Course : Huawei, routers and switches, enhancement

Practical course - 5d - 35h00 - Ref. HUW
Price : 2840 € E.T.

Master distance vector, path vector and link-state routing protocols and their selection criteria. You'll learn about RIP-1, RIP-2, OSPF, BGP, IP switching mechanisms, virtual private network design, as well as Voice over IP and access security.

🎯 Teaching objectives

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

- ✅ Setting up a router and switch
- ✅ Implement BGP, RIP and OSPF protocols
- ✅ Managing multi-area OSPF systems
- ✅ Supervising a router via SNMP

Intended audience

Anyone whose job requires knowledge of configuring routing protocols on Huawei routers.

Prerequisites

Good knowledge of TCP/IP and Huawei router configuration. Or knowledge equivalent to that acquired in the course "Huawei routers and switches, implementation "(ref. HUA).

Course schedule

1 Routing options

- Topology: tree or mesh.
- Prioritization: flat or backbone network.
- Services: prioritization or non-prioritization.
- Flows: synchronous or asynchronous.
- Technical or strategic criteria: throughput, lead time, price or preference.

PARTICIPANTS
Anyone whose job requires knowledge of configuring routing protocols on Huawei routers.

PREREQUISITES
Good knowledge of TCP/IP and Huawei router configuration. Or knowledge equivalent to that acquired in the course "Huawei routers and switches, implementation "(ref. HUA).

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.

(2) Distance vector routing

- RIP 1 and RIP 2 protocols.
- The simplicity of RIP. Loop handling. Convergence. Message handling.
- Subnet routing, security. Multicast broadcasting, SNMP administration.
- External route management, Next Hop. Authentication.
- Multiple metrics. Best path selection. Loop processing, Split Horizon. Poison Reverse. Convergence.
- Implement load sharing. Operator action on route selection.
- Globalization or not of subnets. Routing filtering: access lists.
- Configure authentication.
- RIP configuration commands.

Hands-on work
RIP configuration commands on LAN and WAN. Validate limits. Implement a network interconnection. Troubleshooting, maintenance and debugging on RIP. Implement load balancing.

(3) Link-state routing

- Basic concepts. Database and topology. Link states.
- The OSPF protocol. Metrics and multiple paths: traffic distribution.
- The role of neighborhoods in rapid convergence.
- Hierarchical network with backbone and zones. The notion of designated router. Secure broadcasting of link status.
- Event-based updates. Network updates with or without broadcast.
- Define OSPF areas with or without globalization. Stub Area, Not So Stub Area, virtual link.
- Consequences for broadcasting. Backbone routing configuration, interzone, intrazone.
- Interpret database information. Customize link costs.
- Optimizing OSPF load. Traffic distribution.

Hands-on work
Implement a secure OSPF interconnection. Create a hierarchical network and define OSPF areas. Check backbone broadcasts and the impact of the notion of terminal area (stub area and NSSA) with or without route synthesis. OSPF maintenance and debugging.

(4) BGP path vector routing

- Definition. Autonomous systems. Topology, tables, loops, routes, political routing.
- Path vectors. Attributes. BGP procedures. Exchanges, updates, polling.
- Political routing processing.
- BGP Route Selection and Route Aggregation.
- BGP Routing Policies, Route Reflection and Confederation.
- BGP Multi-homing.

Hands-on work
Implementation of an IP network interconnection using the BGP4 protocol. Set up a network of autonomous systems. Verification of backbone broadcasts. Troubleshooting, maintenance and debugging on BGP. Create a decision table.

5   Flow prioritization (QoS)

- Quality of service (QoS) requirements.
- Characterizing Quality of Service (QoS).
- The mechanisms that guarantee it.
- The DiffServ model. Service classification.
- DiffServ: flow marking: DSCP. Solutions: traffic shaping, queuing.
- Priority management and mapping with DiffServ.
- Fair Queuing, Priority Queuing. Custom Queuing. Frame Relay DLCI prioritization.
- QoS implementation and improvement methods.

Hands-on work
Configure different types of queues. Validate impact on transfers.

6   Virtual Private Networks (VPN)

- MPLS VPN. MPLS components. VPN architecture. Associating flows, labels and QoS.
- IPSec VPN. How it works. Algorithm selection.
- Road and tunnel association. Principles of implementation.

Hands-on work
IPSec tunnel creation. Encryption mechanisms. IPsec configuration. Verification. Troubleshooting, maintenance and debugging.

7   Advanced switches

- Reminders about VLANs The QinQ.
- STP and RSTP reminders. MSTP.
- VLAN configuration, Mux VLAN, Super VLAN and QinQ.
- STP, RSTP and MSTP configuration.
- QoS and end-to-end process description.
- 802.1x: principles and configuration.