Hewlett Packard Enterprise

HPE LAN Switching Installation and Administration HK644S

HPE course number	HK644S
Course length	5 days
Delivery mode	ILT
View schedule, local pricing, and register	**View now**
View related courses	**View now**

This five-day hands-on instructor-led training course is designed to give students the skills required to install, configure and support HPE Switches based on the Comware v5 Operating System. An overview of HPE's switching portfolio is included to allow the participants to know the models, components and features of these switches. Step-by-step labs guide the students through some of the most useful configurations on these switches. Students work in teams to build in class networks that simulate real world situations.

Why HPE Education Services?

- IDC MarketScape leader 4 years running for IT education and training*
- Recognized by IDC for leading with global coverage, unmatched technical expertise, and targeted education consulting services*
- Key partnerships with industry leaders OpenStack®, VMware®, Linux®, Microsoft®, ITIL, PMI, CSA, and (ISC)²
- Complete continuum of training delivery options—self-paced eLearning, custom education consulting, traditional classroom, video on-demand instruction, live virtual instructor-led with hands-on lab, dedicated onsite training
- Simplified purchase option with HPE Training Credits

*Realize Technology Value with Training, IDC Infographic 2037, Sponsored by HPE, January 2016

Audience

The course is for customers who will install, configure and maintain HPE Switches.

Prerequisites

To take full advantage of this course, it is recommended that students have a good understanding of:

- Ethernet, Fast Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet
- Ethernet Switching, including VLANs, STP, RSTP, and MSTP
- IPv4 Basics and Routing including RIP and OSPF
- Security Basics, including 802.1x
- Network Management basics, including SNMP and RMON

Course objectives

Upon successful completion of this course, students should be able to:

- Describe the HPE Switching portfolio, its members, and its features
- Know the Command Line Interface and how to manage the configuration file
- Configure and maintain the following features: basic system management, port and port groups, link aggregation groups, VLANs, MSTP and RRPP, IPv4 basics, routing, and multicast routing, quality of service, security, and network management

Benefits to you

- Gain hands-on experience with the product and acquire a detailed understanding of the features, functionality and the skills needed to install, configure and manage the products
- Experienced instructors provide you with a comprehensive overview, in-depth information and practical exercises on the products and technologies

Detailed course outline

Module 0: Introduction and Product Overview

- HPE A-Series Switches Portfolio
- Agenda
- IT of the Future Will be Built on a Converged Infrastructure
- HPE Networking
- HPE Networking Portfolio
- HPE A-Series Switches Common Features
- Common Features
- Comware v5
- Feature Set
- IPv6 Support
- IRFv2
- OAA Technology
- IMC: Intelligent Management Center
- A5500-SI Series—Introduction
- A5500-SI Models
- Expansion Modules
- Combo Ports: Built-in flexibility
- A5500-EI Series
- A5500-EI Introduction
- A5500-EI Models
- A5500-EI Ports, Slots and Power Options
- Expansion Modules
- A5800 Series—Introduction
- A5800 Models
- A5800 Interface Modules
- Power Options
- A5820X Series—Introduction
- S5820X Models
- S5820X Interface Modules
- A7500E Series—Introduction
- Chassis Models
- Salience Switch and Route Processing Units (Switch Fabrics)
- Interface Modules
- Power Options
- A9500E Series
- HPE A9500E Chassis
- SRPUs for the A9500E
- Interface Modules
- Power Supplies (PSUs) for the A9500E
- A12500 Series—Introduction
- A12500—Chassis Models
- S12508—Chassis View
- MPU: LST1MRPNC1
- Switch Fabric Modules (SFMs)
- Interface Modules
- Power Systems

Module 1: Comware v5 Switching Features—System Management

- System Management
- Getting Started
- User Interface and CLI
- User Interfaces
- Console Login
- Authentication Modes
- Views (contexts) structure
- CLI Command Privilege Levels
- User Privilege Level
- Basic Configuration
- Important User-view Commands
- CLI Help
- CLI Command History
- Configuring the AUX User Interface
- Configuring Local Users
- Telnet
- Enabling and Configuring Telnet
- SSH
- SSH: Secure Shell
- Configuring the SSH Server
- Configuring the SSH User
- SSH Configuration Example
- SSH Configuration Example (Server)
- SSH Configuration Example (PuTTY Client)
- Managing the Configuration File
- File System Command
- Storage Devices
- Example
- Configuration File
- Learning check
- A-Series CTRL keys
- TFTP and FTP
- Configuring the TFTP Client
- Configuring the FTP Server
- Software Upgrade
- Upgrading Software
- Upgrading Software—Example

Module 2: Ports and Bridge Aggregation

- Ports and Bridge Aggregation
- Ports and Link Aggregation
- Port Groups and Port Configuration
- Configuring Port Groups
- Configuring Basic Port Parameters
- Maintaining and Displaying an Ethernet Port
- MAC Address Table
- Link Aggregation
- Architecture
- Link Aggregation Modes
- Configuring a Static Aggregation Group
- Configuring a Dynamic Aggregation Group
- Learning check

Module 3: VLANs	• VLANs • VLAN Types • Port-based VLANs • VLAN Technology Overview • Port Based VLANs • 802.1Q Ethernet frame • IEEE 802.1p • VLAN Tagging Mechanism • Port Link Type • Default VLAN • Packet Handling: Access Ports • Packet Handling: Trunk and Hybrid Ports • Creating VLANs • Configuring Trunk Ports • Configuring Hybrid Ports • Hybrid Ports Application	• Protocol Based VLANs • Encapsulation-Protocol Template • Examples • IP-subnet-based VLANs • MAC-address-based VLANs • Configuring MAC-Address-Based VLANs • Assigning MAC-Address-Based VLANs • Voice VLAN • Configuring the OUI list • Security Mode: • Configuring an Auto-Voice VLAN • Auto-Voice VLAN—Example • Basic QinQ • QinQ • Basic QinQ • Learning check
Module 4: Layer 2 Topology Protocols	• Layer 2 Topology Management Technologies • RSTP • RSTP Review • RSTP: Rapid Spanning Tree Protocol • RSTP Goal • IDs and Priorities • Bridge Roles • RSTP Port Roles • Configuration Messages and Priority Vectors • RSTP Roles • RSTP Active Topology Calculation • Root Bridge • Root Ports • Designated Bridge and Designated Port • Alternate Ports and Backup Ports • Edge Ports • Port States • Configuring RSTP • MSTP • RSTP: Rapid Spanning Tree Protocol • Regions • MSTP Trees • MSTIs • Single Region Configuration (common parameters) • Single Region Configuration (individual settings) • Other useful commands • Link speed vs. path cost • Learning Check • SmartLink • Agenda • Overview • Smart Link Group	• Flush Messages • Transmit and Receive Control VLANs • Protected VLAN and Load Sharing • SmartLink Configuration Prerequisites • Steps • Example 1: Network requirements • Example 1: Configuration procedure • Example 2: Network Requirements • Example 2: Switch C and E • Example 2: Switch B and D • Example 2: Switch A • Example 3: Network Requirements • Example 3: Switch C/Part 1 • Example 3: Switch C/Part 2 • Example 3: Switch C/Part 3 • Example 3: Switch C/Part 4 • Example 3: Switch A, B and D • RRPP • RRPP: Rapid Ring Protection Protocol • RRPP Node Modes • RRPP Control VLAN • RRPP Port • Single Ring • Tangent Rings • Single-domain intersecting rings • Dual-homed Rings • RRPP Mechanisms • Configuring RRPP • Configuring Master and Transit Node • Configuring Edge Node • Configuring Assistant Edge Node • Displaying and Maintaining RRPP

Module 5: IPv4 Services	• IPv4 Services • IPv4 Interfaces • Configuring IPv4 Interfaces • DHCP	• DHCP Client Configuration • Configuring DHCP Server • Configuring DHCP Relay Agent
Module 6: IPv4 Routing	• IPv4 Routing • Initial Note: Tracert in Comware v5 • Static Routes • Configuring a Static Route • Default Route • OSPF • Configuring OSPF • Autonomous Systems and ASBR • Areas and ABRs • Transit Areas and Virtual Links • AS, Areas and Roles • Configuring OSPF • Configuring Area Parameters • Configuring other OSPF Parameters • Configuring OSPF Route Redistribution • OSPF Configuration Example • VRRP • VRRP: Virtual Router Redundancy Protocol	• VRRP Parameters • Master / backup • Load Balancing • Configuring VRRP • BFD: Bidirectional Forwarding Detection • BFD • BFD Authentication Methods • BFD Session Establishment Operation Modes • BFD Session Establishment • BFD Detection Modes • BFD Session Modes • BFD Session Maintenance and Fault Detection • BFD Fault Detection • BFD and OSPF Configuration Example • Configuration Example Configure OSPF basic functions • Configuration Example Configure BFD Parameters • Configuration Example Verification and Debugging
Module 7: IPv4 Multicast	• IPv4 Multicast • Multicast • Multicast Overview • IP Multicast Technology • Multicast IP Addresses • Multicast Flow • IGMPv2 • IGMPv2: Internet Group Management Protocol • IGMPv2 Packets • Multiple Routers • Configuring IGMP • IGMP Snooping • IGMP Snooping Related Ports	• IGMP Snooping Mechanism • Configuring IGMP Snooping • Multicast VLAN • Configuring Multicast VLANs • PIM-DM • PIM: Protocol Independent Multicast • RPF: Preventing Duplication • SPT: Multicast Distribution Tree in PIM-DM • SPT: Graft • Assert Mechanism • Configuring PIM-DM • Multicast Protocols in Comware v5

Module 8: Quality of Service	• Quality of Service • Priority Mapping • Local and Drop Precedence • Port Priority • Trust Modes • dot1p—ld/dp Mapping Table • dscp—lp/dp/dscp Mapping Table • Displaying Port Priority Mapping • Bandwidth and Congestion Management • Bandwith Management • Congestion Management • Configuring Congestion Management • Example: SP+WRR • Traffic Policies • Traffic Classifiers • ACLs: Access Control Lists • ACL Types • ACLs Match Order • Creating a Time Range • Configuring Basic IPv4 ACLs • Auto Match Order in Basic ACLs	• Configuring Advanced IPv4 ACLs • Auto Match Order in Advanced ACLs • Configuring Ethernet Frame Header ACLs • Auto Match Order in Ethernet Frame Header ACLs • Configuring Classifiers • Traffic Behaviors • Actions • Behavior Support by Module Type • Configuring Traffic Behaviors • QoS Policies • Creating and Applying Traffic Policies • QoS Applications • Traffic Statistics • Traffic Filtering • Traffic Mirroring • Traffic Redirection • Traffic Remark—example • VLAN and QoS Processing • VLAN and QoS Processing Summary • Ingress Process for VLAN and QoS • Egress Process for VLAN and QoS
Module 9: Security	• Security • Device Security • Securing the Console • Securing Telnet • ACLs for Telnet and SSH: example • Securing SNMP • AAA-Radius • AAA: Authentication, Authorization and Accounting • Configuring AAA Domains • 802.1X	• 802.1X: Authentication • 802.1X: Automatic Resource Assignement • Configuring 801.2X • AAA, RADIUS and 802.1X Configuration Example • MAC Authentication • MAC Authentication Username Types • Configuring Local MAC Authentication • Configuration Example—User Mode: MAC Address • Configuration Example
Module 10: Network Management	• Network Management • Local Port-Mirroring • Configuring Local Port Mirroring • Remote Port Mirroring • Configuring the Source Device • Configuring the Destination Device • Remote Port Mirroring Example • SNMP	• Enabling and Configuring SNMP v1 or v2c • Configuring Traps • LLDP • LLDP Architecture • LLDP Frame Format • LLDP Operation • Transmit mode • Receive mode

Course data sheet

Module 11: IRF Intelligent Resilient Framework

- IRF Intelligent Resilient Framework
- Agenda
- IRFv2—Overview
- Advantages of IRF
- IRFv2—Members, Roles and Topology
- IRFv2—Overview (2)
- Operational Planes in Standalone Switches
- Operational Planes in IRFv2
- IRFv2—IRF Connections
- IRFv2—Feature Comparison Summary
- Building and Maintaining IRF
- Steps to Build an IRF
- IRF Merge: Master Election
- Configuration files
- IRF Split: MAD
- MAD Detection Protocols
- MAD: Collision Handling and Failure Recovery
- IRF display commands
- Learning check

Learn more at
hpe.com/ww/learnnetworking

Follow us:

Hewlett Packard Enterprise

c04586998, December 2016, Rev. 1