issuer DN	same as subject (certificate is self-signed)
Valid Not Before	Aug 5 20:37:50 2014 GMT
Valid Not After	Aug 5 20:37:50 2019 GMT
Private Key Length	2048 bit

- Paste the signed certificate you received from the CA into the **New Certificate** text box, including the header and footer lines and select OK.

**Replace Certificate - netlab.fictionaluniversity.edu**

Name: netlab.fictionaluniversity.edu

New Certificate

```
-----BEGIN CERTIFICATE-----
[Certificate Content]
-----END CERTIFICATE-----
```

Paste the contents of the new certificate file (.crt or .pem) above.

The certificate must be in PEM format. The PEM certificate format uses the following header and footer lines, which should be included:

```
-----BEGIN CERTIFICATE-----
-----END CERTIFICATE-----
```

When using a chain of certificates, just append the certificates together, one after the other; the server certificate needs to go first, otherwise you'll get a mismatch between private and public keys.

**If the new certificate is valid, it will overwrite the old certificate - the old certificate is not retrievable.**

- Return to the Manage Certificates page. Verify that your certificate now indicates it is signed (as shown below).

If the status of the certificate does not indicate signed, it may be necessary to log off the system and close your browser window. The status will be updated when you enter the system again.

- Select the signed certificate.

Manage Certificates						
Name	Active	Certificate	Valid From / To	Private Key	Signing Request	Manage
SYSTEM_DEFAULT	✔	self-signed	Mar 10 14:39:09 2014 GMT Mar 10 14:39:09 2019 GMT	2048 bit	none	
netlab.fictionaluniversity.edu		signed	Aug 5 20:37:50 2014 GMT Aug 5 20:37:50 2019 GMT	2048 bit	none	

- Select the **Make Active** option.

SSL Certificate Summary - netlab.fictionaluniversity.edu

Name	netlab.fictionaluniversity.edu
Subject DN	OU=Domain Control Validated, CN=*.netdevgroup.com
Issuer DN	C=US, ST=Arizona, L=Scottsdale, O=GoDaddy.com, Inc., OU=http://certs.godaddy.com/repository/, CN=GoDaddy Secure Certificate Authority - G2
Valid Not Before	Jun 23 15:05:02 2014 GMT
Valid Not After	Jun 28 15:44:54 2017 GMT
Private Key Length	2048 bit

Back to Admin
 **Make Active**
 Replace Certificate
 Delete Certificate

- The signed certificate is now active.

Manage Certificates						
Name	Active	Certificate	Valid From / To	Private Key	Signing Request	Manage
SYSTEM_DEFAULT		self-signed	Mar 10 14:39:09 2014 GMT Mar 10 14:39:09 2019 GMT	2048 bit	none	
netlab.fictionaluniversity.edu	✔	signed	Aug 5 20:37:50 2014 GMT Aug 5 20:37:50 2019 GMT	2048 bit	none	

- Verify that your browser address now indicates HTTPS. It may be necessary to log off the system, close your browser window and then re-enter the system.



### 2.28.2.2 Add a Certificate and Private Key to NETLAB+

If you have a signed certificate and private key for your organization (it may be a domain level certificate), you will add the certificate and private key to your NETLAB+ system.

1. Navigate to **Network Configuration > Webserver Ports > Manage Certificates**. You will see the self-signed certificate that is included with NETLAB+.

Manage Certificates						
Name	Active	Certificate	Valid From / To	Private Key	Signing Request	Manage
SYSTEM_DEFAULT		self-signed	Mar 10 14:39:09 2014 GMT Mar 10 14:39:09 2019 GMT	2048 bit	none	

2. Click **Add Certificate**.
3. Select the option for having an existing certificate and private key and then select Next.

Generate a certificate signing request, temporary certificate, and new private key  
 I have an existing certificate and private key

4. Paste your certificate, including the header and footer lines, into the **Certificate** textbox.
5. Paste your private key, including the header and footer lines, into the **Private Key** textbox.



7. Return to the **Manage Certificates** page.

If your certificate is not displayed in the list, it may be necessary to log off the system and close your browser window. The certificate will be listed when you enter the system again.

8. Select the signed certificate.

Manage Certificates						
Name	Active	Certificate	Valid From / To	Private Key	Signing Request	Manage
SYSTEM_DEFAULT	✔	self-signed	Mar 10 14:39:09 2014 GMT Mar 10 14:39:09 2019 GMT	2048 bit	none	
netlab.fictionaluniversity.edu		signed	Aug 5 20:37:50 2014 GMT Aug 5 20:37:50 2019 GMT	2048 bit	none	

9. Select the **Make Active** option.

**SSL Certificate Summary - netlab.fictionaluniversity.edu**

Name	netlab.fictionaluniversity.edu
Subject DN	OU=Domain Control Validated, CN=*.netdevgroup.com
Issuer DN	C=US, ST=Arizona, L=Scottsdale, O=GoDaddy.com, Inc., OU=http://certs.godaddy.com/repository/, CN=GoDaddy Secure Certificate Authority - G2
Valid Not Before	Jun 23 15:05:02 2014 GMT
Valid Not After	Jun 28 15:44:54 2017 GMT
Private Key Length	2048 bit

Back to Admin
 **Make Active**
 Replace Certificate
 Delete Certificate

10. The signed certificate is now active.

Manage Certificates						
Name	Active	Certificate	Valid From / To	Private Key	Signing Request	Manage
SYSTEM_DEFAULT		self-signed	Mar 10 14:39:09 2014 GMT Mar 10 14:39:09 2019 GMT	2048 bit	none	
netlab.fictionaluniversity.edu	✔	signed	Aug 5 20:37:50 2014 GMT Aug 5 20:37:50 2019 GMT	2048 bit	none	

11. Verify that your browser address now indicates HTTPS. It may be necessary to log off the system, close your browser window and then re-enter the system.





### 2.28.3 Interface Status

The Interface Status is shown in the second section of the Network Configuration page. The Interface status displays settings pertaining to both the inside and outside interface.

Interface Status		
	Outside (eth0)	Inside (eth1)
Interface	eth0	eth1
NETLAB+ Role	Outside	Inside
Link State	Up	Up
Admin State	Up	Up
Speed	1,000	100
Duplex	FULL	FULL
Auto Negotiation	ON	ON
MAC Address	00:11:25:AA:ED:B0	00:11:25:AA:ED:B1
IP Address		169.254.1.1 (primary) 169.254.0.254 (secondary)
Subnet Mask	255.255.255.0 (/24)	255.255.255.0 (/24)
	<b>Configure</b>	<b>Not Configurable</b>

The following fields provide information for both the inside and outside interfaces:

- **Interface:** The system interface name.
- **NETLAB+ Role:** The role that the interface plays for this NETLAB+ system.
- **Link State:** The current link state of the interface.
  - **UP** The interface is up (link detected).
  - **DOWN** The interface is down (link not detected).
  - **ADMIN\_DOWN** The interface is administratively down.

If the driver's interface does not support this information, the link-state value will be undefined.

- **Admin State:** The desired administrative link state of the interface.
  - **UP** The interface is administratively enabled.
  - **DOWN** The interface is administratively disabled.

Note: Currently this value will always be UP. There is no method to disable an interface.

- **Speed:** The current link speed if the current interface link state is UP. A value of null/undefined is returned if the interface link state is down or if the driver does not support this information. A virtual appliance may report 10000 as it is a software network interface.
- **Duplex:** The current link duplex (if the interface link state is up). A value of null/undefined is returned if the interface link state is down or if the driver does not support this information.
- **Auto negotiation:** The auto negotiation state of link speed and duplex. A value of null/undefined is returned if the interface link state is down or if the driver does not support this information.
- **MAC Address:** The current MAC layer address of the interface.
- **IP Address:** The current primary IPV4 address bound to the interface as reported by the kernel.
- **Subnet Mask:** The current primary IPV4 subnet mask bound to the interface as reported by kernel.

The IP Address and Subnet Mask may be configured for the Outside Interface.

**Outside (eth0)**

IP Address ● ● ● ●

Subnet Mask  ▼

show help tips

Update
 Cancel

### 2.28.4 Kernel Statistics and Driver Statistics

Kernel and driver statistics may be viewed by selecting the **Show** button in the Kernel Statistics and Driver Statistics sections. In the picture below, the Kernel Statistics are shown. Selecting the Hide button would hide this portion of the display, in the same manner as the Driver Statistics.

Kernel Statistics		
	Outside (eth0)	Inside (eth1)
MTU	1,500	1,500
Collisions	0	0
RX Packets	25,024,570	5,336,706
RX Errors	0	0
RX Dropped	0	0
RX Over Errors	0	0
TX Packets	23,871,121	7,470,478
TX Errors	0	0
TX Dropped	0	0
TX Over Errors	0	0
TX Carrier Errors	0	0
TX Queue Length	1,000	1,000

Refresh

Hide

**Driver Statistics**

Show

### 2.28.5 Test Outbound Access

Use the NETLAB+ Outbound Network Test to verify the outbound firewall requirements have been met. This test can also be accessed from the console interface. This test is available from the Network Configuration utility (see section 2.28)

NETLAB+ must be able to send certain types of data through the network in order to function properly. This outbound traffic includes DNS lookups, outbound mail and HTTP to NETLAB+ Central Services.

The Outbound Firewall Test will determine if the interface, gateway and DNS are reachable. It will also test the server’s ability to communicate with NETLAB+ Central Support. Failure of any of these tests will indicate a network problem and should be corrected for proper functionality of NETLAB+. A successful test will indicate **OK** for all test types.

This is an outbound test only.

Since this is only an outbound test, it will not determine if inbound clients can access the NETLAB+ server. Inbound access problems must be addressed on a client-by-client basis, since this will involve the client’s ability to reach the NETLAB+ server via HTTP and remote access ports.

Detailed firewall connectivity requirements are explained in the “NETLAB+: CSS, Connectivity and Firewall Considerations” white paper available at: [http://www.netdevgroup.com/support/netlab\\_css\\_connect.html](http://www.netdevgroup.com/support/netlab_css_connect.html)

The results of the Outbound Network Test will be displayed.

```
NETLAB Outbound Network and Firewall Test...

Test Protocol/Port Destination Status
-----
ping icmp (echo) primary interface RUNNING - OK (5/5)
ping icmp (echo) default gateway RUNNING - OK (5/5)
ping icmp (echo) primary DNS RUNNING - OK (5/5)
find dns (53 udp) nss.intranet RUNNING - OK (10.0.0.82)
ping icmp (echo) nss.intranet RUNNING - OK (5/5)
get http (80 tcp) nss.intranet RUNNING - OK
mail smtp (25 tcp) mail.netdevgroup.com RUNNING - OK

Tracing the route from this server to CSS.
This may fail if ICMP echo packets are blocked.
traceroute to nss.intranet (10.0.0.82), 30 hops max, 38 byte packets
 1 nss.intranet (10.0.0.82) 0.451 ms 0.332 ms 0.313 ms

OK
```

## 2.29 Disk Status



Disk Status displays the capacity and usage of storage volumes on the NETLAB+ server appliance.

**Disk Status**

**Admin**

NETLAB+ APPLIANCE - DISK STATUS					
Volume	Role	Capacity	Used	Avail	Use%
hda1	system	988M	305M	633M	33%
hda5	tech support	4.8G	4.4G	220M	95%
hda6	program files	4.8G	607M	4.0G	13%
hda7	user data	7.5G	665M	6.5G	9%
hda8	virtual mem				

Refresh
 Done

NETLAB Professional Edition<sup>®</sup> systems are delivered with two hard disks and RAID 1 mirroring. An identical copy of each volume is maintained on each disk. If the system encounters unrecoverable problems with a disk partition in a RAID 1 volume, that partition is marked faulty and no longer used. However, the system will continue to function without data loss as long as the other partition on the same volume is healthy.

The status of RAID disk volumes are displayed on systems equipped with RAID 1. A healthy RAID system will display a green light beside each disk volume.

NETLAB+ APPLIANCE - DISK STATUS									
Volume	Role	Capacity	Used	Avail	Use%	Status	Disk 0	Disk 1	Progress
md1	system	2.0G	74M	1.9G	4%	good	up	up	
md6	program files	9.8G	329M	9.4G	3%	good	up	up	
md7	tech support	1000M	32M	968M	3%	good	up	up	
md8	user data	60G	38M	60G	0%	good	up	up	
md5	virtual mem					good	up	up	

Refresh
 Done

A red light beside a disk volume indicates a partition failure, which cannot be corrected without manual intervention. Please contact NDG technical support staff if you see a red light on this page.

NETLAB+ APPLIANCE - DISK STATUS									
Volume	Role	Capacity	Used	Avail	Use%	Status	Disk 0	Disk 1	Progress
md1	system	2.0G	74M	1.9G	4%	good	up	up	
md6	program files	9.8G	329M	9.4G	3%	degraded	up	fail	
md7	tech support	1000M	32M	968M	3%	degraded	up	fail	
md8	user data	60G	38M	60G	0%	resync	up	up	39.2% 380.2min
md5	virtual mem					degraded	up	fail	

The disk subsystem requires maintenance. Please contact NDG technical support.

Note: NETLAB+ uses software RAID, even if the server model has support for on-board RAID. Replacing a hard disk will not automatically initialize the disk and return it to the RAID volume. Please contact NDG if you need to replace a hard disk.

Replacing a hard disk will not automatically initialize the disk and return it to the RAID volume. Please contact NDG for assistance.

NDG also receives alerts through CSS if a RAID 1 partition has failed. Please keep your contact information up to date so that we may notify you in this event.

## 2.30 Usage Reporting



Usage reporting provides valuable feedback on the use of your NETLAB+ system. The ability to review the use your NETLAB+ system is receiving provides helpful information to share within your organization, and can be a helpful indicator of when to consider expanding your system.

There are several levels of reporting available, each with a variety of sorting and grouping options:

- **Community Usage:** Total number of labs and lab hours, grouped by community.
- **User Usage:** Total number of labs and lab hours per user.
- **Class Usage:** Total number of labs and lab hours per class.
- **Pod Usage:** Total number of labs and lab hours per equipment pod.

### 2.30.1 Community Usage Reporting



The total number of labs and lab hours, grouped by community is displayed when community usage reporting is selected. The report may be customized by selecting options on the menu page.

**Selection Criteria**

**Start Date**  None  Date Aug 22 2006

**End Date**  None  Date Jun 26 2008

**Sort By**

- Lab Hours
- Total Labs
- Community ID
- Community Name

Search
 Exit

- **Start Date and End Date:** An optional start date and end date may be selected. The information displayed will be limited by the selected date range. If no date range is selected, the report will contain information starting from earliest available through the present.
- **Sort By:** The information is sorted by default according to lab hours, but may be changed to total labs, community ID or community name.

Select **Search** to view the reporting results.

COMMUNITY USAGE EARLIEST to NOW			
ID	NAME	LABS	HOURS
1	default	152.0	548.5
3	CCNP Development Team	7.0	16.0
4	Quick Tech	5.0	7.0
2	ABC Technical School	2.0	1.5
5	Acme University	0.0	0.0
TOTAL		166.0	573.0

Notice that community usage is reported from “Earliest” to “Now” since no start or end dates were specified. The sort field may be changed by clicking on a heading field. Here, we will change the report to sort by **Name**.

COMMUNITY USAGE EARLIEST to NOW			
ID	NAME	LABS	HOURS
2	ABC Technical School	2.0	1.5
5	Acme University	0.0	0.0
3	CCNP Development Team	7.0	16.0
1	default	152.0	548.5
4	Quick Tech	5.0	7.0
TOTAL		166.0	573.0

The statistics reflect only current communities since the time they were created. No information is displayed for communities that have been deleted from the system.



### 2.30.2 User Usage Reporting



The total number of labs and lab hours is reported for each user. This level of reporting includes a variety of options that provide a high level of flexibility. The report may be customized by selecting options on the menu page. Field descriptions may be displayed by selecting **show tool tips**.

Selection Criteria

<b>Start Date</b>	<input checked="" type="radio"/> None <input type="radio"/> Date <span style="margin-left: 10px;">Aug ▼</span> <span style="margin-left: 10px;">22 ▼</span> <span style="margin-left: 10px;">2006 ▼</span>
<b>End Date</b>	<input checked="" type="radio"/> None <input type="radio"/> Date <span style="margin-left: 10px;">Jun ▼</span> <span style="margin-left: 10px;">26 ▼</span> <span style="margin-left: 10px;">2008 ▼</span>
<b>Community</b>	--- all communities --- ▼
<b>User ID</b>	<input style="width: 100%;" type="text"/>
<b>User Name</b>	<input style="width: 100%;" type="text"/>
<b>Count</b>	<input checked="" type="radio"/> Individual usage only <input type="radio"/> Individual and team usage
<b>Show</b>	<input checked="" type="radio"/> Show all users regardless of usage <input type="radio"/> Only users with positive usage <input type="radio"/> Only users with zero usage
<b>Sort By</b>	<input checked="" type="radio"/> Lab Hours <input type="radio"/> Total Labs <input type="radio"/> User ID <input type="radio"/> User Name
<b>Group By</b>	<input checked="" type="radio"/> Community <input type="radio"/> No Grouping

show help tips

- **Start Date and End Date:** An optional start date and end date may be selected. The information displayed will be limited by the selected date range. If no date range is selected, the report will contain information starting from earliest available through the present.
- **Community:** By default, the report contains information on users from all communities. You have the option to filter the report to a single community.
- **User ID:** Enter a value to filter on a particular user ID. An asterisk (\*) may be used to match multiple records. For example, **student\*** will match any user ID starting with the word **student**.

- **User Name:** Enter a value to filter on a particular user name. An asterisk (\*) may be used to match multiple records. For example, **Smith\*** will match any user ID starting with the word **Smith**.
- **Count:** This option determines if team usage is also counted in each user’s total lab hours.
- **Show:** Use this option to show or hide users with zero lab hours.
- **Sort By:** The information is sorted by default according to lab hours, but may be changed to total labs, user ID or user name.
- **Group By:** Determines if results are grouped by communities. This option has no affect unless the “**all communities**” option is selected in the Community option above.

Select **Search** to view the reporting results.

USER USAGE EARLIEST to NOW			
ID	NAME	LABS	HOURS
<b>[1] Default Community</b>			
newbe	New Be	5	6.0
jcary	Jason Cary	3	3.0
msmith	Mary Smith	3	2.0
jdoe2006	Jane Doe	1	2.0
sebby	Sebby	1	1.0
Student5	Student Five	2	1.0
victoria	Victoria	1	1.0
Student8	Student Eight A	1	0.5
<b>[2] ABC Technical School</b>			
Studentabc_1	Student abc 1	1	0.5
Studentabc_2	Student abc 2	0	0.0
Studentabc_3	Student abc 3	0	0.0
Teacher1	Teacher One	0	0.0
Teacher2	Teacher Two	0	0.0
<b>[4] Quick Tech</b>			
s1_quick	S1 Quick	2	3.0
s2_quick	S2 Quick	2	3.0
jquick	Jane Quick	0	0.0
<b>TOTAL</b>		<b>22</b>	<b>23.0</b>

As shown in the example of community reporting in the previous section, the sort field can be changed by clicking on a heading field.

The statistics reflect only current communities since the time they were created. No information is displayed for communities that have been deleted from the system.

### 2.30.3 Class Usage Reporting



Class usage reporting displays the total number of labs and lab hours for instructor-led training (ILT), individual labs, and team labs for each class. The report may be customized by selecting options on the menu page. Field descriptions may be displayed by selecting **show tool tips**.

**Selection Criteria**

Start Date:  None  Date Aug 22 2006

End Date:  None  Date Jun 27 2008

Community: --- all communities ---

show help tips

- **Start Date and End Date:** An optional start date and end date may be selected. The information displayed will be limited by the selected date range.
- **Community:** By default, the report is grouped by community. You have the option to filter the report to a single community.

Select **Search** to view the reporting results.

In this example, a class usage report has been created for a single community, within a selected date range.

CLASS USAGE Aug 1, 2006 to Aug 1, 2008								
NAME	ILT LABS	ILT HOURS	INDIVIDUAL LABS	INDIVIDUAL HOURS	TEAM LABS	TEAM HOURS	TOTAL LABS	TOTAL HOURS
<b>[2] ABC Technical School</b>								
CCNP Fall Class	36	55.0	1	0.5	1	1.0	2	1.5
CCNP Summer Class	6	3.0	0	0.0	0	0.0	0	0
FNS Class	86	88.0	0	0.0	0	0.0	0	0
<b>TOTAL</b>	<b>128</b>	<b>146.0</b>	<b>1</b>	<b>0.5</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1.5</b>

### 2.30.4 Pod Usage Reporting



Pod Usage Reporting displays the total number of labs and lab hours for each pod that is installed on your NETLAB+ system. The report will only contain statistics for currently installed pods. Pods that have been deleted from the system will not be included. The report may be customized by selecting options on the menu page.

**Selection Criteria**

**Start Date**  None  Date Aug 22 2006

**End Date**  None  Date Jun 27 2008

**Sort By**

- Lab Hours
- Total Labs
- Pod ID
- Pod Name
- Pod Type

- **Start Date** and **End Date:** An optional start date and end date may be selected. The information displayed will be limited by the selected date range.
- **Sort By:** The information is sorted by default according to lab hours, but may be changed to total labs, Pod ID, pod name or pod type.

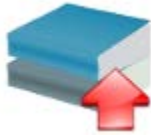
Select **Search** to view the reporting results.

POD USAGE EARLIEST to NOW				
ID	NAME	TYPE	LABS	HOURS
3	POD 3	ASA Testing	13.0	66.0
1	POD 1	AE Basic Router Pod V2	14.0	41.0
2	Wireless Testing	DEV Wireless Controllers	4.0	37.0
7	Galactica	AE Cuatro Router Pod	5.0	5.5
10	CSP # 5	AE Cuatro Switch Pod	0.0	0.0
4	Galactica .	AE Network Fundamentals Pod	0.0	0.0
<b>TOTAL</b>			<b>36.0</b>	<b>149.5</b>

Here, we will modify our results by selecting the pod ID field as our sort field.

POD USAGE EARLIEST to NOW				
ID	NAME	TYPE	LABS	HOURS
1	POD 1	AE Basic Router Pod V2	14.0	41.0
2	Wireless Testing	DEV Wireless Controllers	4.0	37.0
3	POD 3	ASA Testing	13.0	66.0
4	Galactica .	AE Network Fundamentals Pod	0.0	0.0
7	Galactica	AE Cuatro Router Pod	5.0	5.5
10	CSP # 5	AE Cuatro Switch Pod	0.0	0.0
TOTAL			36.0	149.5

## 2.31 Manage Curriculum



NETLAB+ can provide web hosting for curriculum. This page includes options to add or remove curriculum modules and to select curriculum authorization options appropriate for your system.

As of version 4.0.24, curriculum is authorized per community. Systems with multiple communities must manage access to curriculum using the Curriculum Authorization Options explained below. The global Curriculum Authorization Options influence the default authorization behavior for new communities and new curriculum. Curriculum management may only be performed using the Administrator account.

Certain restrictions must be followed to preserve the separation of access to copyrighted Cisco Networking Academy curriculum content and labs.

Please refer to [Appendix C](#) for instructions on managing curriculum on a multi-purpose NETLAB+ system.

Curriculum management may only be performed using the Administrator account using the Add/Remove curriculum function.

**Installed Curriculum Modules**

- ◆ Click on the EDIT buttons to edit or delete curriculum modules.
- ◆ Click on the name to access the curriculum in a popup window.

INSTALLED CURRICULUM					
EDIT	NAME	LANGUAGE	AUTHORIZED COMMUNITIES	INSTRUCTOR ACCESS	STUDENT ACCESS
	<a href="#">CCNA Exploration Routing 4.0</a>	English	<ul style="list-style-type: none"> <li>◆ default</li> <li>◆ iowa Pod 1</li> <li>◆ iowa Pod 2</li> <li>◆ iowa Pod 3</li> <li>◆ Bogotá, Colombia</li> <li>◆ Lima, Perú</li> <li>◆ Buenos Aires, Argentina</li> <li>◆ Test</li> </ul>	Yes	Yes

Add Curriculum
 Curriculum Authorization Options

Select the **Curriculum Authorization Options** button to display the selection of authorization preferences. The preferences for curriculum authorization determine how the system will handle authorization of curriculum modules when additional communities are created and new curriculum modules are installed (see section [2.31.3](#))

AUTHORIZATION PREFERENCES		
Option	When a new community is created...	When new curriculum is installed...
<input checked="" type="radio"/> ALL	All existing curriculum is automatically authorized for use by the new community.	All communities in the authorization checkboxes are checked on by default.
<input type="radio"/> DEFAULT	Existing curriculum must be manually authorized for the new community.	The default community in the authorization checkboxes is checked on by default. All other communities are unchecked by default.
<input type="radio"/> MANUAL	Existing curriculum must be manually authorized for the new community.	All communities in the authorization checkboxes are unchecked by default.

- **All**

When a new community is created, all existing curriculum is automatically authorized for use by the new community. When new curriculum is added, the checkboxes indicating that a community is authorized to use the curriculum are automatically checked on for all communities. No intervention from the Administrator is required to make installed curriculum modules available to all communities. This option is also appropriate for all single community systems.

Do not use the ALL option for a multi-purpose NETLAB+ system. This choice is not appropriate for multi-purpose systems due to the licensing issues discussed above. Please see [Appendix C](#) for instructions.

- **Default**

When a new community is created, existing curriculum must be manually authorized for the new community. When new curriculum is added, the checkbox indicating that a community is authorized to use the curriculum is automatically checked on *for the default community only*. For all other communities, the checkboxes must be checked on to allow the communities to access the new curriculum.

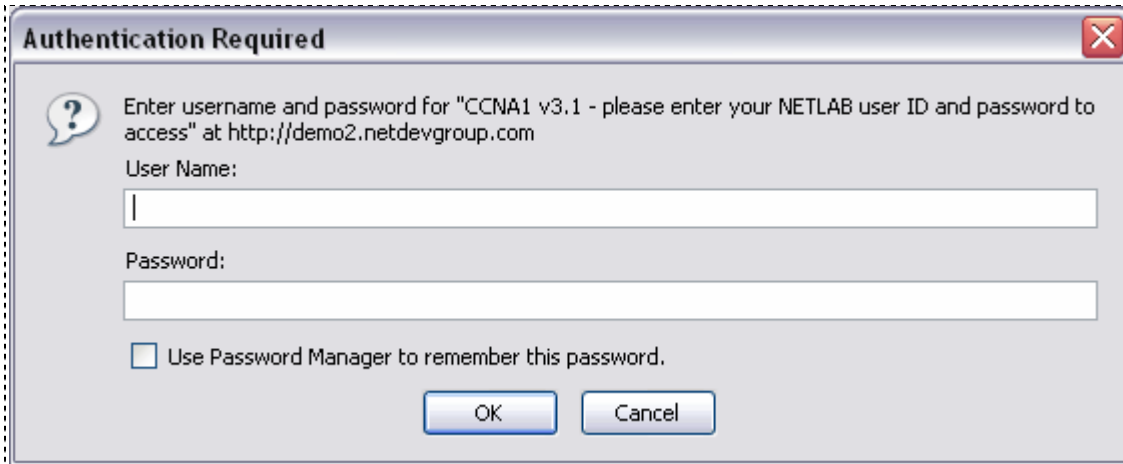
- **Manual**

When a new community is created, existing curriculum must be manually authorized for the new community. When new curriculum is added, the checkboxes must be checked on to allow communities, including the default community, to access the new curriculum.

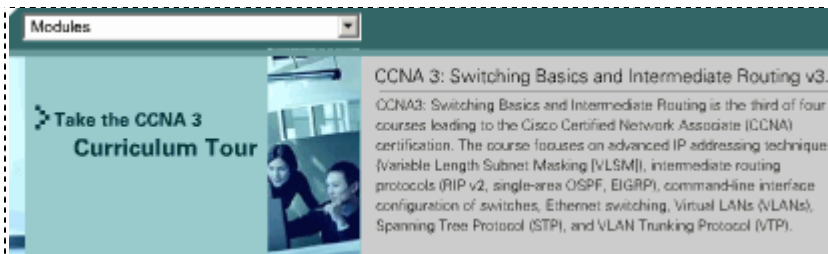


### 2.31.1 View a Curriculum Module

You may view any of the modules by clicking on the name of the module in the installed curriculum list (see section 2.31); however, you will be prompted to enter a NETLAB+ user ID and password. You may use a valid instructor ID, student ID or the Administrator account.



The selected curriculum will then be displayed.



### 2.31.2 Edit Curriculum Module Settings

The curriculum modules currently installed on the system are listed on the Manage Curriculum page.

#### Installed Curriculum Modules

- Click on the EDIT buttons to edit or delete curriculum modules.
- Click on the name to access the curriculum in a popup window.

INSTALLED CURRICULUM					
EDIT	NAME	LANGUAGE	AUTHORIZED COMMUNITIES	INSTRUCTOR ACCESS	STUDENT ACCESS
	<a href="#">CCNA Exploration Routing 4.0</a>	English	<ul style="list-style-type: none"> <li>• default</li> <li>• Iowa Pod 1</li> <li>• Iowa Pod 2</li> <li>• Iowa Pod 3</li> <li>• Bogotá, Colombia</li> <li>• Lima, Perú</li> <li>• Buenos Aires, Argentina</li> <li>• Test</li> </ul>	Yes	Yes

Add Curriculum
 Curriculum Authorization Options

To edit modules currently installed, select the **Edit** button , to display the edit screen.

Module Identifier	en_routing_40
Curriculum Name and Version	CCNA Exploration Routing 4.0
Language	English
Authorized Communities	<input checked="" type="checkbox"/> 1: default <input checked="" type="checkbox"/> 2: Iowa Pod 1 <input checked="" type="checkbox"/> 3: Iowa Pod 2 <input checked="" type="checkbox"/> 4: Iowa Pod 3 <input checked="" type="checkbox"/> 5: Bogotá, Colombia <input checked="" type="checkbox"/> 6: Lima, Perú <input checked="" type="checkbox"/> 7: Buenos Aires, Argentina <input checked="" type="checkbox"/> 8: Test <input type="checkbox"/> 9: ABC Technical School
Allow Access	<input checked="" type="checkbox"/> Instructors <input checked="" type="checkbox"/> Students
Access URL	/uc/en_ERouting_v40_Linux/index.html
<span> Update</span> <span> Delete</span> <span> Cancel</span>	


You may wish to update the **Curriculum Name and Version** and the **Language** fields in order to display the information on the main curriculum screen.

In the **Authorized Communities** section, each community that you wish to grant access to view the curriculum content must have the check box next to the community name checked on. You may check on and/or uncheck the boxes as needed.

You may also update the **Allow Access** settings for the module to allow instructors and/or student access the material.

Select **Cancel** to return to the main curriculum screen with no action, **Update** to implement any changes you have made, or **Delete** to remove the module from the system.

### 2.31.3 Add New Curriculum Modules

Again, working from Manage Curriculum page, select  to add a new curriculum module. Follow the directions given on each step of the three-step process.

Use the name of the file (without the .zip extension) as the **Module Identifier**. The **Curriculum Name and Version** and the **Language** information that you enter will be displayed in the curriculum module list.

In the **Authorized Communities** section, each community that you wish to grant access to view the curriculum content must have the check box next to the community name checked on. You may check on and/or uncheck the boxes as needed. The initial settings that are displayed depend upon your selection of curriculum authorization options (see section [2.31](#)).

You may choose to allow instructors and/or students to access the curriculum through NETLAB+ by selecting the **Allow Access** settings.

**Step 1 of 3** - Specify a module identifier, description, and the users that will have access.

If hosting Cisco Networking Academy Curriculum:

1. Download the curriculum in **.zip** or **Linux** format from Academy Connection to your local PC. **Do not use Windows or .exe formats!**
2. Use the name of the file (without the .zip extension) as the module name (for example, en\_CCNA1\_v31).

Module Identifier	en_routing_40
Curriculum Name and Version	CCNA Exploration Routing 4.0
Language	English
Authorized Communities	<input checked="" type="checkbox"/> 1: default <input checked="" type="checkbox"/> 2: Iowa Pod 1 <input checked="" type="checkbox"/> 3: Iowa Pod 2 <input checked="" type="checkbox"/> 4: Iowa Pod 3 <input checked="" type="checkbox"/> 5: Bogotá, Colombia <input checked="" type="checkbox"/> 6: Lima, Perú <input checked="" type="checkbox"/> 7: Buenos Aires, Argentina <input checked="" type="checkbox"/> 8: Test <input type="checkbox"/> 9: ABC Technical School
Allow Access	<input checked="" type="checkbox"/> Instructors <input checked="" type="checkbox"/> Students

**Next** **Cancel**




**Step 2 of 3** - Enter the location (drive, path, and filename) of the curriculum .zip file on your local machine. Click on the **Browse** button to open a file selection dialog. When you click OK, the .zip file you specify will be uploaded to the NETLAB server. Then, the contents will be unzipped and installed.

Zip file: C:\Curriculum\_Download


**Next** **Back** **Cancel**

Depending on the file size and speed of your connection, it may take a while for the upload process to complete. Remain on the page until the upload has completed.


**Step 3 of 3 - Uploading ZIP File**




 The ZIP file is now being uploaded to the NETLAB server. This may take a while for large files and/or slow connections. If you navigate from this page, the upload will be cancelled.

**UPLOAD IN PROGRESS - DO NOT NAVIGATE AWAY FROM THIS PAGE**



A message will indicate successful upload of the curriculum module.


 • Curriculum from **en\_CCNA1\_v31\_in.zip** was installed successfully

## 2.32 Academy Sharing Portal



The NETLAB+ license allows Cisco Networking Academies to share access to their system with other Cisco Networking Academies. You can also charge cost recovery (within the guidelines of the Cisco Networking Academy).

Participation in the sharing portal is optional. This service is provided at no additional cost to NETLAB<sub>AE</sub> customers with a current maintenance agreement. Academies that are not current on their maintenance agreement will need to update their maintenance agreement in order for their information to be displayed on the portal.

Prior to enabling advertising on the web portal, it is recommended that you verify the status of outbound HTTP connectivity by testing outbound access (see section [Appendix A.2](#)).

Complete the form in order to begin advertising your Academy on the portal and select **Update Settings** to save changes. All information is subject to review by NDG.

**1. Do you want to advertise the availability of your system(s) to other Academies using the NETLAB Academy Edition sharing portal?**

Yes  No

---

**2. What [pod types](#) are you willing to share (check all that apply)?**

Basic Router Pod v1 (no PCs)

Basic Router Pod v2 (with remote PCs)

Basic Switch Pod v1 (no PCs)

Basic Switch Pod v2 (with remote PCs)

Advanced Router Pod

Advanced Switch Pod

Network Security Pod (2.0)

Security Router Pod

Security PIX Pod

CCNA 2.1 5-Router Pod

---

**3. Type your Academy name as you would like it to appear on the sharing portal.**

Generic University

---

**4. Who should Academies contact to coordinate access to your NETLAB<sub>AE</sub> system(s)?**

Name	Email Address	Phone Number (optional)
Jane Doe	janedoe@fictionalname.org	555-5555

---

**5. Provide any additional information you want stated on the website. For example, explain your sharing model:**

- ◆ Example 1. *Our CATC will share with all Academies within our Academy tree.*
- ◆ Example 2. *We are looking to exchange time with other Academies that own NETLAB<sub>AE</sub>.*
- ◆ Example 3. *We charge a small cost recovery fee that is based on the total number of participating Academies. Our goal is to keep the cost below X per year.*

We charge a small cost recovery fee that is based on the total number of participating Academies. Our goal is to keep the cost below \$125 USD per year.

---

**6. Do you want to notify Cisco Area and Technical Managers that your Academy will provide no cost access to Cisco Network Academies that need assistance?**

Yes\*  No

The information will be added to the Academy Sharing Portal.

### Hosting Academies

The Academies below have indicated that they are willing to share time on their NETLAB<sub>AE</sub> system. Please direct inquiries to the contacts listed below.

Academy Name	Pod Types Available	Contact Information	Comments
Generic University	Basic Router Pod v1 (no PCs) Advanced Router Pod	Jane Doe janedoe@fictionalname.net 555-5555	We charge a small cost recovery fee that is based on the total number of participating Academies. Our goal is to keep the cost below \$125 USD per year.

The Academy Sharing Portal is available at:

<http://www.netdevgroup.com/content/cnap/sharing/>



## Appendix A Console Configuration

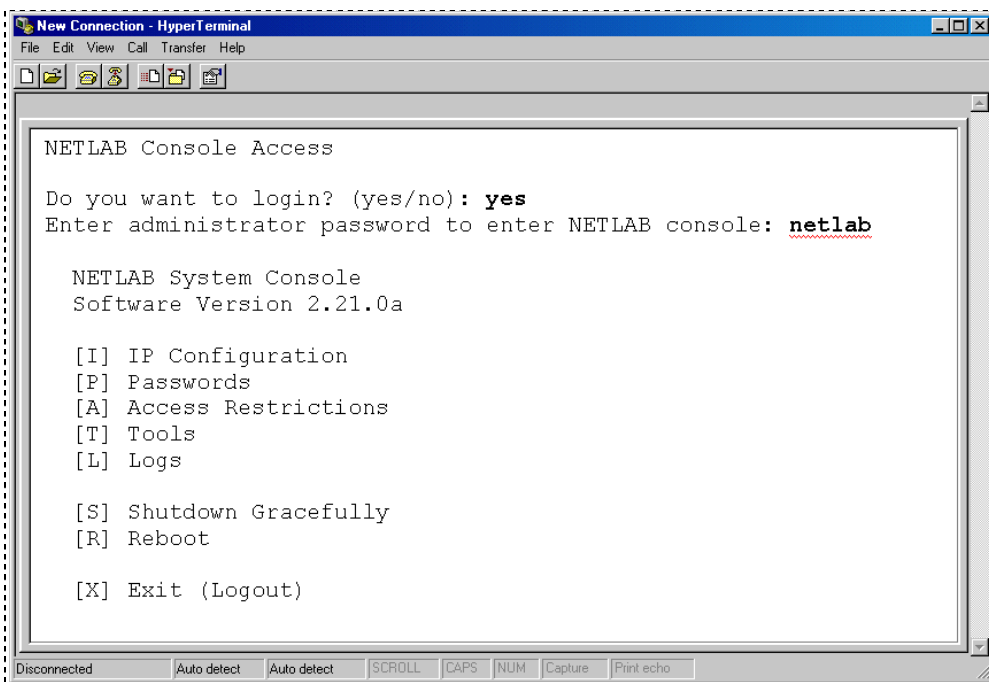
Initial server configuration tasks are performed using a menu-driven console interface. These tasks establish necessary IP connectivity prior to using the web-based administrator interface.

To perform basic IP configuration, you will need to connect to the NETLAB+ console interface. There are two acceptable ways to do this:

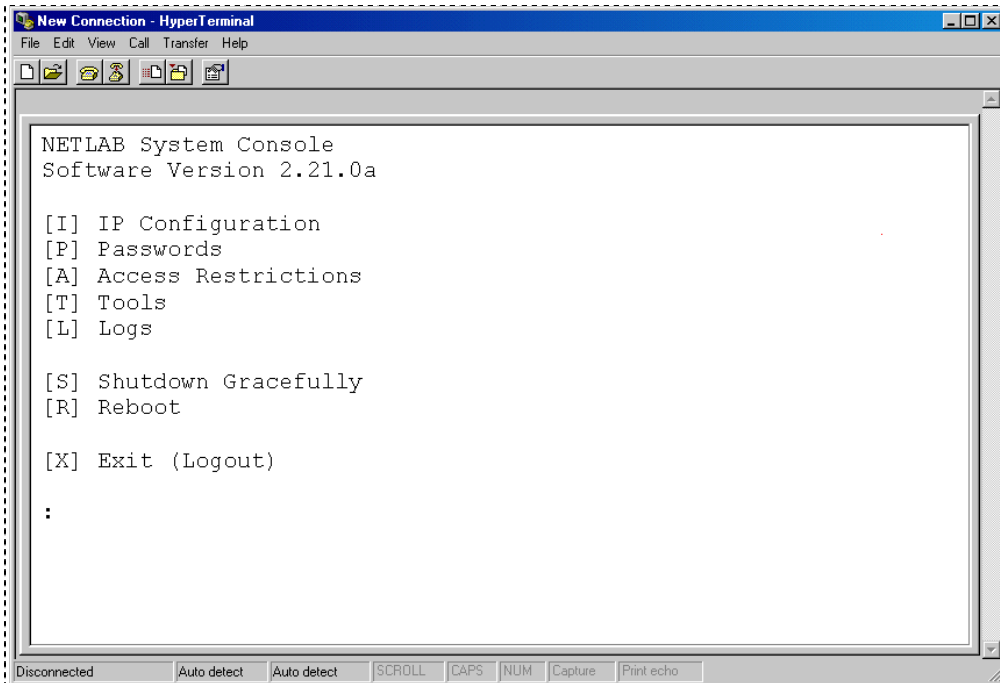
Connect a VGA monitor and keyboard to the designated ports on your system. This method is preferred because you are able to observe the server when it is booting. Connect the monitor and keyboard before powering on the server.

Establish a serial port connection from another PC, laptop, or terminal using the server's built-in serial port and communications software (such as Hyper Terminal). The serial port does not become active until the server has booted. The appendix specific to your server hardware contains the correct serial port settings.

If you are using a serial connection, the console will not respond until the server has booted. Press the ENTER key. When asked if you want to login, respond **Yes**. You will be prompted to enter the administrator's password. The system default administrator password is **netlab**.



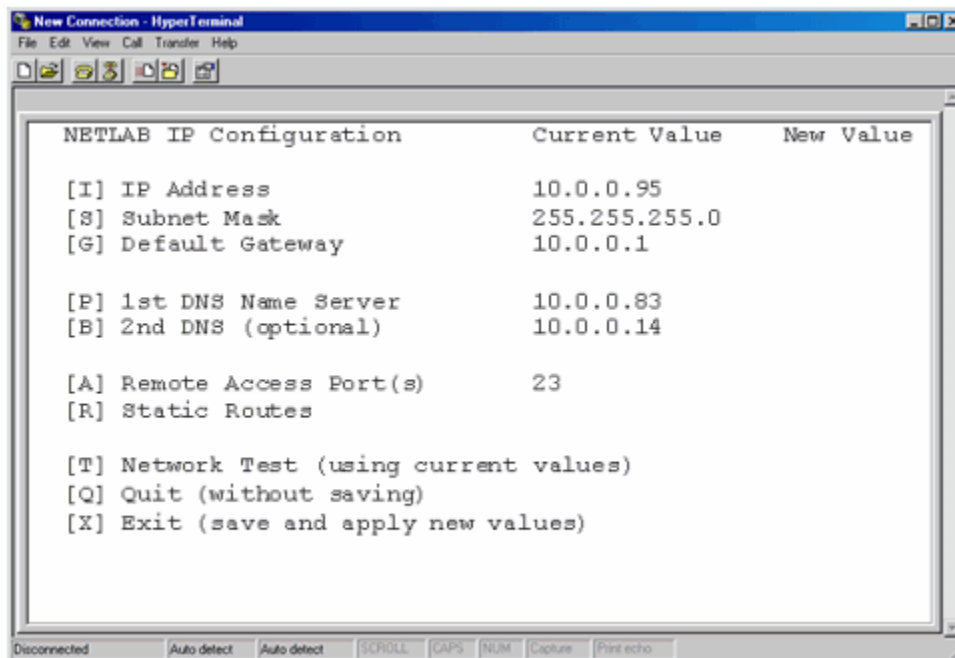
Each menu item has a hot-key identified by brackets.



The NETLAB+ server will require a static IP address. If you are using Network Address Translation (NAT) at your site, you will need to allocate a unique external IP address to NETLAB+ and open a static mapping between the external and internal NETLAB+ IP addresses.

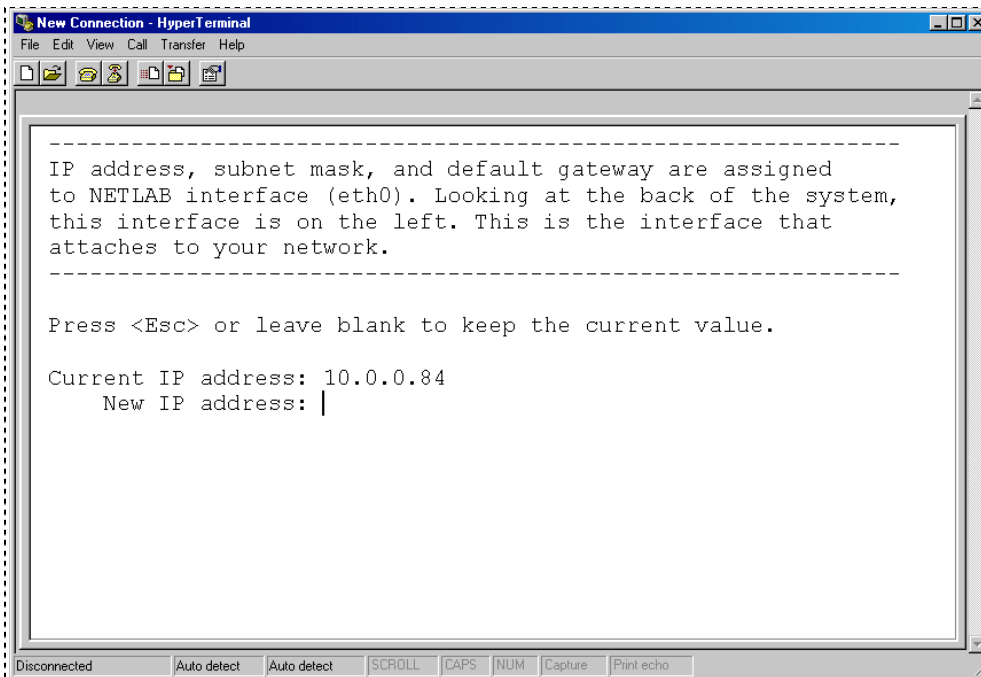
You must assign a unique static IP address.

Enter "I" to access the NETLAB+ IP Configuration menu and begin IP Configuration of the server.

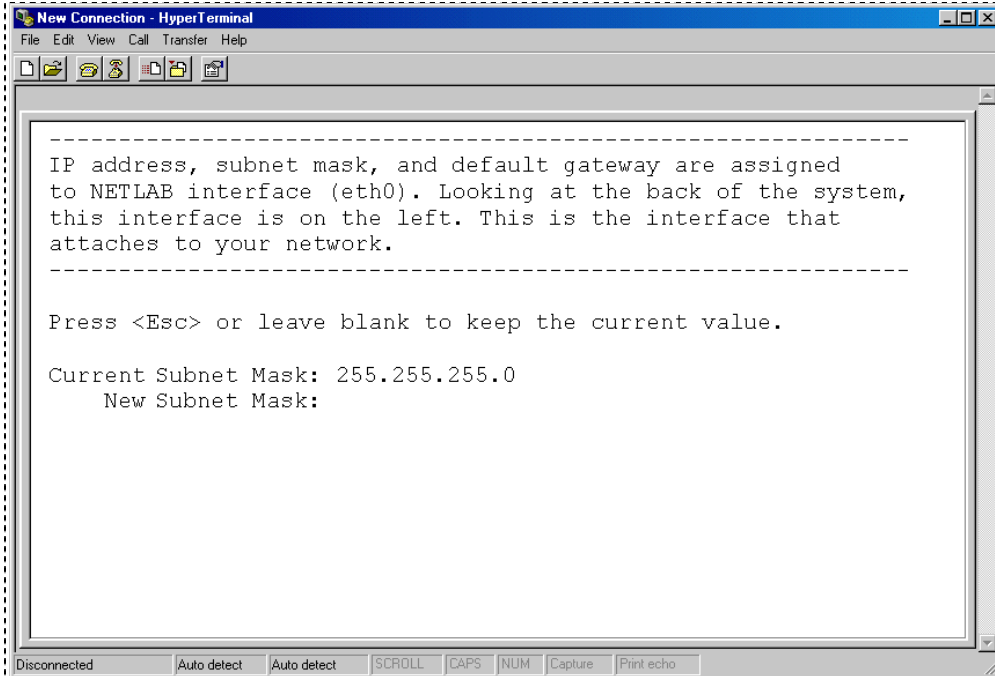


Any Current Values will be displayed. Any new values configured during your session will be displayed in the New Value column. The values will be applied once you choose [X] Exit to save and apply the new values.

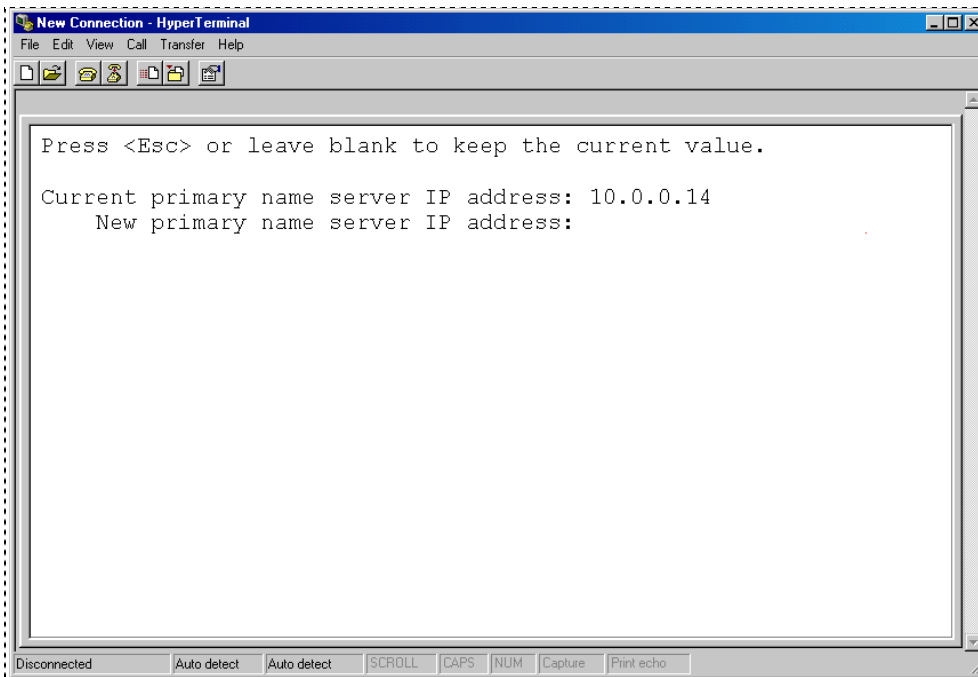
Choose [me] to configure the IP address you will use at your site. This IP address must be compatible with your LAN network address space. At the prompt, enter the IP address in dotted decimal format.



Next, enter values for the subnet mask and default gateway. The default gateway address must be on the same network as the IP address and subnet mask you assign.



A Domain Name Server (DNS) provides host name to IP address resolution. Enter the IP address of the primary and backup DNS servers. You are required to enter a primary DNS. The backup, or secondary DNS, is optional but highly recommended.



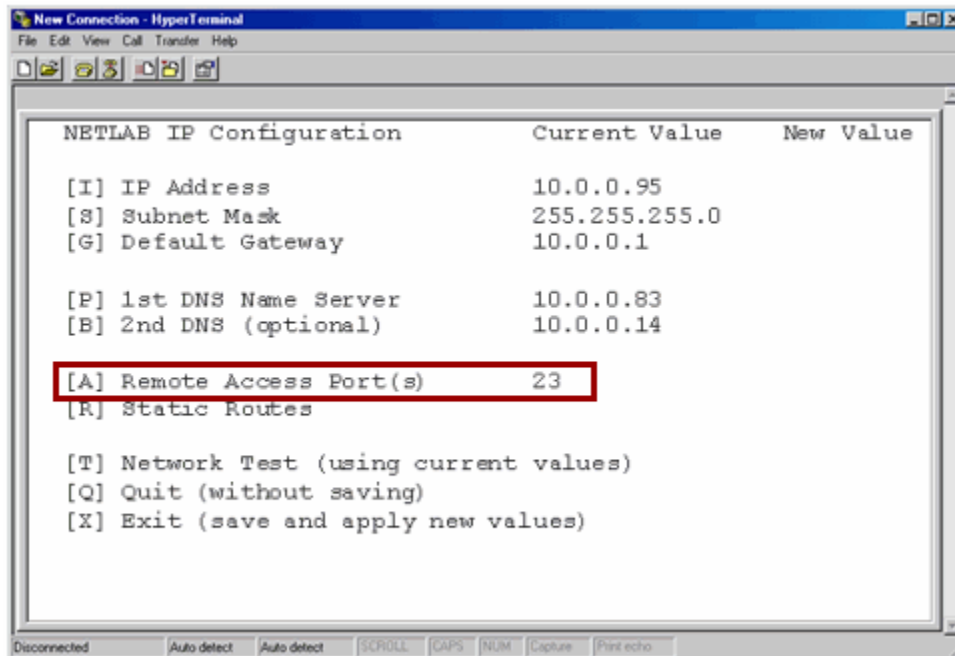
Proceed to the next section if you would like to define remote access ports to use in place of the default remote access port selection, port 23.

Otherwise, in order to complete the configuration process you must select [X] Exit to save the newly configured values for your server. Once the new values have been saved, you should run a [T] Network Test. Details of the Outbound Firewall Test are discussed in [Appendix A.2](#).

### Appendix A.1 Define Remote Access Ports

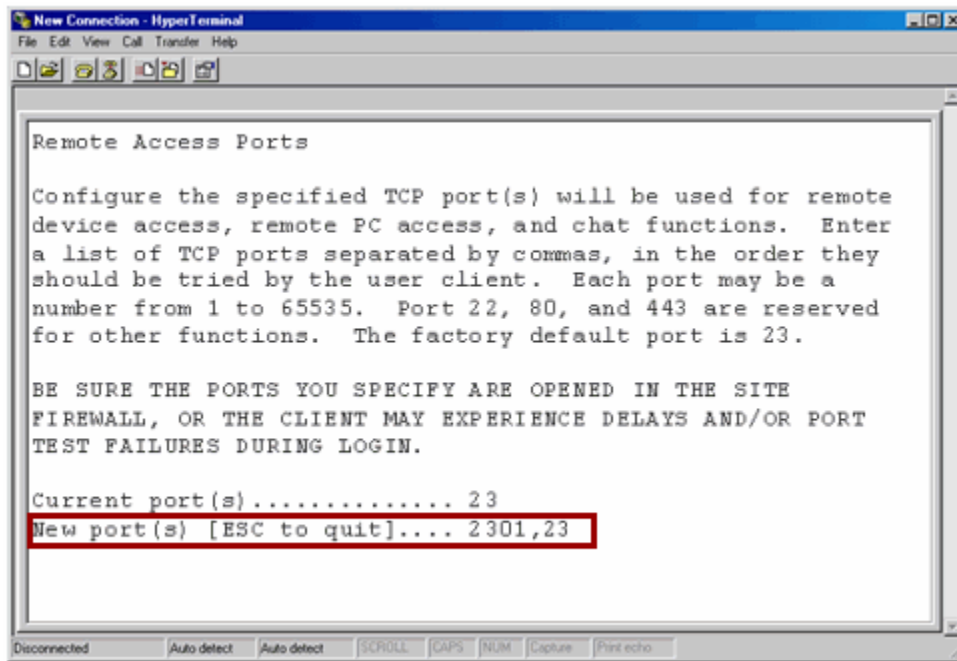
The factory default port used by NETLAB+ for remote device access, remote PC access and chat functions is TCP port 2201 (existing systems with software prior to 2009.R1.beta.2 will have the former default setting of 23). Chat functions will be available in a future software release. At some organizations, it may be desirable to select a different port, in order to remain compliant with your organization’s security policies. You may select one or more port numbers to be used in place of the factory default.

A Remote Access Test is performed during each user login. This test will fail if a connection using the TCP port(s) cannot be established. If you define more than one port for use as the outbound TCP connection, the test will attempt to establish a connection using each port number, in the order they are listed, until the Remote Access Test detects a successful connection. The system will keep track of which port results in successful access and will use that port first for the user’s next login.



Select [A] and enter a list of TCP ports separated by commas, in the order they should be tried by the user client. Each port may be a number from 1 to 65535.

Port 22, 80, and 443 are reserved for other functions and cannot be used as Remote Access ports.



Here, ports 2301 and 23 have been entered as Remote Access Ports.

It is critical that the ports you specify are opened in the site firewall, or the client may experience delays and/or port test failures during user login.

You must [X] Exit to save the newly configured values for your server. Once the new values have been saved, you should run a [T] Network Test. Details of the Outbound Firewall Test are discussed in the next section.

## Appendix A.2 Outbound Firewall Test

NETLAB+ must be able to send certain types of data through the network in order to function properly. This outbound traffic includes DNS lookups, outbound mail, and HTTP to NETLAB+ Central Services.

The Outbound Firewall Test will determine if the interface, gateway and DNS are reachable. It will also test the server's ability to communicate with NETLAB+ Central Support. Failure of any of these tests will indicate a network problem and should be corrected for proper functionality of NETLAB+. A successful test will indicate **OK** for all test types.

This is an outbound test only.

Since this is only an outbound test, it will not determine if inbound clients can access the NETLAB+ server. Inbound access problems must be addressed on a client-by-client basis, since this will involve the client's ability to reach the NETLAB+ server via HTTP and remote access ports.

Any errors reported during the test should be evaluated and corrected. Most errors are caused by firewall configuration issues.

```

NETLAB Outbound Network and Firewall Test...

Test      Protocol/Port      Destination          Status
----      -
ping      icmp (echo)        primary interface    RUNNING - OK (5/5)
ping      icmp (echo)        default gateway      RUNNING - OK (5/5)
ping      icmp (echo)        primary DNS          RUNNING - OK (5/5)
find      dns (53 udp)       nss.intranet         RUNNING - OK (10.0.0.82)
ping      icmp (echo)        nss.intranet         RUNNING - OK (5/5)
get       http (80 tcp)      nss.intranet         RUNNING - OK
mail      smtp (25 tcp)      mail.netdevgroup.com RUNNING - OK

Tracing the route from this server to CSS.
This may fail if ICMP echo packets are blocked.
traceroute to nss.intranet (10.0.0.82), 30 hops max, 38 byte packets
 1 nss.intranet (10.0.0.82) 0.345 ms 0.311 ms 0.307 ms

Press any key to continue..|
  
```

When your test runs correctly, you can exit the NETLAB+ System Console interface and continue with your NETLAB+ installation tasks. You can choose to logout from your main menu. Do not shut down or power off the server at this time.

The Outbound Firewall Test may also be accessed from the web interface.



## Appendix B Upgrade a Router to Use Pagent IOS

In order to support the requirements of certain curriculums, it may be necessary to upgrade a router to use Pagent IOS. Pagent is an enhanced Cisco IOS image that includes IP traffic generation features. The Pagent toolset functions on top of the typical Cisco IOS image, but comes bundled with the IOS image.

Since this process involves several steps that will require your time and attention, make certain you are committed to running Pagent on the router for the foreseeable future.

Once the process is completed, you will appreciate the advantage of having NETLAB+ automatically enter the required activation key for Pagent. Having this task automated by NETLAB+ eliminates the need to enter this key with each use, as others must do who use Pagent independently of the NETLAB+ system.

Before starting this process, please make certain that:

A pod has been installed on your NETLAB+ system. See the *Adding New Pods* section [2.25.1](#) for details on pod installation.

The pod includes a router on which you would like to load Pagent.

The router has sufficient DRAM and Flash to meet your requirements.

When selecting a router on which to load Pagent, you must be careful to select a router that has adequate DRAM and Flash to allow you to use the IOS feature set needed to support your curriculum requirements. This is necessary to assure that you will be able to run the IOS and any profiles that are created.

### Appendix B.1 Obtain a Pagent IOS Image

A Pagent IOS image must be uploaded to the NETLAB+ system. If you do not have an image file, and you are a Cisco Networking Academy instructor, you may download an image file in the Tools section in Academy Connection, if not please contact your CISCO Representative.

## Appendix B.2 Upload the Pagent Image to the NETLAB+ Server

In order to load the Pagent IOS image you must upload the file from your local machine to NETLAB+'s TFTP directory. The name of the file must meet the format restrictions; rename the file if necessary to comply with the following rules:

The file name must have a **“.bin”** extension.

The file name cannot contain any **“+”** characters. You may wish to substitute with a **“\_”** character.

The length of the file name cannot exceed 45 characters.

The examples in this chart show how typical Pagent IOS image file names may be renamed in order to be uploaded to NETLAB+.

Pagent Image name not meeting the name format requirements.	Pagent Image name changed to meet the name format requirements.
C2801-tpgen+adventerprisek9-mz.PAGENT.4.3.0	C2801_advipserk9_mz_PAG_4_3_0.bin
c2801-tpgen+ipbase-mz.PAGENT.4.3.0	C2801_ipbase_mz_PAG_4_3_0.bin

## Appendix B.3 Modify the Device Settings on the Router to Use Pagent

The device settings on the router must be modified in order to use the Pagent IOS image that was uploaded in the previous step. Please see section [2.25.2.1](#).

Two settings on this page must be modified.

The Image Recovery Option must be set to recover if the specified image is not in flash.

If you have your Pagent activation key, enter it in the activation key field.

The Pagent Activation key must be entered in order for NETLAB+ automation processes to run on the pod. In addition, other NETLAB+ automatic features such as password recovery will depend on this key.

POD 1 DEVICE R4	
Device Name	R4
Device Type	Cisco 2801/2811 (S0/1/X) ▾
Automation	shared console, automated actions, image recovery
Software Image	c2801-tpgen_adventerK9-mz.4.3.0.bin ▾
Image Recovery Option	recover if the specified image (above) is not in flash ▾
Image Recovery Local Interface	FastEthernet0/0
Image Recovery Control Port	CONTROL SWITCH 1 PORT 7
Access Server	ACCESS SERVER 1 PORT 4
Switched Outlet	S.O. DEVICE 1 OUTLET 4
Activation Key (optional)	407554012371

Please note that the pod must be offline in order to modify these device settings. After completing modifications, remember to select the management option to bring the pod online and make it available for reservations.

Online Bring this pod ONLINE and make it available for reservations.

If you have entered the key, you may proceed to the verification step, [Appendix B.5](#). If you do not yet have a key to enter, please continue to the next step.

## Appendix B.4 Obtain a Pagent Activation Key

In order to obtain the key, you will be required to report the Machine ID, which is a unique number based on the equipment hardware of your router. This procedure must be done from an Instructor Account. Please see section [2.15](#) for details on creating an instructor account.

Please follow these steps:

1. Sign in to the NETLAB+ system with an instructor account. See the *Initial Login* section of the *NETLAB+ Instructor Guide* for more information.
2. Create a lab reservation on the pod that contains the router with the Pagent IOS image. Details on making a lab reservation are available in the *Reserve An Equipment Pod for Your Own Use* section of the *NETLAB+ Instructor Guide*.
3. At the scheduled time, enter the lab session. See the *Enter a Lab Session* section of the *NETLAB+ Instructor Guide* for more information.
4. Establish a console connection to the router. You may refer to the *Remote Console Connection* section of the *NETLAB+ Instructor Guide*.

By examining the output on the router as the router is booting up, you should see some evidence of Pagent. You should see the Machine ID displayed, as shown in the pictures below. Write down this number, and have it available for reference when you request a Pagent Activation Key. If you are a Cisco Networking Academy instructor the procedure for requesting the key may be downloaded in the Tools section in Academy connection, if not please contact your Cisco representative.

http://204.85.2.208 - R4 - POD 1 - g - NETLAB Telnet Applet - Mozilla Firefox

```

*****
**                               **
**      Welcome to Pagent V4.3!   **
**      Pagent: "Make your net work" **
**                               **
**      W A R N I N G           **
**                               **
**      Pagent is Cisco proprietary technology. All pagent **
**      images use license keys which you can obtain from: **
**                               **
**      For Cisco customers:     **
**      http://www.cisco.com/kobayashi/sw-center/support/nvt/nvt-licensing.shtml **
**                               **
**      For Cisco employees:     **
**      http://www.in-pagent.cisco.com/protected-cgi/get_key.cgi **
**                               **
**      Distributing pagent outside of the company without **
**      the appropriate permission is a serious offense.   **
**      Only secure Pagent images with license key may be **
**      run outside of Cisco facilities.                   **
**                               **
*****
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Installed image archive
Cisco 2801 (revision 5.0) with 116736K/14336K bytes of memory.
Processor board ID FTX0945W0MY
2 FastEthernet interfaces
2 Low-speed serial(sync/async) interfaces
1 Virtual Private Network (VPN) Module
DRAM configuration is 64 bits wide with parity disabled.
191K bytes of NVRAM.
62720K bytes of ATA CompactFlash (Read/Write)

--- System Configurati

```

Disconnect Control Pause History Who Status Break Tilde Color Font Help Clipboard

NDG NETLAB g POD 1 R4 **connected**

Applet telnetApplet started

```

http://204.85.2.208 - R4 - POD 1 - g - NETLAB Telnet Applet - Mozilla Firefox
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wml/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Installed image archive
Cisco 2801 (revision 5.0) with 116736K/14336K bytes of memory.
Processor board ID FTX0945W0MY
 2 FastEthernet interfaces
 2 Low-speed serial(sync/async) interfaces
 1 Virtual Private Network (VPN) Module
DRAM configuration is 64 bits wide with parity disabled.
191K bytes of NVRAM.
62720K bytes of ATA CompactFlash (Read/Write)

      --- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]:

Press RETURN to get started!

*Jul  9 13:39:37.839: %VPN_HW-6-INFO_L0C: Crypto engine: onboa5.279: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEtherr
Router>
Invalid pagent license configured
Machine ID: 4279256517

Please obtain a license key from the following Web page:

For Cisco customers:
http://www.cisco.com/kobayashi/sw-center/support/nvt/nvt-licensing.shtml

For Cisco employees:
http://www.in-pagent.cisco.com/protected-cgi/get_key.cgi

Please enter pagent license key:

Invalid pagent license configured
Machine ID: 4279256517

Please obtain a license key from the following Web page:

For Cisco customers:
http://www.cisco.com/kobayashi/sw-center/support/nvt/nvt-licensing.shtml

For Cisco employees:
http://www.in-pagent.cisco.com/protected-cgi/get_key.cgi

Please enter pagent license key: █

Disconnect Control Pause History Who Status Break Tilde Color Font Help Clipboard
NDG NETLAB g POD 1 R4 connected
Applet telnetApplet started

```

If you see no evidence of Pagent, it will be necessary to perform a scrub on the router. A very convenient way of performing a scrub on the router is to select the **scrub device** option on the Action tab as shown below.



## Appendix B.5 Verify that Pagent has been Successfully Loaded

In order to verify that the Pagent Activation Key has been entered into the system you will once again sign into your instructor account, make a lab reservation, attend the lab session and establish a console connection to the router, following the steps described in [Appendix B.4](#).

This time, observe the dialog displayed during the boot up process. You should see the NETLAB+ automation process respond to the prompt for the activation key as showed in the picture below.

```

http://204.85.2.208 - R4 - POD 1 - g - NETLAB Telnet Applet - Mozilla Firefox
Press RETURN to get started!

*Jul  9 14:28:59.847: %VPN_HW-6-INFO_LOC: Crypto engine: onboa7.287: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet
Router>
Invalid pagent license configured
Machine ID: 4279256517

Please obtain a license key from the following Web page:

For Cisco customers:
http://www.cisco.com/kobayashi/sw-center/support/nvt/nvt-licensing.shtml

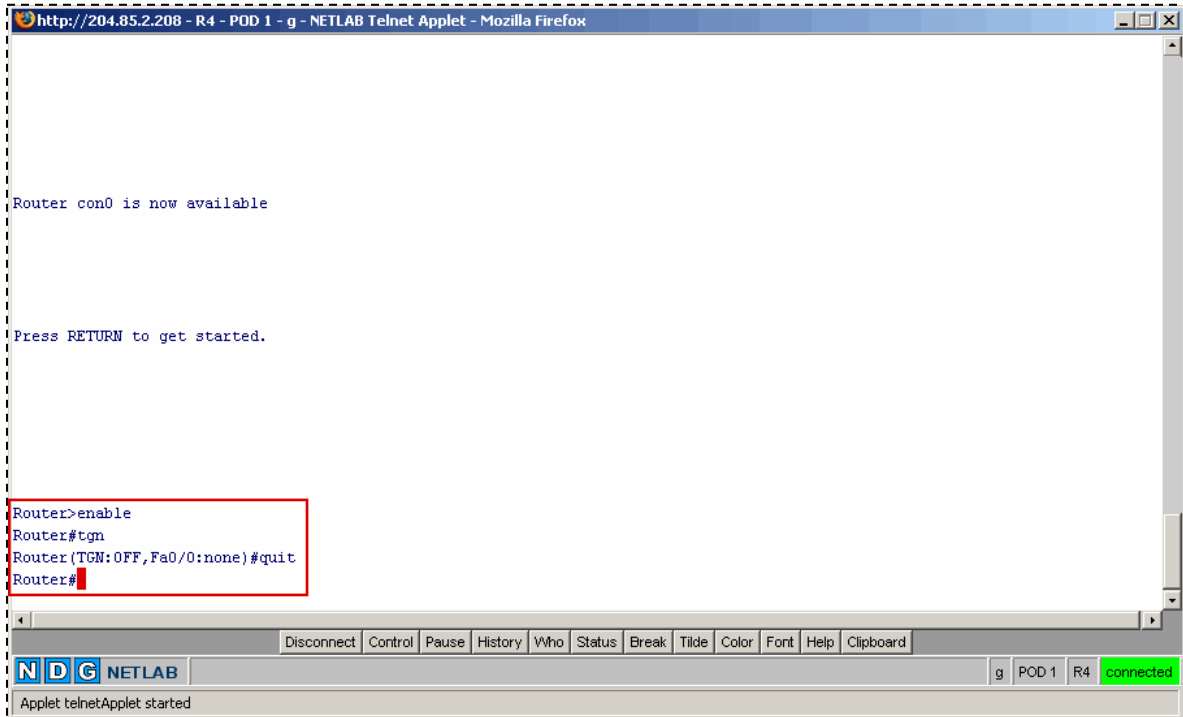
For Cisco employees:
http://wwwin-pagent.cisco.com/protected-cgi/get_key.cgi

Please enter pagent license key: 407554012371
Verifying pagent license key "407554012371" ...
pagent license key "407554012371" is valid
Configuring pagent security ... done

Router>
Disconnect Control Pause History Who Status Break Tide Color Font Help Clipboard
NDG NETLAB g POD 1 R4 connected
Applet telnetApplet started
  
```



After entering the key, NETLAB+ will allow you to configure not only the router with the regular IOS commands, but also the traffic generator. In order to verify that Pagent is accessible and has been loaded correctly, please follow the process shown on the picture below.



## Appendix C Curriculum Management for Multi-Purpose NETLAB+ Systems

When a NETLAB+ system is purchased by a customer who is a participant in the Cisco Networking Academy and also provides training independently of the Cisco Networking Academy, certain restrictions apply. These restrictions must be followed to preserve the separation of access to copyrighted Cisco Networking Academy curriculum content and labs.

Your multi-purpose system will have at least two communities, one used for the Cisco Networking Academy, and one to support training programs not affiliated with the Cisco Networking Academy. As of version 4.0.24, curriculum is authorized per community. Systems with multiple communities must manage access to curriculum using the Curriculum Authorization Options as described in section [2.31](#).

**All communities on your multi-purpose system must fall into one of two categories:**

Community used to support the Cisco Networking Academy	Community used for any other training program
The community is granted access to some or all of the Cisco Networking Academy curriculum modules that have been installed on the system.	The community is not granted access to Cisco Networking Academy curriculum modules that have been installed on the system.
The community may be granted access to any other third party or custom curriculum content belonging to your organization.	The community may be granted access to any other third party or custom curriculum content belonging to your organization.
The community is granted access to some or all of the labs designed for use with the Cisco Networking Academy (see <a href="#">Appendix D</a> ).	The community is not granted access to labs designed for use with the Cisco Networking Academy (see <a href="#">Appendix D</a> ).
The community may have access to any other third party or custom labs belonging to your organization.	The community may have access to any other third party or custom labs belonging to your organization.
The community has a student population comprised of Cisco Networking Academy students only. Student ids within this community are assigned to students enrolled in the Cisco Networking Academy.	The community has a student population enrolled in training other than the Cisco Networking Academy.

The recommended course of action for curriculum management:

Use your default community for training within the Cisco Networking Academy. This will allow you to take advantage of the DEFAULT authorization setting that requires the least administrative intervention to maintain curriculum on your system.

Update the curriculum authorization options (see section 2.31) to the DEFAULT setting. Keep in mind that “DEFAULT” refers to how the selection affects the setting for the default community on your system. The advantage to using this setting is that the default community will be automatically authorized to access to curriculum modules when they are added to the system.

If you have additional communities that are being used to support the Cisco Networking Academy, you will need to check on the curriculum authorization checkbox (see section 2.31.3) to allow the communities to have access as needed whenever new curriculum is added to your system.

AUTHORIZATION PREFERENCES		
Option	When a new community is created...	When new curriculum is installed...
<input type="radio"/> ALL	All existing curriculum is automatically authorized for use by the new community.	All communities in the authorization checkboxes are checked on by default.
<input checked="" type="radio"/> DEFAULT	Existing curriculum must be manually authorized for the new community.	The default community in the authorization checkboxes is checked on by default. All other communities are unchecked by default.
<input type="radio"/> MANUAL	Existing curriculum must be manually authorized for the new community.	All communities in the authorization checkboxes are unchecked by default.

If your default community is not being used with the Cisco Networking Academy, you should select the MANUAL option so that the authorization checkbox is not checked on for the default community when new curriculum is added.

If the MANUAL option is selected, it will be necessary to authorize access for any communities requiring access to the curriculum, including the default community, when new curriculum modules are added to your system.

AUTHORIZATION PREFERENCES		
Option	When a new community is created...	When new curriculum is installed...
<input type="radio"/> ALL	All existing curriculum is automatically authorized for use by the new community.	All communities in the authorization checkboxes are checked on by default.
<input type="radio"/> DEFAULT	Existing curriculum must be manually authorized for the new community.	The default community in the authorization checkboxes is checked on by default. All other communities are unchecked by default.
<input checked="" type="radio"/> MANUAL	Existing curriculum must be manually authorized for the new community.	All communities in the authorization checkboxes are unchecked by default.

Be aware that a student who is enrolled in the Cisco Networking Academy and also participating in training at your organization that is not part of the Academy will need to have two separate student accounts, one in a community used to support the Academy, and one in a community used for other training. While this may be an inconvenience, please keep these factors in mind:

The multi-purpose NETLAB+ system was designed to be a cost effective solution to allow organizations to effectively have two systems for the price of one.

The requirement of maintaining separate communities and thus, separate student accounts for Academy and non-Academy training is not a technical issue but rather a requirement to maintain compliance to restrictions on access to copyrighted material not owned by NDG.

## Appendix D Global Lab Management for Multi-Purpose NETLAB+ Systems

When a NETLAB+ system is purchased by a customer who is a participant in the Cisco Networking Academy and also provides training independently of the Cisco Networking Academy, certain restrictions apply. These restrictions must be followed to preserve the separation of access to copyrighted Cisco Networking Academy curriculum content and labs.

Your multi-purpose system will have at least two communities, one used for the Cisco Networking Academy, and one to support training programs not affiliated with the Cisco Networking Academy. As of version 4.0.24, global lab designs are authorized per community. Systems with multiple communities must manage access to global labs curriculum using the Global Lab Authorization Options as described in section 2.23.

Please refer to [Appendix C](#) for instructions on community and curriculum management for multi-purpose systems and a discussion of the impact on student accounts.

The recommended course of action for global lab management:

Update the Global Lab Authorization Preference (see section 2.23) to the DEFAULT setting. Keep in mind that “DEFAULT” refers to how the selection affects the setting for the default community on your system. The advantage to using this setting is that the default community will be automatically authorized to access the global lab designs when they are installed.

When new global lab designs are installed, it will be necessary to authorize access for any other communities requiring access to the new labs as described in section 2.23.

Global Lab Authorization Preferences		
Option	When a new community is created...	When a global lab design is installed...
<input type="radio"/> ALL	All existing global lab designs are automatically authorized for use by the new community.	All communities are automatically authorized to use the labs.
<input checked="" type="radio"/> DEFAULT	Existing global lab designs must be manually authorized for the new community.	The default community is automatically authorized to use the labs. All other communities must be manually authorized.
<input type="radio"/> MANUAL	Existing global lab designs must be manually authorized for the new community.	All communities must be manually authorized.

If your default community is not being used with the Cisco Networking Academy, you should select the MANUAL option so that the default community is not automatically authorized to access global labs when they are installed.

If the MANUAL option is selected, it will be necessary to authorize access for any communities requiring access to the new labs, including the default community, when new global lab designs are added to your system.

Global Lab Authorization Preferences		
Option	When a new community is created...	When a global lab design is installed...
<input type="radio"/> ALL	All existing global lab designs are automatically authorized for use by the new community.	All communities are automatically authorized to use the labs.
<input type="radio"/> DEFAULT	Existing global lab designs must be manually authorized for the new community.	The default community is automatically authorized to use the labs. All other communities must be manually authorized.
<input checked="" type="radio"/> MANUAL	Existing global lab designs must be manually authorized for the new community.	All communities must be manually authorized.