
Getting Started with HP Switching and Routing

Duration: 1 Day Course Code: 00239667

Overview:

The Getting Started with HP Switching and Routing Instructor Led training (ILT) helps network technicians understand the foundational network technologies they need to know before attending the HP A-Series Networking Technologies (ILT) and HP E-Series Networking Technologies (ILT) courses. Specifically, the training covers basic switch functionality, virtual LANs (VLANs), infrastructure device security, IP routing concepts, link aggregation, and network redundancy. This course also provides an overview of HP A-Series switches, which are designed for data centers and enterprises, and E-Series switches, which are designed for small-to-medium businesses (SMBs). In addition, this training describes how each foundational technology is implemented on both A-Series and E-Series switches.

Target Audience:

Professionals who deploy SMB and enterprise-edge solutions based on HP technologies, including HP reseller systems engineers, customer IT staff, HP system engineers, HP services field and call center support engineers.

Objectives:

- Describe the ways that switches can be categorized, based on their capabilities or form factor.
 - Explain how HP A- and E-Series switches help organizations meet today's business and technical challenges
 - Explain factors that can make network infrastructure devices vulnerable to attack and explain how to physically secure infrastructure devices from unauthorized access
 - Describe how and why VLANs are implemented on HP E-Series and A-Series switches
 - Describe how Layer 3 switches use static and default routes to ensure that traffic reaches its final destination
 - List basic components of routing tables and explain the purpose of each component
 - Explain how dynamic and static links are implemented on HP switches
 - Compare STP, RSTP, and MSTP and explain how they are implemented on HP switches
 - Describe the advantages and disadvantages of using HP IRF to provide network redundancy
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Testing and Certification

Recommended preparation for exam(s)

- HP AIS - Network Infrastructure [2011]
 - HP AIS - Network Infrastructure [2011] - upgrade from AIS - ProCurve Networking [2004] & [2006]
 - HP AIS - Network Infrastructure [2011] - upgrade from AIS - ProCurve Networking [2008] & AIS - HP ProCurve Networking [2010]
 - HP AIS - Network Infrastructure [2011] - upgrade from Cisco/3Com/H3C
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Content:

Module 1: HP Switch Overview

- Current networking challenges
- Customer requirements
- Converged Networks
- Open standards
- HP switch series overview
- HP warranty
- Green business technology
- Activity: Switch categorization
- Switch categorization quiz
- Network environment
- Deployment options
- Layer 2 and Layer 3 switches
- Switch manageability
- Form factor
- Stackable
- HP switch portfolio
- V-Series switches
- E-Series switches
- A-Series switches
- A-Series routers
- Switch management interfaces
- In-band and out-of-band management
- HP E-Series switches—Initial access
- HP E-Series switches—Management users
- HP E-Series switches—CLI structure
- HP A-Series—User interfaces
- HP A-Series—CLI command levels
- HP A-Series—Privilege levels
- HP A-Series—CLI structure
- HP CLI help

Module 2: Security Basics

- Overview of attacks
- Activity: Common attack
- The need for physical security
- Defense in depth
- HP defense components
- Trusted network infrastructure
- Access control
- Threat management
- Benefits of HP's defense strategy
- Activity: Physical security and hardware protection
- Authenticating management users
- Authenticating management users on A-Series switches
- Authenticating management users on E-Series switches
- Secure management protocols
- SSHv2
- HTTPS
- SSH and HTTPS requirements

Module 3: VLAN Basics

- Definition of a VLAN
- Need for VLANs on today's network
- Benefits of using VLANs
- Example network segmented by VLANs
- IEEE 802.1Q standard
- Example Ethernet header
- Tagged and untagged VLAN memberships on E-Series switches
- E-Series switches
- Default VLAN on E-Series switches
- Guidelines for configuring VLANs on E-Series switches
- Configuring VLANs on E-Series switches
- Extending VLAN boundaries across E-Series switches
- Configuring IP addresses on E-Series switches
- Viewing the status of VLAN ports on E-Series switches
- GVRP
- Types of ports on A-Series switches
- Configuring access ports on A-Series switches
- Configuring trunk ports on A-Series switches
- Default VLAN for A-Series trunk ports
- Extending VLANs across A-Series switches
- Configuration guidelines for A-Series switches
- Configuring IP addresses on A-Series switches
- Layer 2 or Layer 3 forwarding
- Example: identify the destination device's MAC address
- Example of Layer 2 forwarding
- Activity: Tag manipulation in Layer 2 forwarding on E-Series switches
- Activity: Tag manipulation in Layer 2 forwarding on A-Series switches

Module 4: Fundamentals of Routing

- Layer 3 routing
- Destination IP address
- Next hop, or gateway
- Types of routes
- Direct routes
- Indirect routes
- Static routes
- Information required for routes
- A-Series routing table
- E-Series routing table
- Routing example
- Routing example: Part 2
- Routing example: Part 3
- VLAN tagging on E-Series switches
- VLAN tagging on E-Series switches (Answers)
- Access or trunk ports on A-Series switches
- Access or trunk ports on A-Series

Module 5: Link Aggregation

- Link aggregation and LACP
- Ever-increasing bandwidth requirements
- Benefits of link aggregation
- LACP overview
- LACP requirements
- LACP link negotiation
- Dynamic LACP: Active and passive
- Conversations
- Link aggregation terminology
- Implementing link aggregation on HP E-Series switches
- LACP or port trunking
- Static aggregated link
- Dynamic aggregated link
- Configuring static aggregated links on E-Series switches
- Configuring dynamic aggregated links on E-Series switches
- VLANs and aggregated links
- Configuring VLANs for a static aggregated link
- Enabling a dynamic aggregated link to support multiple VLANs
- Activity: Static vs. dynamic aggregated links on E-Series switches
- Load distribution Distributed trunking overview
- Distributed trunking implementation
- Benefits of distributed trunking
- Implementing link aggregation on HP A-Series switches
- Link aggregation on A-Series switches
- Optional group activity
- Port aggregation states
- Configuration settings that affect the aggregation state
- Reference ports
- Static link aggregation group
- Reference port for the static link aggregation groups
- Aggregation state of static port members
- Dynamic link aggregation groups
- Reference port for a dynamic link aggregation group
- Aggregation state of dynamic member ports
- Comparing static and dynamic aggregation links on A-Series switches
- VLANs and aggregate interfaces
- Load distribution

Module 6: Providing Network Redundancy

- STP
- Need for network redundancy
- STP overview
- Electing a root bridge
- Exchanging BPDUs to elect the root bridge
- Root path and path costs
- Activity: calculating the path cost
- Using the bridge ID as a tie-breaker
- Using the port ID as a tie-breaker

switches (Answers)

- Switch port states
- STP enhancements
- STP limitations
- RSTP enhancements
- MSTP enhancements
- Interoperability
- RSTP configuration
- Default STP version on HP switches
- E-Series switches
- A-Series switches
- Enabling RSTP on E-Series switches
- Enabling RSTP on A-Series switches
- Bridge and port priorities
- Changing the bridge priority
- Considerations for VLANs
- Scenario: spanning tree and VLANs
- Poor design can isolate VLAN
- Assigning all VLANs to redundant links
- MSTP configuration
- MSTP instances
- MSTP regions
- MSTP instances and the Internal Spanning Tree (IST)
- Configuring MSTP on A-Series and E-Series switches
- Review activity
- HP IRF
- IRF overview
- IRF connections
- Learning the topology
- Electing a master
- Simplified network operations
- Distributed forwarding and routing
- Redundancy

Further Information:

For More information, or to book your course, please call us on Head Office +254 713 027 191

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