



Configuring and Deploying HPE MSR Routers HK645S

HPE course number	HK645S
Course length	3 days
Delivery mode	ILT
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In this three-day course, students will complete hands-on activities that implement basic and advanced configurations of HPE MSR Series routers. The key products discussed are the HPE MSR Series Routers. Topics include: features of the HPE MSR Series router families, architecture of the MSR Series products, upgrading, configuring, monitoring and troubleshooting HPE MSR routers.

Why HPE Education Services?

- IDC MarketScape leader 4 years running for IT education and training*
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Audience

- Network and System Administrators
- Network Engineers

Prerequisites

- Basic fundamental LAN/WAN networking knowledge
- Theoretical knowledge of the following WAN protocols & services:
 - Routing and Switching Fundamentals
 - RIP
 - OSPF
 - BGP

Course objectives

Upon successful completion of this course, students should be able to implement, configure and monitor the following key protocols and services:

- Internet Protocol
- Static Routing

- Routing Information Protocol (RIP)
- Open Shortest Path First (OSPF)
- Virtual Router Redundancy Protocol (VRRP)
- ACLs
- Network Address Translation (NAT)
- Border Gateway Protocol (BGP)
- Troubleshooting

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

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

Detailed course outline

Module 1: Introduction and Product Overview	<ul style="list-style-type: none"> • Two Day Agenda • HPE A-Series portfolio overview 	<ul style="list-style-type: none"> • A-Series router portfolio • HPEN MSR Router Overview
Module 2: Basic router configuration	<ul style="list-style-type: none"> • Objectives • Console cable • Using the Console Port • Authentication modes • CLI command privilege levels • Configure console access • Configure Telnet access • Configure SSH access • Views (contexts) structure • Views in the CLI • A-Series CTRL 	<ul style="list-style-type: none"> • Saving and deleting working configurations • Common upgrade methods • A-MSR router upgrade in FTP mode • A-MSR router upgrade over FTP (cont.) • Boot menu-File control • Initial system configuration • Displaying interface status • Displaying interface details • Debugging commands • Useful command reference • Lab Activity: Initial Router Configuration
Module 3: Routing Basics and RIP	<ul style="list-style-type: none"> • Objectives • Types of routes • Components of a route • Route table information • IP routes sources preferences • Static routes • Dynamic routing • Types of dynamic routing protocols • RIP overview 	<ul style="list-style-type: none"> • RIP update example • RIP: Problems • RIP: Solutions • Split horizon • RIP configuration: Sample setup • RIP configuration • RIP configuration verification • Lab Activity: Configuring static routing and RIP
Module 4: Single area OSPF	<ul style="list-style-type: none"> • Objectives • OSPF routing protocol • Reviewing OSPF basics • Dynamic Routing Link State Principle OSPF • Dynamic Routing Broadcast Networks • Dynamic Routing IP OSPF V2 Topology Overview • OSPF Configuration (cont.) 	<ul style="list-style-type: none"> • Explicitly Specifying the Router ID • Specifying the Authentication at Area Level • Specifying the Authentication at Interface Level • Redistributing Static in to OSPF • show ip ospf interface command • show ip ospf database command • Lab Activity 5: Configuring single area OSPF
Module 5: Configuring VRRP	<ul style="list-style-type: none"> • Objectives • Basic default gateway redundancy operation • VRRP: automatic failover for default gateway • VRRP terminology review • Client interacts with virtual router • Automatic failover 	<ul style="list-style-type: none"> • Sample setup • VRRP Configuration • Verify VRRP • Other Features: Verify VRRP • Lab Activity: Configuring VRRP
Module 6: Multi Area OSPF	<ul style="list-style-type: none"> • Objectives • Multi-Area OSPF Hierarchical Design • Overview about OSPF Routers • OSPF Areas (official types) • LSA Types & Flooding Scopes • Case Study—Multi Area • Multi-area Config • Other Router's Sample OSPF Configuration • Verify the OSPF Status • LSA Flooding: Stub Area • Case Study—Stub Area 	<ul style="list-style-type: none"> • Stub Area Config • Stub Area—Default Route • Stub Area with No Summaries • Stub Area with No Summary • Stub Area Config • Stub Display OSPF • No Summaries NSSA • NSSA with No Summary • Stub NSSA Config • Lab Activity: Configuring Multi-Area OSPF

Course data sheet

Module 7: ACL and NAT

- Objective
- Access-list Overview
- Match Conditions in an Access-list
- Actions in an Access-list
- Configuring a Basic Access-List
- Basic ACL
- Configuring an Advanced Access-list
- Advanced ACL—Sample
- Sample Topology
- Verifying an ACL
- Displaying ACL
- NAT Basics
- NAT Configuration
- Lab Activity: ACL and NAT

Module 8: Configuring Border Gateway Protocol

- Objectives
 - BGP Overview
 - BGP Messages
 - Complete BGP illustration
 - Exterior BGP
 - Interior BGP
 - Why is an IGP necessary?
 - IBGP Full-mesh Scaling
 - BGP Path Attributes (= BGP Metrics)
 - Important BGP Attributes
 - AS-Path Attribute
 - AS-PATH Attribute Example
 - Origin Attribute
 - Origin Attribute Example
 - Nexthop Attribute
 - Nexthop Attribute Example
 - Resolving EBGp Next Hops
 - Local Preference Attribute
 - Local Preference Example
 - Metric Attribute
 - Metric Attribute Example
 - BGP Route Selection Procedure
 - BGP—Basic Configuration
 - Displaying BGP peers
 - Displaying BGP routing table
 - Overview of the IP Routing Policy
 - Five policy-related Filters
 - Relationship between Routing Policy and Filters
 - List of Routing policy Configuration Tasks
 - Defining the if-match Clause of the Route-Policy
 - Defining the apply Clause of the Route-Policy
 - Execution Rules of the Route-Policy
 - AS Regular Expression
 - Configuring Route Import
 - Defining ip-prefix List
 - Configure Route Filter
 - Monitoring and Maintaining the Routing Policy
 - ACL-based Route Filtering
 - AS-Path-based Route Filtering
 - Border Gateway Protocol Route Policy-based Route Filtering
 - Lab Activity: Configuring BGP
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