



# IT ESSENTIALS II: NETWORK OPERATING SYSTEMS

## COURSE INFORMATION

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This course examines the components of the most popular networking operating systems in operation today, including Windows 2000 and Linux.

### **Module 1: Operating System Fundamentals**

In this chapter, desktop operating systems will be reviewed, including their components, limitations, and their relationship to network operating systems.

This chapter provides an overview of PCs including the OS and computer networks. Microsoft Windows is detailed from the beginnings of MS-DOS to the latest Windows XP. The UNIX and Linux operating systems are also detailed from their origins to the current configurations. Most network applications, including the Internet, are built around a client/server relationship. The student will learn how this relationship works along with the components and configurations of the NOS.

### **Module 2: Introduction to Networking**

This chapter starts with an overview of networking. The student will learn about the types of networks used today, including LAN, WAN, peer-to-peer, and client/server. The benefits of an open system as opposed to a proprietary system are discussed. The OSI model represents an open system. As covered in this chapter, the OSI reference model divides the functions of the network into seven layers that enable communication. The student will gain an understanding of protocol suites including specific protocols used in TCP/IP, IPX/SPX, and AppleTalk. This chapter will also explain LAN architecture, Ethernet, Token Ring, and FDDI.

### **Module 3: Physical Components of a Network**

In this chapter, the student will study the fundamentals of the network. The choices that are made when a computer network is designed determine how well the system works. This chapter discusses how the physical and logical topology combined with the network media and devices allow all the computers connected to the system to communicate with each other and the Internet.

### **Module 4: TCP/IP Networking**

The U.S. Defense Department Advanced Research Projects Agency (DARPA) produced the designs and experimental networks that evolved into the public Internet. The Transmission Control Protocol/Internet Protocol (TCP/IP) network model that was developed is based on the Open Systems Interconnection (OSI) reference model. It is now the predominant protocol suite used in networking.

In this chapter the student will learn how the layers of the TCP/IP work together to communicate on a network, how addresses are assigned, and how a computer name is translated into an IP address and back again. Additionally, the functions performed by each of the major protocols that compose the TCP/IP protocol suite will be discussed.

## **Module 5: Overview of Network Services**

This chapter provides an introduction to network operating systems (NOSs). The ability to access a remote system is also discussed. This allows a system administrator to efficiently maintain a network. A directory service provides system administrators with centralized control of all users and resources across the entire network. The student will learn other NOS services that allow users to communicate, share files, and print. They will also learn how to access the Internet, an intranet, and an extranet.

## **Module 6: Introduction to Network Operating Systems**

A computer operating system (OS) is the software foundation on which the computer applications and services run. Similarly, a network operating system (NOS) enables communication between multiple devices and the sharing of resources across a network.

A NOS is, generally, an operating system that runs on a network server, such as Novell NetWare or Microsoft Windows NT Server. This chapter covers the following network operating systems:

- Microsoft Windows NT 4.0
- Microsoft Windows 2000
- Linux
- UNIX

## **Module 7: Installation & Boot Process Overview**

An IT professional is typically asked to perform software installations, including application software and operating systems. Installing an operating system (OS), especially a network operating system (NOS), can be one of the most complex installation tasks. This chapter is an overview of the NOS installation process, including how to plan for the installation and how to troubleshoot installation problems.

## **Module 8: Windows 2000 Professional**

This chapter details the Windows 2000 operating system. There are four steps to the installation. Once it is verified that the system is compatible, Windows 2000 guides the administrator to the final step of logging on. The chapter also covers the management of user accounts and file systems in order to provide the administrator with the necessary information to share folders, files, and assign permissions. The student will also learn about Windows 2000 services that are configured to provide access to the web, e-mail, and other computers.

## **Module 9: Linux Installation Procedures**

Planning the installation is an important step in a Linux installation. This is due to the more complex nature and compatibility issues that arise with Linux. A good installation plan will make the actual installation process run much smoother. This chapter presents a detailed installation of Red Hat Linux. Other distribution installation procedures are very similar except that the order of the installation steps may be a little different.

The X server system is an important aspect of the installation process and this chapter will cover this topic in detail. This chapter covers the installation and configuration of X server on a Linux system. Some distributions install and configure X automatically. However, this chapter covers how to customize or change any of the X server settings once the installation is complete. Once the operating system has been installed there are several post installation tasks and configurations that need to be done.

### **Module 10: Linux Administration**

This chapter details the Linux operating system. Linux is primarily intended to be a server based Network Operating System (NOS). It includes a few additional steps that are not found in Windows 2000. Once it is verified that the system is compatible, Linux guides the administrator to the final step of logging on. Managing user accounts and the file system are also covered in this chapter in order to provide the administrator with the necessary information to share folders, files, and assign permissions. The student will also learn about Linux daemons that are configured to provide access to the web, e-mail, and so on.

### **Module 11: Advanced NOS Administration**

A system administrator is required to protect the information that is stored on network servers. This is accomplished by performing a regular procedure known as system backup. This chapter will cover the types of backups that can be done. In addition, the student will learn how to map a drive in order to provide users with access to information stored on network servers. Monitoring the system is a required task that allows the administrator to keep track of resources, including disk management, CPU usage, and memory usage. This chapter also covers the key concepts of analyzing and optimizing the network. With this information, problem-solving guidelines can be implemented in the troubleshooting process.

### **Module 12: Installing & Maintaining Hardware in Linux**

Most current Linux distributions have evolved to be able to auto-detect and configure themselves to use the software upon, or after, installation. However, there will be situations when the auto-detection process will not happen. Sometimes it is necessary to manually configure new hardware or tweak it without the automatic configuration. This chapter covers how to manually configure new hardware with the various hardware that is used on a Linux system. This chapter also covers special installations and tweaks that will need to be done when installing Linux on a laptop or mobile device.

### **Module 13: Troubleshooting the Operating System**

Troubleshooting a system that has manifested some level of failure can be one of the most stressful jobs in computing. Experienced system administrators rely on a proven and systematized methodology to solve system problems. They must be able to recognize common error conditions and know their usual causes. They must learn to evaluate symptoms in such a way as to isolate their probable origin. Then it is necessary to apply their experience in knowing what sorts of tests to run and avenues to explore in order to verify hypotheses regarding the problem, or to gather more data. They need to know what to do to fix the problem, or where to go to get assistance quickly, then follow through by doing it. They should document what they learn along the way to make it easier to attack any recurrences of the problem.

Finally, they need to educate users in a way that will either prevent the problem from occurring again, or at least enable them to provide meaningful feedback if it does.

## **Module 14: Network Security**

Developing a security policy for a network depends on several factors. The type of business, the type of data, and the management philosophy must be considered in order to determine "Acceptable Use".

This chapter will detail the importance of developing a security policy in order to guard against the internal and external threats to a network. The student will learn the security measures to implement. Patching and upgrading the Network Operating System (NOS) will ensure that the system is current. Additionally, the student will gain an understanding of firewalls and proxies.

For further information and a demo of the online course material log on to:

[http://www.cisco.com/en/US/learning/netacad/course\\_catalog/IT2.htm](http://www.cisco.com/en/US/learning/netacad/course_catalog/IT2.htm)



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