Fasttrack for Deploying HPE FlexFabric Comeware Technologies

Cursusduur: 5 Dagen   Cursuscode: H8D09S

Beschrijving:

This five-day course gives network engineers an opportunity to plan for and implement networks utilizing HPE Comware devices. Participants will work HPE IRF, ACL's, QoS, OSPF, BGP and Multicast technologies. This course covers basic and advanced topics within the HPE FlexCampus Architecture. The learner will experience both theory and hands on experience utilizing real hardware through lab exercises over four days.

The learner will configure and monitor Comware devices using open standard technologies. You will work with layer 2 technologies, such as Multiple Instance Spanning Tree (MSTP) and Link-Aggregation (Trunks). You will also learn about Backplane Stacking. Layer 3 technologies, such as static routes, Open Shortest Path First (OSPF) with Multi-Area implementations, and Border Gateway Protocol (BGP), along with multicast solutions leveraging Protocol independent Multicast (PIM) both dense and spare modes.

Doelgroep:

This course is intended for Network or systems administrators, network engineers, and consultants who plan to Deploy HPE Comware 7 switches into a new or existing network.

Doelstelling:

- Protect devices with local and remote authentication using telnet, SSH, web, and SNMP access

- Navigate the HPE Comware CLI and manage the flash file system

- Upgrade the Comware switch operating system

- Configure VLANs on HPE Comware switches

- Configure a Comware switch for DHCP server and DHCP relay

- Configure multiple spanning tree and apply STP security features

- Differentiate between static and dynamic link aggregation

- Configure and troubleshoot link aggregation on HPE switches

- Implement and deploy HPE IRF with MAD technologies to protect your network

- Configuring and managing HPE Comware devices with HPE IMC

- Configure, design and deploy Access Control Lists (ACLs)

- Configure, design and deploy Open Shortest Path First (OSPF), in multi-area, and work with External routes

- Configure, design and deploy Border Gateway Protocol (BGP)

- Configure, design and deploy Quality of Service (QoS)

- Configure, design and deploy Multicast (Protocol Independent Multicast Dense Mode and Spare mode) along with IGMP technologies

Vereiste kennis en vaardigheden:

- This course is recommended for students who need to deploy HPE FlexNetwork technologies based on Comware. It does not require completion of any previous HPE Networking courses
- Network Experience is required

Cursusinhoud:

Module 1: Introduction-SME

- Welcome to Fast Track for Deploying HPE FlexNetwork Comware Technologies!
- Course schedule
- Introductions

Module 2: Basic Setup-SME

- Accessing the console of an HPE Comware switch
- Levels of access and privilege levels
- CLI introduction and navigation
- Basic configuration
- Interface configuration
- Troubleshooting

Module 3: Protecting Management Access

- Applying password protection to local and remote authentication
- Associating user roles with password and scheme authentication
- Implementing remote management with telnet, SSH, web, and SNMP access

Module 4: Management of Software and Configuration Files

- Understanding the boot up process of the HPE switches
- Understanding how to use the flash file system on the HPE switches
- Upgrading the operating systems on the HPE switches
- Managing configuration files on the HPE switches

Module 5: VLANs

- Reviewing VLANs and the various types of VLAN
- Understanding when to use each of the three VLAN port types
- Configure VLANs and assign IP addresses to VLAN interfaces
- Implementing basic routing on directly connected VLANs
- Verify connectivity within and between VLANs

Module 6: IP Services

- Implementing DHCP server and DHCP relay on Comware switches
- Implementing secure NTP on Comware switches
- Understanding and configuring basic logging options
- Implementing DNS to resolve names to addresses

Module 7: Spanning Tree Protocol

Module 14: Advanced Open Shortest Path First

- Deploy HPE products in single-area and multiple-area OSPF systems
- Use area definitions and summaries to create efficient and scalable, multiple-area designs
- Advertise routes to external networks in a variety of OSPF environments
- Promote fast, effective convergence during a variety of failover situations
- Use virtual links as required to establish nondirect connections to the backbone
- Implement OSFP authentication

Module 15: Exterior Border Gateway Protocol

- Establish and monitor eBGP sessions between your routers and Internet Service Provider (ISP) routers
- Advertise an IP block to multiple ISP routers
- Filter BGP routes as required for a dual-homed ISP connection
- Configure a BGP router to advertise a default route in OSPF or to redistribute and aggregate BGP routes, as appropriate

Module 16: IP Multicast

- Route multicast traffic using Protocol Independent Multicast-Dense Mode (PIM-DM) or Protocol Independent Multicast-Sparse Mode (PIM-SM)
- Select and configure rendezvous points (RPs) based on particular environmental needs such as redundancy and efficient operation
- Minimize unnecessary multicast flooding
- Apply advanced controls such as source-specific multicasting (SSM) and administrative scopes to a PIM-SM deployment

Appendix A: Converged Infrastructure

- FlexFabric
- FlexCampus
- FlexBranch
- FlexManagement
- Software-Defined Networks (SDN)

Appendix B: Basic Network Design Concept

- Understanding the differences between the access, distribution, and core layers
- Comparing and contrasting a two-tier versus three-tier design
- Choosing appropriate links for connections
- Implementing the appropriate redundant

Lab 9: IP Routing

- Task 1: Initialize the Lab Topology
- Task 2: Basic VLAN and IP Configuration
- Task 3: Configure and Verify Static Routing
- Task 4: Configure Loopback Interfaces
- Task 5: Configure OSPF in a Single Area
- Task 6: Configure Silent (Passive) Interfaces

Lab 10: Intelligent Resilient Framework (IRF)

- Task 1: Initialize the Lab Topology
- Task 2: Prepare for IRF Lab
- Task 3: Establish an IRF Topology
- Task 4: Establish Distributed Link Aggregation
- Task 5: Restore your configurations from Lab 9

Lab 11: Introduction to Intelligent Management Center

- Task 1: Initialize the Lab Topology
- Task 2: Configure SNMP Settings on the HPE Devices
- Task 3: Discover Devices in IMC
- Task 4: IMC Management and Reports
- Task 5: Manage VLANs

Lab 12.1: Configure Basic ACLs

- Task 1: Establish VLAN 20
- Task 2: Add VLAN 20 to OSPF
- Task 3: Place the client in VLAN 20
- Task 4: Plan a basic ACL to protect the server VLAN
- Task 5: Create an ACL to protect the Server VLAN
- Task 6: Test the ACL
- Task 7: Remove the ACLs
- Task 8: Save configurations

Lab 12.2: Configure Advanced ACLs

- Task 1: Control all traffic routed out of the Users VLAN
- Task 2: Test the ACL
- Task 3: Control all traffic routed out of the Guest VLAN
- Task 4: Test the ACL
- Task 5: Remove the packet-filters and put the client back to vlan 12
- Task 6: Save configurations

Lab 13: Implement QoS

- Task 1: Establish a baseline of behavior
- Task 2: Generate congestion
- Task 3: Set a port priority for all traffic
- Task 4: Prioritize traffic by application
- Task 5: Test the policy

- Overview of pre-2004 IEEE 802.1D standard
- Overview of RSTP
- Overview of PVST+
- Overview and configuration of MSTP on Comware switches
- Configuration of STP security features on Comware switches

Module 8: Link Aggregation

- Reviewing problems with STP and load sharing with STP
- Introducing link aggregation
- Comparing and contrasting the different link aggregation types
- Configuring and verifying link aggregation on Comware switches

Module 9: IP Routing

- VLANs and routing
- Static routing
- Dynamic routing with RIP
- Dynamic routing with OSPF
- Single area OSPF configuration

Module 10: Intelligent Resilient Framework (IRF)

- Understanding the technologies and concepts involving IRF
- Understanding the advantages that IRF provides
- Describing a split stack and how the Multi-Active Detection (MAD) protocol deals with this problem
- Configuring a simple IRF topology
- Verifying and troubleshooting an IRF topology

Module 11: Introduction to Intelligent Management Center (IMC)

- Understand the components of IMC
- Understand how to install IMC
- Understand how to access IMC
- Implement a basic configuration using IMC

Module 12: Access Control Lists (ACLs)

- Define ACL and identify the criteria by which ACLs select traffic
- Configure ACLs on HPE Comware based switches to select given traffic
- Apply static ACLs to interfaces to meet the needs of a particular scenario
- Examine an ACL configuration and determine the action taken on specific packets

Module 13: Quality of Service

- Configure HPE switches to honor the appropriate QoS marks applied by other

solution
- Understanding IP addressing special needs
- Understanding good practices in OSPF designs

Lab 1: Accessing HPE vLabs

- Task 1: Verify starting state of switches
- Task 2: Explore the CLI
- Task 3: Configuring IP Addressing and Verifying Connectivity

Lab 2: Basic Setup

- Task 1: Initialize the Lab Topology
- Task 2: Restrict Privileges on Comware
- Task 3: Set up Telnet and SSH Access for Comware

Lab 3: Protecting Management Access

- Task 1: Initialize the Lab Topology
- Task 2: Password Recovery on the Comware Switches
- Task 3: Manage Files on the Comware Switches

Lab 4: Management of Software and Configuration Files

- Task 1: Initialize the Lab Topology
- Task 2: Password Recovery on the Comware Switches
- Task 3: Manage Files on the Comware Switches

Lab 5: VLANs

- Task 1: Initialize the Lab Topology
- Task 2: Creating VLANs
- Task 3: Enabling Connectivity in VLAN 11
- Task 4: Enable connectivity in VLAN 12
- Task 5: Enable connectivity between VLANs 11 and 12

Lab 6: IP Services

- Task 1: Initialize the Lab Topology
- Task 2: Configure a Comware Switch as a DHCP Server
- Task 3: Implement DHCP Relay
- Task 4: Synchronize Time using NTP
- Task 5: Implement a Syslog Solution

Lab 7: Spanning Tree Protocol

- Task 1: Initialize the Lab Topology
- Task 2: Configure Single Instance STP
- Task 3: Configure Multiple Instance STP (Instance 0, 1, 2)
- Task 4: Examine MSTP Operation with Redundant Links

Lab 14.1: Implement OSPF

- Task 1: Build the topology
- Task 2: Configure OSPF with one area
- Task 3: Trace routes
- Task 4: Adjust costs to select new routes
- Task 5: Observe LSA propagation and SPF calculations
- Task 6: Disable the link between Comware-2 and Comware-3
- Task 7: Save configurations

Lab 14.2: Implement Multiple OSPF Areas

- Task 1: Divide the OSPF system into multiple areas
- Task 2: Explore the multi-area OSPF AS
- Task 3: Observe effects of area boundaries on LSA updates
- Task 4: Configure aggregated area summaries
- Task 5: Prohibit advertisements of area 0 routes in other areas
- Task 6: Observe effects of route aggregation on LSA updates
- Task 7: Save configurations

Lab 15.1: Establish an eBGP Session

- Task 1: Build the topology
- Task 2: Configure a BGP session to ISP1 on the company router
- Task 3: Configure BGP sessions on the ISP1 router (Comware-3)
- Task 4: Create a BGP connection that uses authentication
- Optional: Task 5: backup the configurations

Lab 15.2: Advertise and Receive Routes Using eBGP

- Task 1: Explore the BGP routing table
- Task 2: Advertise a route in BGP
- Inject a network into BGP using a null route (Comware-2)
- Inject a network into BGP using a null route (Comware-3)
- Task 3: Connect the company router to the OSPF AS
- Task 4: Advertise a default route in OSPF
- Task 5: Test the routing
- Task 6: Filter other ISP routes from BGP advertisements
- Observe the problem
- Solve the problem

Lab 16.1: Configuring PIM-DM

- Task 1: Restore your switch configuration
- Task 2: Verify the topology
- Task 3: Prepare the multicast sender and receiver
- Task 4: Enable IGMP on users' default

devices
- Create a QoS policy that assigns a specified class of traffic to a priority queue
- Select and implement an appropriate strategy for queue scheduling
- Implement traffic policing policies that enforce the negotiated committed information rate (CIR),committed burst size (CBS), peak information rate (PIR), and excessive burst size (EBS) for a specified class of traffic
- Respond to congestion in advance by applying the appropriate traffic shaping and Weighted Random Early Detection (WRED) policies
- Determine the QoS mark that an HPE switch will assign to specific outbound traffic and, if necessary, adjust the mark

Lab 8: Link Aggregation

- Task 1: Initialize the Lab Topology
- Task 2: Configure and Verify Link Aggregation

router (Comware-4)
- Task 5: Enable PIM-DM on routers between the receivers and source
- Task 6: Stream multicast traffic
- Task 7: Save configurations

Lab 16.2: Configuring PIM-SM

- Task 1: Restore your switch configurations
- Task 2: Prepare the multicast sender and receiver
- Task 3: Enable multicast routing and IGMP on receivers default
- Task 4: Enable PIM-SM on routers between the source and receivers
- Task 5: Configure a static RP
- Task 6: Stream multicast traffic
- Task 7: Configure dynamic RPs

Nadere informatie:

Neem voor nadere informatie of boekingen contact op met onze Customer Service Desk 030 - 60 89 444

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