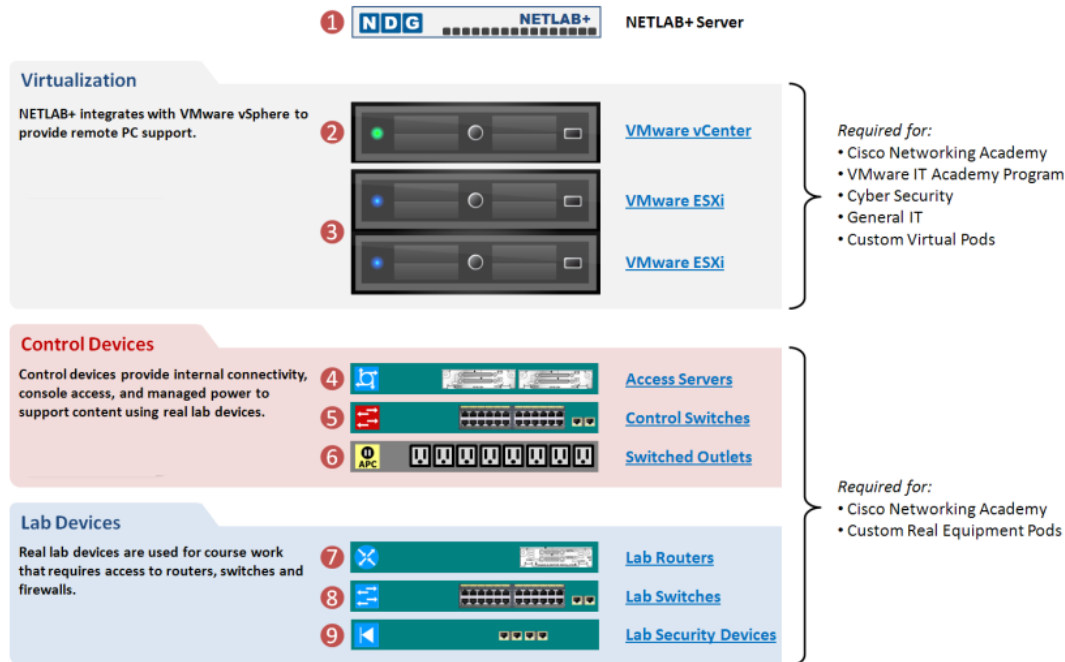


## NETLAB+ System Requirements

The diagram below illustrates the basic system requirements and hardware components that are part of a NETLAB+ system. Some components are optional depending on the labs and pods you choose to implement. The tables below provide a brief description of each required component shown. An interactive version of this diagram is available on the NDG website:

<http://www.netdevgroup.com/products/requirements/>



### Core Components

The following table describes the core rack components that are the foundation of all NETLAB+ installations. The numbers in the left column refer to the red circle numbers in the diagram on the first page.

#	Component	Description
1	NETLAB+ Server	NETLAB+® is a server appliance with all software pre-installed.
2	VMware vCenter	VMware vCenter enables you to manage the resources of multiple ESXi hosts and allows you to monitor and manage your physical and virtual infrastructure. NETLAB+ integrates with VMware vCenter to assist the administrator with installing, replicating and configuring virtual machine pods.
3	VMware ESXi	Physical VMware ESXi servers host the virtual machines in your pods. Virtualization using ESXi is performed on separate physical servers, not included with NETLAB+. You can interface with multiple ESXi servers if necessary.

## Optional Components to Support Real Lab Equipment

If your curriculum content selection is implemented using NETLAB+ to provide access to real lab equipment, such as the networking equipment required to support Cisco Networking Academy content, the additional hardware summarized below is required. Please refer to the specific requirements for Cisco Networking Academy content to determine the type and quantity of hardware needed.

#	Component	Description
4	Access Servers	Access servers provide 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 console connections through the access server.
5	Control Switches	NETLAB+ uses control switches to provide connectivity between the NETLAB+ server, access servers, remote PCs, and switched outlet devices. Control switches are not accessed by lab users.
6	Switched Outlets	Switched outlets provide managed electrical power, allowing NETLAB+ and users to turn lab equipment on and off.
7	Lab Routers	Lab routers are required for course work that requires access to real equipment. The number of routers and router types required is based on pod type and course work.
8	Lab Switches	Lab switches are required for course work that requires access to real equipment. The number of switches and switch types required is based on pod type and course work.
9	Lab Security Devices	Lab security devices are required for certain course work that requires firewall configuration. The number of lab security devices required is based on pod type and course work.

## Other Required Hardware

This equipment must be purchased separately:

- Standard 19" rack(s)
- Power strips and surge protectors
- Category 6 Ethernet cables
- Octal cables for your access server(s) modules (real equipment, Cisco Netacad)

## Uninterruptible Power Supply (UPS)

A UPS of 1200VA 670W or higher is recommended to handle small power outages and power surges. Currently NETLAB+ does not provide a UPS signaling interface for automatic server shutdown.

## Network Connectivity Requirements (NETLAB+ Host Site)

- 100Mb/s or 1Gb/s Ethernet Connection to Campus LAN
- 5.0 Mb/s or higher Internet connection, with higher outbound burst capability
- Fixed static IP address (DHCP is not supported, port address translation not supported)
- TCP port 22, 80, 2201 open inbound
- TCP port 80 outbound to receive updates and lab content

See the Technical Support section of the NDG website for additional information on connectivity requirements and firewall considerations: <http://www.netdevgroup.com/support/>

The Documentation section of the NDG website includes a variety of reference materials. Including the Remote PC Guide for VMware Implementation with vCenter:

<http://www.netdevgroup.com/support/documentation/>

## Lab Content and Support for Academic Programs

Lab content, special documentation materials, and support for certain academic programs are made available by request to eligible organizations pending verification of membership. These programs currently include:

- Cisco Networking Academy
- VMware IT Academy Program

Your NETLAB+ system must be connected to the Internet to receive lab content and updates for these academic programs. Current membership in an academic program is required for continued content updates, access to special materials, and technical support related to the program.

## Annual License Fee for NETLAB Academy Edition<sup>®</sup>

NETLAB Academy Edition<sup>®</sup> is discounted upfront with the right to use tied to a required annual license fee. This model provides a lower cost of ownership and keeps your system current as technology changes. If you purchase a NETLAB Academy Edition<sup>®</sup> system, please be aware that the annual license fee is included in the first year, and required for continued use after the first year. The annual license fee also includes software updates, lab content updates, and technical support. NDG is firmly committed to supporting the dynamic nature of academic programs, which requires a continuous investment by NDG in both labor and equipment.

## Client Requirements

Client access is performed through a supported web browser. NETLAB+ provides several built-in applications that require the Oracle Java Plugin.

Platform	Supported Browsers	Version	Status
Windows	Mozilla Firefox	3.6+	Supported
	Internet Explorer	8+	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

Browser Plugins and Settings	Description / Setting
Java™	A Java plug-in is required. The Apple iPad does not currently support Java and therefore cannot be used for NETLAB+ access.
JavaScript	Enabled
Cookies	Enabled (for this site)
Popup Windows	Enabled (popup blockers should be disabled for the specific NETLAB+ host).

## Client Internet Connection Requirements

Broadband Internet or campus LAN access is required. The following connection speed (or higher) is recommended:

- 256kb/s download (from Internet), with burst to 1Mb/s
- 256kb/s upload (to Internet)