

Course 748: Fundamentals of Cisco Router and Switch Administration

(5 days)

Course Description...

This course will cover LAN and WAN connectivity using Cisco switches and routers. Students will learn the commands needed to effectively deploy and manage these devices. Students will also gain detailed knowledge of network communication and real world best practices for using and securing the equipment.

Learning Objectives...

- Understand Cisco hardware components and typical hardware for most networks.
- Ability to backup and restore configurations and operating systems on routers and switches.
- Build a knowledge base of Cisco commands for routers and switches.
- Detailed knowledge of TCP/IP design, addressing and communication.
- Troubleshooting of typical problems.
- Basic understanding of IPX/SPX (for CCNA preparation)

Who should attend...

Those interested in developing real-world skills for the administration of Cisco routers and switches.

Prerequisites...

There are no formal prerequisites for this course.

See next page for a detailed course outline...



Course Outline...

Unit 1: Router Hardware

Router Architecture

- Cisco family of routers
- Cisco IOS for routers
- CatOS and Cisco IOS for switches
- Interfaces
- Console Port
- Aux Port

Router Hardware

- Memory
- The boot process
- The configuration register

Important Commands

- Navigating the CLI (command line interface)
- Informational Commands
- Global Configuration Commands

Unit 2: Backup and Restore

Initial Configuration

- Out of the box configuration
- Configuration Wizards
- The Cut and Paste method.

Backup, Restore and Break-In

- TFTP Servers
- Backup IOS
- Backup configuration
- Restore IOS
- Restore configuration
- Resetting a password.

Unit 3: Network Communication

Understanding Network Communication

- OSI Model
- Unique Addressing
- Unicast, Multicast and Broadcast
- LAN Communication
- Role of TCP/IP
- TCP/IP Suite
- ARP
- ICMP
- TCP versus UDP
- Client communication – Adjacency Test
- Host Routing Table
- WAN Communication



IP Addressing and Routing

- Routing Analogies
- What's in an IP Address?
- Classful IP Addressing
- Loopback
- Route table processing
- Cisco Routing Table
- Static Routes
- Subnetting
- Classless IP Addressing (CIDR)
- VLSM
- Reverse Engineering the network design

IP Troubleshooting

- Ping
- Extended Ping
- Traceroute
- Debug commands

Solving Business Problems

- Proxy Servers
- NAT and PAT
- Converting from one IP range to another
- Incorrect subnet assignments
- Cisco trick questions

Case Study - Designing an IP Network

- Scalable IP network design with VLSM
- NAT
- Proxy Servers

Unit 4: Dynamic Routing

Dynamic IP Routing

- Why dynamic routing
- Dynamic Routing Protocols
- Distance Vector versus Link State
- Administrative Distance
- Count to Infinity Problem and solutions
- RIP
- IGRP

Unit 5: WAN Connectivity

Point to Point Circuits

- DCE / DTE
- Encapsulation
- Frame Relay
- ISDN
- BRI
- PRI
- VPN
- Simulating WAN connectivity



Unit 6: Security

Access-Lists

- Standard Access Lists
- Extended Access Lists
- Named Access Lists
- ACL Troubleshooting

Case Study Revisited – Securing the network

- Where do firewalls fit in?
- ACLs
- IDS / IPS
- DMZ

Unit 7: Troubleshooting and Housekeeping

Cisco Support

- Cisco Support
- Smartnet contracts

Systematic Troubleshooting

- Physical connectivity
- The Telco closet guy
- Telnet hopping
- Route Table Problems
- IOS Problems

Housekeeping

- Timestamps
- Local logging
- Syslog and time servers
- Blocking Telnet

SNMP

- SNMP Overview
- MIB-II
- SNMP Commands

Unit 8: Switching

Switching

- Switch Operation
- Spanning Tree
- Identifying bad NICs / cables
- Multicast traffic

VLANs

- VLAN Concepts
- Trunking



Unit 9: Netware

Novell Routing

- Novell network architecture
- GNS
- IPX RIP
- SAP
- IPX Addressing
- IPX Routing tables

Please contact your ROI representative to discuss course tailoring!!!