

## Cisco® Router Fundamentals 2-Day "Hands-On" Workshop

### *Installation, Configuration, and Troubleshooting*

#### Introduction

*Two intensive, power-packed days of hands-on Cisco training.*

You'll learn Cisco networking including Cisco® router installation, configuration, and troubleshooting training, taught by a Cisco CCNA™ certified trainer, using live in-classroom routers. Our Cisco router training begins by providing a good, solid foundation on which you build your Cisco networking knowledge through clear, easy-to-understand student exercises. You'll learn and understand the basics of Cisco networking, building a Cisco router configuration from scratch, designing the TCP/IP protocol, monitoring your router, saving and restoring configurations, and designing and implementing access lists. You'll even learn Cisco router password recovery procedures! Our exclusive lab exercises have been tested and proven by students the world over to be clearly written and easy to understand and follow. Our instructional techniques focus on relevant, helpful material delivered in a way that makes difficult concepts easy for you to remember and apply.





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## At Course Completion

Upon completion of this Cisco training workshop, you'll know...

- How to take your router from no configuration to full functionality
- Three powerful techniques for saving configurations and for re-applying them (Perfect for disaster prevention and recovery)
- How to upgrade your router's Cisco Internetwork Operating System (CIOS)
- The use of CDP (Cisco Discovery Protocol) in troubleshooting
- How to properly design and configure IP addressing schemes (and how to avoid common IP configuration pitfalls)
- The step-by-step procedures to configure NAT to make your router an Internet firewall
- How to configure and deploy DHCP on a Cisco® router for automatic IP address assignment
- Local and remote router configuration procedures
- The basics of routing protocols with hands-on labs in RIP version 1, RIP version 2, and IGRP
- How to control traffic with standard and extended IP access lists
- How to recover passwords (and how to protect against unauthorized password recovery!)
- Testing procedures using PING, traceroute, and debug

This intensive, two-day hands-on Cisco ® Router training workshop will get you up to speed in a hurry with practical tools and techniques you can put to use right away.

## Cisco® professional certification exams

This Cisco® training workshop will help prepare you for the routing portion of the Cisco® CCNA® routing and switching exam 640-801. Exam candidates are encouraged to visit [www.cisco.com](http://www.cisco.com) for complete exam objectives and outlines.

## Who should attend?

This hands-on Cisco router training workshop is perfect for experienced network administrators, engineers, and technicians who are just now starting to work with Cisco routers, for network-savvy business people who need to learn the lingo, for CCNA candidates looking for hands-on experience, for teachers and instructors wanting to brush up on technical training skills, and anyone who needs to better understand the most widely used routers in the world.



## Cisco® Router Training Workshop Outline

### *Module One: Development and growth of computers, networks, and routers*

Learn what led to today's networks and the equipment that makes them work.

- Evolution of computers and networks
- Identifying the three different computing models
- Types of networks from LANs to WANs
- Enterprise networking defined
- Brief history of Cisco routers

### *Module Two: The OSI Reference Model*

The OSI Reference Model is the standard for understanding how different devices communicate within an internetwork. You'll learn how to use this powerful tool in designing and troubleshooting your network,

- Brief history of the OSI model
- How it works
- Understanding the critical layers for your network
- Overview of the functions of each layer
- Mnemonics to help you remember it (especially for CCNA candidates!)
- OSI model and protocols

### *Module Three: The Basics of Cisco Routers*

You'll see different types of routers and where they're used. You'll see the insides of a router, it's primary hardware components, and how to configure the incredibly powerful Cisco Internetwork Operating System (CIOS).

- A look at the different types of Cisco routers
- Primary hardware components
- CIOS software versions and feature sets
- The boot sequence of a Cisco router
- IOS software commands and shortcuts
- The main reason why commands sometimes don't work

### *Module Four: Designing and Configuring the TCP/IP Protocol Suite*

Understanding IP addressing is at the core of modern network design and troubleshooting. You'll use powerful learning techniques to become comfortable with IP addressing and subnetting so your networks will run faster with fewer data collisions.

- The layers of TCP/IP
- Protocols within the TCP/IP suite
- What are sockets and ports and why are they important?
- Understanding an IP address
- Designing an IP network with subnets
- Getting ready for IP version 6

### *Module Five: Building a Router Configuration from the Ground Up*

When you get a new router, its configuration is blank. In this module, you'll actually erase your classroom router's configuration and start from scratch, using both the menu-driven setup script and manual configuration techniques. You'll learn how to take your router from no configuration to full functionality as you build the configuration step-by-step, from the ground up.

- Password protected modes
- Global configure mode
- Using the menu-driven setup script
- Configuring the interfaces
- The difference between configuring WAN and LAN ports
- Assigning console and virtual terminal passwords
- The difference between the enable password and the enable secret (and which one you should never use!)

### *Module Six: Monitoring Your Router*

Once your router is operating, you'll need to monitor it for optimization, security, and troubleshooting. In this module, you'll learn how to use the "show" family of commands and the powerful Cisco Discovery Protocol to see what your router (and its neighbors) are doing "behind the scenes".

- Using the "show" family of commands
- The critical difference between "show run" and "show start"
- How to use the Cisco Discovery Protocol (CDP) to view neighboring Cisco devices
- How to turn off CDP for security and bandwidth conservation

### *Module Seven: Network Address Translation*

Network Address Translation (NAT) is one of the most talked about tools in today's network environment. We'll show you how to configure NAT to protect your LAN while sharing an Internet or other WAN connection.

- When to use Network Address Translation (NAT)
- Four types of NAT
- Configuring NAT
- Building a firewall with your Cisco router

### *Module Eight: Deploying and Configuring DHCP on your Cisco Router for Automatic IP Address Assignment*

You can use DHCP on a Cisco Router with NAT to configure an entire SOHO network without the need for expensive, complex servers. You'll see the simple steps required for deploying and configuring DHCP.

- Configuring a DHCP pool
- Setting up a TFTP server for DHCP log maintenance
- Determining and configuring the DHCP excluded address range
- Configuring the addresses, subnet masks, and TCP/IP options for assignment by DHCP

### *Module Nine: Routing Protocols and Procedures*

This is what routers are all about and you'll see when to use static routing and when to use dynamic routing. You'll work with three different routing protocols to see the differences between them.

- Configuring static routing
- Dynamic routing protocols
- Distance-vector and link-state routing
- RIP, RIPv2, and IGRP

### *Module Ten: Backing Up and Restoring Configurations*

Production routers can have lengthy, complicated configurations that would be difficult (if not impossible) to recreate. As with anything in the computer world, backups are

critical. You'll learn and experiment with three different ways of backing up and applying configurations.

- Using Trivial File Transfer Protocol (TFTP) to save and restore configurations
- Using HyperTerminal's capture and send text utility to save and restore configurations right on your PC
- How to clean up configurations to avoid errors
- Using HyperTerminal's convenient edit option "paste-to-host"

### *Module Eleven: Remote Router Control*

Most of the time, you'll control your router remotely. In this module, you'll learn how to use Telnet and a variety of commands to configure, optimize, and troubleshoot your router from your desktop (or wherever you are!).

- Using Telnet to remotely monitor and control the router
- Telnet commands to see and disconnect remote users
- Using Telnet commands to view your own remote sessions
- Sending console messages from Telnet sessions

### *Module Twelve: Controlling Access*

One of the most popular ways of managing network traffic is through a router's access-lists. You'll see how to build standard IP access lists to control general traffic and extended IP access lists to permit or deny very specific types of traffic.

- Access lists defined
- Types of access lists
- Building and using IP standard access lists
- Building and using IP extended access lists
- The real reason why you should never build your access list directly on the router
- Shortcut to building and editing access lists
- Adding usernames and passwords to your router



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### *Module Thirteen: Passwords and Recovery*

You'll see the different types of router passwords and how to encrypt all (or selected) router passwords. Then, you'll actually go through the procedures for recovering a lost password on a Cisco 2501 router and you'll learn how to find password recovery procedures for whatever type of router you use.

- Types of passwords
- Encrypting all passwords
- Password recovery techniques for when you don't know the privileged mode password

### **Prerequisites**

Students should have basic familiarity with computers and networks. This is a fundamentals workshop and is appropriate for those with no router experience and limited networking experience. More advanced students should carefully review the course outline to ensure that it meets their personal/career objectives.



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