Introduction to Cisco Routers

Hands-on course of 5 days - 35h
Ref.: ROC - Price 2024: €3 220 (excl. taxes)

THE PROGRAMME ──────────

last updated: 01/2018

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 environnement.
- 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.
Hands-on work : 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.
Hands-on work : 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.
Hands-on work : 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 Protocl (PPP). Basic mechanisms. Password Authentication Protocol (PAP).

- Challenge Handshake Authentication Protocol (CHAP). Using ML-PPP (Multilink PPP).
Hands-on work : 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.
Hands-on work : 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.
Hands-on work : Using the PROM Monitor. Changing the configuration register. Installing a new IOS with the tftpdnld command. Configuring and querying the SNMP agent.

DATES

REMOTE CLASS
2025 : 31 Mar, 30 Jun, 29 Sep, 29 Dec