Publication date : 01/12/2024

Course : Juniper, routing and switching, advanced

Practical course - 5d - 35h00 - Ref. JUP
Price : 3630 € E.T.

Master the concepts of distance vector, link state and path vector protocols with this advanced training course. You'll also learn about the characteristics of the RIP, OSPF and BGP routing protocols, IP switching mechanisms and VPN design.

Teaching objectives

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

- Master advanced routing and switching techniques
- Setting up a mutli-area OSPF network with static route redistribution and RIP
- Configuring a Mutli-AS network with BGP routing and OSPF as IGP
- Implementing MSTP and VSTP
- Implementing Level 2 and Level 3 QoS on the same IP network

Intended audience

Network engineer/administrator and technician.

Prerequisites

Good knowledge of TCP/IP and Juniper router configuration, or knowledge equivalent to that provided by the course "Juniper, routing and switching, implementation" (ref. JUN).

Practical details

Hands-on work

Discussions, experience sharing, demonstrations, tutorials and case studies.

Teaching methods

Active pedagogy based on examples, demonstrations, experience sharing, case studies and assessment of learning throughout the course.

Course schedule

PARTICIPANTS

Network engineer/administrator and technician.

PREREQUISITES

Good knowledge of TCP/IP and Juniper router configuration, or knowledge equivalent to that provided by the course "Juniper, routing and switching, implementation" (ref. JUN).

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 Routing infrastructure in JUNOS

- Static, aggregated, generated routes.
- Multi-instance routing tables, VRF.
- Load balancing and filter-based routing.
- IP tunnels: GRE, IP-IP.
- Introduction to IPSec.

Hands-on work

Aggregated route configuration, summarized announcements, virtual routers, GRE tunnel configuration.

2 Advanced OSPF and multi-area

- Link-state routing theory-OSPF: a detailed review.
- Reminders on basic single-area OSPF.
- OSPF multi-area, redistribution of external routes.
- Configuration of advanced features (Stub Area, NSSA, Authentication).

Hands-on work

Configuration of a multi-area OSPF network with static route redistribution and RIP.

3 BGP path vector routing

- BGP, autonomous systems and the Internet.
- Basic BGP configuration, INGP and EBGP.
- Review of BGP attributes, advanced features.
- Advanced BGP: route reflectors and confederations.

Hands-on work

Configuration of a multi-AS network with BGP routing, OSPF as IGP and route reflectors.

4 Multicast routing

- Multicast at levels 2 and 3, protocols and their merits.
- The PIM protocol in Dense mode.
- Intelligent Pim: Sparse and Sparse-dense modes.

Hands-on work

Implementation of a multicast routing network in dense and sparse mode.

5 Advanced Ethernet Swithing

- VLAN assignment by filtering.
- Private VLAN.
- Automated VLAN management: the MVRP protocol.
- Level 2 tunneling: Q-in-Q.

Hands-on work

Use of VLAN/filtering, Private VLAn, MVRP management, use of Q-in-Q.

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.

6 The advanced Spanning Tree protocol

- The weaknesses of Spanning Tree (STP).
- Rapid Spanning Tree (802.1D-2004).
- Multiple Spanning Tree (802.1Q-2003) and VSTP exception.
- Protection against attacks on STP.

Hands-on work
MSTP and VSTP implementation.

7 Service quality at levels 2 and 3

- Guarantee the highest possible and most reliable throughput across an IP fabric.
- QoS: classification, classes, queues, priorities, congestion, scheduling, BA rewriting.
- Layer 2 configuration (802.1p).
- Layer 3 configuration (DSCP, TOS, IP precedence).

Hands-on work
Implement QoS at both levels on the same IP network.