

# Course overview

## CompTIA Network+ Certification Support Skills (2005 Objectives)

(G518eng)



### Overview and objectives

This 5-day practical "hands-on" course is the essential foundation for newcomers to network support. The course has been developed to produce competent network support engineers that are capable of taking and passing CompTIA's Network+ Certification exam.

On course completion, students will be able to:

- Identify network topologies, cabling, connectors, and components.
- Install and configure a network card and client software.
- Identify network protocols and define the concepts of network layers.
- Understand and implement the TCP/IP protocol.
- Identify the features of network and client operating systems (Windows, NetWare, Linux, Mac OS).
- Configure remote and wireless network connections.
- Configure user and security settings for an operating system.
- Use test equipment to troubleshoot network connectivity.

### Certification track

This course will prepare students to take the N10-003 CompTIA Network+ Certification exam, for the objectives released in May 2005.

CompTIA Network+ Certification has been created as a benchmark for local area networking installation and support. The qualification is endorsed by Microsoft, Novell, Cisco, Compaq, and Lotus, among other leading vendors. This qualification is particularly recommended for students who wish to progress to the Microsoft Certified Systems Engineer qualification.



### Target audience

This course has been created for students who have or will have the responsibility for installing, maintaining and troubleshooting local area networks, with a particular emphasis on Microsoft Windows Networks, Novell NetWare, and UNIX/Linux-based systems. This course will particularly benefit students pursuing a career in network administration, as a Network Support Technician, Network Administrator, or Network Analyst or in Help Desk support.

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### Course prerequisites

Students should meet the following criteria prior to attending the course:

- Taken and passed both CompTIA A+ Certification exams or have equivalent knowledge and experience.
- Six months to one year of post-A+ Certification support experience.
- Extensive experience of supporting end-users and PC-based systems.

### Course contents

The course consists of two volumes, with a study volume, containing indexed notes and review questions, and a companion volume, containing exam objectives mapping, exam information, practical labs, answers to review questions, and a comprehensive glossary. The course also comes with an online practice exam.

An instructor edition of the course is available with margin notes and tips for the trainer. Access to course resources on gtslearning's trainer portal ([www.gtstrainer.com](http://www.gtstrainer.com)) is also available, subject to meeting minimum order requirements. gtstrainer hosts setup guides and data, PowerPoint slides, timetables, and extra exam information.

#### Module 1 - Networking Fundamentals

- **Networking Elements** • LANs, WANs, and the Internet • Network Components • Uses and Benefits of a LAN • Server-Based Networks • Peer-to-Peer Networks
- **Physical Topologies** • Introduction to Topologies • Star Topology • Bus Topology • Ring Topology • Other Topologies
- **Physical Media** • Transmission Media • Media Bandwidth • Media Types • Twisted Pair Cable (TP) • Coaxial Cable • Fiber Optic Cable • Firewire (IEEE 1394) • USB

#### Module 2 - The OSI Model

- **Introducing the OSI Model** • The OSI Model • OSI Model Summary
- **OSI Model Lower Layers** • Physical Layer • Data Link Layer • 802 Standards • Media Access • Ethernet (IEEE 802.3) • Token Ring (IEEE 802.5) • VGAnyLAN • AppleTalk
- **Network Components** • Intranetwork and Internetwork Devices • Structured Wiring Systems • Network Adapters
- **OSI Model Middle Layers** • Network Layer • Transport Layer • Routers • Layer 3 Switches • Overview of Transport Protocols • Characteristics of Transport Protocols • Adding and Removing Protocols
- **OSI Model Upper Layers** • Upper Layers of the OSI Model • Client/Server Protocols

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### Module 3 - Major Network Operating Systems

- **Features of Network Operating Systems** • Server Network Operating Systems • Workstation Software • Identifying a Machine on the Network • Connecting to Network Resources • Using Network Printers • Network Applications • Shared Network Applications
- **Novell NetWare** • Novell NetWare
- **Microsoft Windows** • Windows NT • The Windows 2000 Family • The Windows 2003 Family • Client Software • Combining Windows and NetWare • Windows Administration Tools
- **UNIX, Linux, and Mac OS X** • UNIX • Linux • Apple Mac OS X

### Module 4 - TCP/IP Fundamentals

- **Introducing TCP/IP** • Development of TCP/IP • Why is TCP/IP so Popular? • TCP/IP as an Open Standard • The TCP/IP Protocol Suite
- **The Internet and Transport Protocols** • Address Resolution Protocol (ARP) • Internet Protocol • ICMP • Transmission Control Protocol (TCP) • User Datagram Protocol (UDP)
- **Application Protocols** • TCP/IP Services • Email (SMTP Protocol) • The World Wide Web (HTTP) • Other TCP/IP Services • TCP/IP Ports
- **Understanding IP Addressing** • IP Addresses • Subnet Mask • Creating Subnets • Planning an IP Addressing Scheme • Applying for an Internet Address • Default Gateway • Supernetting • IP Version 6 • Zeroconf Networks
- **Configuring TCP/IP on Windows Workstations** • TCP/IP Configuration Parameters • Dynamic Host Configuration Protocol
- **Name Resolution Methods** • Host Names and FQDNs • Name Resolution Using the HOSTS File • Name Resolution Using DNS • Microsoft Networking Host Names
- **TCP/IP Utilities** • ARP Utility • PING • TRACERT / TRACEROUTE • NETSTAT • ROUTE • NBTSTAT • IPCONFIG / IFCONFIG • Troubleshooting DNS • FTP • Other Utilities

### Module 5 - Network Remote Access

- **Wireless Communications** • Wireless Networks • Microwave • Infrared • Radio (Single Frequency / Spread Spectrum) • Bluetooth • Setting up a Wireless Network
- **WAN Technologies** • WAN Overview • Dedicated/Leased Lines • Switched Networks • X.25 • ISDN • Fiber Distributed Data Interface (FDDI) • Synchronous Optical Network
- **Remote Connectivity** • Public Networks • The Internet • Remote Connection Protocols • Tunneling/Encapsulation • Requirements for Remote Connectivity • Virtual Private Networks (VPN) • Remote Desktop Protocol (RDP) • Intranets and Extranets • VLANs • Troubleshooting Remote Connectivity for Small Offices

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### Module 6 - Network Administration and Security

- **Administering the Operating System** • Network Operating System Security • Administrative / Supervisory Account • Creating and Managing User Accounts • Groups • File Security in Windows • Securing a Linux File System • NetWare File Security
- **Building a Secure Network** • What Makes an Operating System Secure? • Types of Attack • Types of Defense • Password Principles • Authenticating User Logon Requests • Encryption • IPSec • Firewalls • Proxy Servers • NAT and ICS
- **Fault Tolerance and Disaster Recovery** • Fault Tolerance and Redundancy • Backup Strategies • Virus Prevention • Uninterruptible Power Supplies (UPS) • Disk Fault Tolerance

### Module 7 - Troubleshooting

- **Troubleshooting Equipment** • Cable Testing Equipment • Product Indicators • Test Frame and Packet Generators
- **Troubleshooting Procedures** • Overview of Troubleshooting Procedures • Troubleshooting Networks • Troubleshooting Cabling • Troubleshooting Infrastructure • Routing Issues • Troubleshooting Name Resolution • Establishing a Session • Troubleshooting Services • User Problems • Service Packs and Driver Updates
- **Monitoring Network Performance** • Performance Monitor • Network Monitor • Protocol Analyzer • SNMP