

Hands-on course , 4
day(s)
Ref : RCM

Participants

Network technicians and administrators.

Pre-requisites

Basic knowledge of enterprise networks, and in particular IP addressing mechanisms.

Next sessions

Cisco multilayer switches

OBJECTIVES

By the end of this course, the participant will be able to implement a level 2 switched network and ensure its reliability via redundancy. He or she will also have learned how to implement the QoS needed to process VoIP, and to make the ports of a switch secure.

1) Campus networks

2) Building a campus network

3) Managing redundant links

4) Traffic management

5) Adding reliability

6) Handling multicast.

7) Network access control

Workshop

Essential hands-on courses using 2950 switches. This course is independent of the model and iOS version.

1) Campus networks

- Evolution of LANs.
- Bridging, routing, and switching.
- Pros and cons of different options.
- Choosing an appropriate solution.
- Organizing a network of switches.
- Topology rules.

2) Building a campus network

- Elements of the physical layer.
- From 10MB Ethernet to Gigabit Ethernet.
- Full Duplex Ethernet.
- Principles and protocols.
- Virtual LAN: VLAN.
- VLAN design criteria (ports, addresses).
- Wide area virtual LANs. VLAN Trunking Protocol (VTP).
- Assigning mobile access. Dynamic Trunk Protocol (DTP). Cisco Discovery Protocol (CDP).
- Switch to switch linking. Inter Switch Link (ISL from Cisco) or 802.1Q (IEEE standard).
- Grouping links: Ether Channel.

Workshop

Configuring a switched network. Implementing interconnected virtual LANs. VTP configuration.

3) Managing redundant links

- Spanning Tree Protocol (STP).
- Principles, algorithm.
- Configuring a redundant topology.
- Precautions of use.
- Impact on convergence.
- PVST+ (Per VLAN Spanning Tree), evolution of Spanning Tree.
- InterVLAN routing.
- Defining workgroups.

Workshop

Redundant gigabit switch interconnections. Implementing STP. Configuring priorities, managing backups. Handling incidents based on settings.

4) Traffic management

- VLAN to VLAN traffic.
- Integration via a backbone.
- IP routing performance with multilevel switching.
- Managing storms and corresponding actions.
- Configuration of quality of service for data traffic and VoIP traffic.
- 802.1P service classes and their DSCP mapping.
- Marking flows, prioritization and resource reservation.
- VLAN VoIP.
- Benefits of MPLS (Multi Protocol Label Switching).
- IP Switches.

Workshop

Implementing different traffics. Comparing performance.

5) Adding reliability

- The HSRP protocol (Hot Standby Routing Protocol).
- Implementing a reliable solution.
- Validating handovers.

Workshop

Configuring a switch command cluster with HSRP transparent backup. Validating handovers. Configuring priorities and preemption.

6) Handling multicast.

- Role and principle of multicast.
- Link level processing. Different protocols: IGMP.
- The role of the PIM protocol (ProtocolIndependent Multicast).
- PIM V1 and V2.
- Implementing the IGMP snooping function.
- Management of multicasting.

Workshop

Completion and management of multicasting in a switching network.

7) Network access control

- Filtering mechanisms.
- Traffic filtering.
- Standard and extended lists.
- By address, port, applications, flows.
- Secure ports and associated actions.

Workshop

Implementing criteria-based access protections. Filtering physical access attempts. Filtering traffic.