

Hands-on course , 5
day(s)
Ref : ROC

Participants

Anyone involved in installing and maintaining Cisco based networks.

Pre-requisites

Basic knowledge of networking technologies or IPv4 networks.

Next sessions

Introduction to Cisco Routers

OBJECTIVES

At the end of this practical course, participants will be able to install, configure and maintain a router or switch. Also, to implement a static or dynamic routing, interconnecting LANs via a WAN solution, filter traffic, which model of Cisco router, administering routers in the safest conditions.

1) Cisco router architecture

2) Installing and configuring a router

3) Installing and configuring a Cisco switch

4) IP routing configuration

5) Using serial interfaces and WAN

6) Security

7) Router exploitation and maintenance

1) Cisco router architecture

- Hardware components (Flash, NVRAM, network interface cards,...).
- The Internetworking Operating System (IOS).
- Initial configuration.

2) Installing and configuring a router

- Preparing the router environment.
- Connecting the console cable and the ethernet connection.
- Using the "enable" mode. The "show" command.
- Showing material and software versions. Using the "configure" mode.
- Basic configuration commands : Time, host name, user names and passwords.
- Interfaces configuration. Preparing VTY access with telnet or ssh.
- Testing the network with "ping" and "traceroute" commands.

Workshop

Basic router configuration. Testing network reachability with ping and traceroute.

3) Installing and configuring a Cisco switch

- Cisco switching platforms.
- Frame switching versus packet routing.
- Building a reliable level-2 architecture.
- The Spanning Tree Protocol. Designing VLANs.
- Configuration commands.
- Integrating switches and routers.

Workshop

Installing a Cisco switch. Basic configuration. Implementing VLANs.

4) IP routing configuration

- Designing a redundant network topology.
- Defining a routing strategy. Static or dynamic routing. Default routes.
- Understanding routing tables.
- Ensuring service availability with Hot Standby Router Protocol (HSRP). Virtual router.
- Dynamic routing with RIP v1 and v2. Understanding Routing Information Protocol (RIP). Configuration commands. Debugging.
- Dynamic routing with EIGRP. Enhancement to IGRP. EIGRP metrics. Load balancing. Configuration commands. Debugging.
- Dynamic routing with OSPF. Open Shortest Path First (OSPF). Metrics and areas. Configuration commands. Debugging.

Workshop

Designing and implementing a redundant topology. Using HSRP Static routing. Dynamic routing with RIP, EIGRP, and OSPF.

5) Using serial interfaces and WAN

- Serial interfaces on leased lines.
- Frame relay interfaces. Physical interface configuration. Virtual serial interface configuration.
- ATM and ISDN interfaces.
- Point-to-Point Protocol (PPP). Basic mechanisms. Password Authentication Protocol (PAP).
- Challenge Handshake Authentication Protocol (CHAP). Using ML-PPP (Multilink PPP).

Workshop

Connecting routers with "cross" serial lines. Interface configuration with PPP encapsulation. Managing rates and Maximum Transmission Units (MTU). Analyzing network performances

6) Security

- Private addresses vs. routable official Internet addresses.
- Using Network Address Translation (NAT).
- Using Port and Address Translation (PAT).
- Using Access Control Lists (ACL). Basic ACL. Extended ACL.
- Replacing telnet access with ssh.
- Using HTTPS to configure a router.
- Using the syslog protocol.

Workshop

Using NAT and PAT on a router. Using ACL. Configuring ssh.

7) Router exploitation and maintenance

- Boot sequence.
- Using Cisco configuration register.
- Recovering a lost password.
- Installing a new IOS.
- Managing router configuration with TFTP.
- Configuring SNMP on the router.

Workshop

Using the PROM Monitor. Changing the configuration register. Installing a new IOS with the tftpdnld command. Configuring and querying the SNMP agent.