

# Network Administration

## Course Content

### *Hardware Fundamentals*

By course end a student should have an understanding of basic PC hardware, and should know how to recognize, clean, handle, install, diagnose, understand the function of, and know the different types of each of the following components:

- CPU's
- RAM
- Motherboards
- Cases, and power supplies
- ROM / CMOS, firmware
- Expansion buses
- Floppy drives
- IDE drives
- SCSI devices
- Keyboards, mice
- CD and DVD media drives
- Sound and Video card
- Monitors
- Modems & NICs
- Printers
- Cables and connectors
- Laptops and docking stations
- Network hubs, cabling, wireless
- Fans and Heat sinks

### **Operating System Essentials**

This module introduces students to the world of computer operating systems. Focus will be aimed at preparing students to support Windows 2000, Windows XP, Windows Vista and Windows 7 client systems in a home or office environment. The primary goal of this module is to ensure students have advanced knowledge in preparing computers for operating system deployments, using the built-in administrative utilities to extract the optimal performance and security from the operating system and the ability to recognize problems and recover from them effectively. Equal emphasis will be shown to administration of home computers as to computers in a corporate environment. Among the many topics covered, students will become skilled at performing routing procedures at the command line.

This module, in combination with the Hardware Fundamentals module, is designed to help prepare students for CompTIA's A+ certification exams (220-701 and 220-702).

### **Windows 7**

This module is designed to expand the students' knowledge of Microsoft's latest client operating system in a corporate environment. The challenges of deploying Windows 7 to large numbers of computers with varying user and security configurations will be discussed in detail. Windows 7 role in providing and receiving network services (such as shared printing and shared folder access) will be examined. Students will become proficient at utilizing the built-in Windows productivity tools to provide the highest degree of convenience and security to clients. Additional exposure to performance tuning, application support, disaster recovery and troubleshooting will aid students looking for careers as network support technicians.

This module is designed to assist students in their preparation for the Microsoft Certified Technology Specialist (MCTS) certification exam (70-680).

### **Microsoft Networking Essentials**

**Upon completion the student will be able to:**

- Understand the concepts of Internet, intranet, and extranet, including: VPN, security zones, & firewalls.
- Understand local area networks (LANs) & wide area networks (WANs) covering: perimeter networks; addressing; reserved address ranges for local use (including local loopback ip), VLANs; wired LAN and wireless LAN, leased lines, dial-up, ISDN, VPN, T1, T3, E1, E3, DSL, Cable, etc. and their characteristics (speed, availability).
- Understand wireless networking. Types of wireless networking standards and their characteristics (802.11A,B,G,N including different Ghz ranges), types of network security (WPA/WEP/802.1X etc.), point-to-point (P2P) wireless, wireless bridging

### **Understanding Network Hardware**

- Understand switches, including managed or unmanaged switches; VLAN capabilities; Layer 2 and Layer 3 switches, security options; hardware redundancy; support; backplane speed; switching types, MAC table; understanding capabilities of hubs vs. switches
- Understand router transmission speed, directly connected routes, static routing, dynamic routing (routing protocols), default routes; routing table and how it selects best route(s); routing table memory, NAT, software routing in Windows Server
- Understand media types: cable types and their characteristics, including media segment length and speed; fibre optic; twisted pair shielded or nonshielded; catxx cabling, wireless; susceptibility to external interference (machinery, power cables, etc); susceptibility to electricity (lightning), susceptibility to interception.

### **Understanding Protocols and Services**

- Understand the OSI model and the TCP model; examples of devices, protocols, applications and which OSI/TCP layer they belong to; TCP and UDP; well-known ports for most used purposes, packets and frames
  - Understand IPv4 & IPv6 including such topics as: subnetting; IPconfig; why use IPv6; addressing; ipv4toipv6 tunnelling protocols to ensure backwards compatibility; dual IP stack; subnet mask; gateway; ports; packets; reserved address ranges for local use (including local loopback IP);
  - Understand names resolution methods such as: DNS, WINS, steps in the name resolution process, and networking services like: DHCP, remote access
  - Finally coverage of troubleshooting tools such as ping; tracert; pathping; Telnet; IPconfig, and netstat.

This module is designed to assist students in their preparation for the Microsoft Technology Associate (MTA) certification exam (98-366).

### **Windows Server 2008 Administration**

This module will introduce students to the Windows operating system deployed as a network server. Students will use their knowledge of Windows server roles to extend Windows Server 2008 to provide a wide array of services to network users in a secure and highly available solution. Students will deploy Active Directory to create enterprise networks capable of thousands of users as well as deploying Windows Server in a stand-alone configuration capable of supporting a very small network of computers. Additional topics covered include optimizing storage devices, optimizing server performance and performing basic server maintenance.

This module is designed to assist students in their preparation for the Microsoft Technology Associate (MTA) certification exam (98-365).

### **Active Directory**

This module teaches students, through lectures, discussions, demonstrations, textbook exercises, and classroom labs, the skills and knowledge which form the foundation of preparation necessary for administering an Active Directory Domain Services implementation on Windows Server 2008.

The module begins by examining planning an Active Directory deployment including advanced concepts in DNS deployment. Subsequent topics are devoted to user and group administration, physical considerations when deploying Active Directory and group policy deployment.

This module will also include a one week hands-on project where students are presented with a real-world case study and prepare that enterprise network in class.

This module is designed to assist students in their preparation for the Microsoft Certified Technology Specialist (MCTS) certification exam (70-640).

### **Linux**

Students will be introduced to installing, configuring and managing both Debian-based and Red Hat-based distributions of Linux. Topics covered include command-line administration, user and group maintenance, and file system manipulation. Students will become familiar with both the KDE and GNOME desktop environments.

### Security Fundamentals

This module provides further refinement of the core concepts in securing a Windows Server from the numerous dangers that threaten them. The ability to detect risk and recommend security countermeasures is a key skill that will be developed throughout this module. Students will learn to detect and categorizes various forms of malware as well as detect and combat social engineering and phishing attacks. The user authentication process will be studied as well as the forms of access control available to Windows Server administrators. The fundamentals of cryptography including encryption, digital certificates and the public key infrastructure are also covered in detail.

This module is designed to assist students in their preparation for the Microsoft Technology Associate (MTA) certification exam (98-367).

### Ethical Hacking

Students will develop the foundations to secure a network and to become a better network administrator. This course prepares students to defend their corporate environment against malicious attackers by exploring the world of hacking. Students will learn the techniques and methods used by real hackers to compromise systems in order to discover ways their environments might be vulnerable to these attacks. Among the hacking techniques discussed will be reconnaissance methods, using automated scanning tools to profile a network or computer system, using malware to compromise system security, password cracking, denial of service and distributed denial of service attacks, and compromising wireless security. The material in this course will also help prepare a student for CompTIA's Security+ certification exam and the EC-Council's Certified Ethical Hacker (CEH) exam.

### Cisco Routers

Students learn configuration of Cisco routers and switches using Cisco's IOS. The following topics will be covered: introduction to Internetworking Technology, concepts and commands required to configure Cisco Routers and switches in small to medium multi-protocol networks, experience configuring fully operational Cisco routers and switches, apply Cisco IOS software commands to start up and configure a newly installed router and switch, perform all basic configuration procedures to build a multi-router, multi-group network that uses LAN and WAN interfaces for the most commonly used routing and routed protocols.

The student will be able to challenge for **Cisco's CCNA** and **CCENT** certifications.

Tuition	<b>\$9,787.00</b>
1% fee	<b>\$97.87</b>
Books	<b>\$1,551.00</b>
Student fee	<b>\$95.00</b>
Mandatory fees	
Computeraccess	
Total	<b>\$11,530.87</b>