

# Introduction to Cisco Routers

Hands-on course of 5 days - 35h

Ref.: ROC - Price 2024: CHF3 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 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.

*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.

#### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

#### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more. Participants also complete a placement test before and after the course to measure the skills they've developed.

#### TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

#### TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

#### ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@ORSYS.fr to review your request and its feasibility.

- Point-to-Point Protocol (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

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REMOTE CLASS

2024 : 01 Jul, 14 Oct