Publication date : 04/11/2024

Course : Cisco and HP multi-tier switches, implementation

Practical course - 5d - 35h00 - Ref. RZZ
Price : 3330 CHF E.T.

At the end of this course, you'll be able to implement a Layer 2 switched network and ensure its reliability through redundancy. You'll also see how to implement the QoS required to handle VoIP, and secure switch ports.

Teaching objectives

At the end of the training, the participant will be able to:

- Implement CISCO and HP multi-tier switch architectures
- Configure distribution and access switches
- Securing switch ports
- Implement redundant Ethernet switching
- Implementing QoS

Intended audience

Network technicians and administrators.

Prerequisites

Basic knowledge of corporate networks, particularly IP addressing mechanisms.

Practical details

Hands-on work

Alternating conceptual and practical presentations.

Teaching methods

50-70% of the session is devoted to practical work.

Course schedule

PARTICIPANTS

Network technicians and administrators.

PREREQUISITES

Basic knowledge of corporate networks, particularly IP addressing mechanisms.

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.

1 Campus networks

- LAN evolution.
- Bridging, routing and switching.
- Advantages and disadvantages of the various options.
- Choose the right solution.
- Organization of a switch network.
- Topology rules.

2 Building a campus network

- Physical layer elements.
- From 10Mb Ethernet to Gigabit Ethernet. Full-duplex Ethernet.
- VLAN design criteria (ports, addresses).
- Extended virtual LANs. VLAN Trunking Protocol (VTP).
- Dynamic Trunk Protocol (DTP). Link Layer Discovery Protocol (LLDP). Cisco Discovery Protocol (CDP).
- Inter Switch Link (Cisco ISL) or 802.1.q (IEEE standard).
- Link grouping : Ether Channel.

Hands-on work

Configuration of a switched network with CISCO and HP switches. Implementation of interconnected virtual LANs. VTP configuration.

3 Redundant link management

- Spanning Tree Protocol (STP).
- Configuring a redundant topology.
- Precautions to take, impact on convergence.
- PVST+ (Per VLAN Spanning Tree), Spanning Tree evolution.
- Inter-VLAN routing.
- Define work groups.

Hands-on work

Redundant Gigabit switch interconnections. STP implementation. Priority configuration, backup management. Incident handling according to configuration.

4 Traffic management

- VLAN to VLAN traffic.
- Integration via a backbone.
- IP routing performance with multi-level switching.
- Storm management and related actions.
- Quality of service configuration for data and VoIP traffic.
- 802.1P service classes and their DSCP mapping.
- Flow marking, prioritization and resource reservation.
- The benefits of MPLS (Multi Protocol Label Switching).

Hands-on work

Implementation of different traffic patterns. Performance comparison.

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.

5 Reliability

- HSRP (Hot Standby Routing Protocol).
- Implementation of a reliable solution.
- Toggle validation.

Hands-on work
Configuration of a switch control cluster with transparent HSRP backup. Validate failovers. Configure priorities and preemption.

6 Multicast processing

- Role and principle of multicast.
- Link-level processing. Various protocols: IGMP.
- The role of PIM (Protocol-Independent Multicast).
- PIM V1 and V2.
- Implementation of IGMP snooping.
- Multicast broadcast management.

Hands-on work
Implementation and management of multicast broadcasting in a switch network.

7 Network access control

- Access Control Lists (ACL).
- Filtering mechanisms.
- Traffic filtering.
- Standard and extended lists.
- By address, port, application, flow.
- Secure ports and associated actions.

Hands-on work
Implementation of access protection by criteria. Physical access filtering. Traffic filtering.