

COURSE OUTLINE

Course Name: HCIP-Datacom-Core Technology V1.0

Course Code: HW - HCIP-DCT



DURATION	SKILL LEVEL	DELIVERY METHOD	TRAINING CREDITS	TECHNOLOGY
10 Day(s)	Intermediate	ILT/VILT Theoretic & Hands on practice	Huawei Voucher	Datacom

Course Overview

Datacom certification focuses on the application of datacom technologies in industry scenarios. The core technology of HCIP-Datacom includes the general knowledge that must be mastered in all scenarios of the datacom industry. It is the basis for learning each sub-direction. Each sub-direction represents a network scenario. Trainees can select one or more sub-directions based on their interests and career development plans.

Obtaining any certificate in the HCIP-Datacom series certification requires passing the core exam and the corresponding sub-direction exam. The order of the two exams is not required. If trainees pass the core exam first and then pass any of the sub-direction exams within the validity period of the core exam results, they can obtain the corresponding certificate. If trainees continuously pass multiple sub-direction exams and then pass the core exam within the validity period of the sub-direction exam results, they can obtain multiple corresponding certificates at the same time. The core exam does not need to be repeated.

Audience Profile

- Personnel who want to become senior datacom engineers.
- Personnel who want to master core knowledge and skills in the datacom field.

Prerequisites

- Be familiar with common operations of Huawei network devices.
- Have the knowledge and skills described in the HCIA-Datcom course.

Course Objectives

- On completion of this program, the participants will be able to describe core network device structures, functional modules, forwarding processes, routing tables, FIB tables, and route-based forwarding processes.
- Explain route import principles and application scenarios.
- Describe OSPF route calculation, DR and BDR functions, OSPF packets, neighbour relationships, adjacencies, LSA fields and types, SPF algorithm, intra-area, inter-area, external route calculation, loop prevention, special areas, route summarisation, packet authentication, and basic OSPF configuration.
- Describe IS-IS concepts, implementation, differences between IS-IS and OSPF, and perform basic IS-IS configurations.
- Describe BGP concepts, peer types, peer relationship setup, state machine, common path attributes, route reflectors, route selection rules, route control, MP-BGP concepts, and perform basic BGP configurations.
- Explain EVPN origins, common EVPN route types, and typical EVPN usage scenarios.
- Use ACLs, IP prefixes, filter-policies, and route-policies to filter routes and modify route attributes.
- Describe PBR application scenarios, classification, MQC-mode configuration, and packet filtering in MQC mode.
- Describe large-scale campus network architecture, Ethernet switching technologies, WLAN scenarios, reliability, service management, security, and VPN technologies used in campus networks.
- Describe STP defects, RSTP improvements and mechanisms, MSTP concepts and mechanisms, and perform basic RSTP and MSTP configurations.
- Describe stack and CSS concepts, setup processes, and MAD mechanisms.
- Describe multicast definition, address structure, forwarding implementation, RPF, IGMP versions, IGMP snooping, SSM mapping, IGMP proxy, PIM concepts, PIM-DM, PIM-SM, and perform basic PIM configurations.
- Describe IPv6 development, advantages over IPv4, core concepts, packet headers, address formats and types, ICMPv6, NDP, stateless address autoconfiguration, DHCPv6 autoconfiguration, and configure IPv6 addresses, routes, and autoconfiguration.
- Describe firewall definitions, types, development history, differences from routers and switches, security zones, security policies, session tables, server maps, and perform basic firewall configurations.

- Apply device security hardening policies, configure STelnet, and configure local attack defence.
- Explain VPN classification, implementation modes, VRF concepts, typical VRF applications, and implement basic VRF configurations.
- Describe BFD functions and implementation, and configure and apply BFD.
- Analyse single-gateway LAN issues, explain VRRP concepts and mechanisms, describe active/standby switchover, and perform basic VRRP configurations.
- Describe DHCP implementation, address allocation rules, DHCP and DHCP relay scenarios, and perform basic DHCP configurations.
- Describe network management development trends, functions, protocols, implementation mechanisms, differences, and application scenarios.
- Describe large-scale WLAN architecture and characteristics, key WLAN construction technologies, and configure large-scale WLAN networking.
- Describe datacom network functions in the digital world, scenario classifications, basic solution concepts, and Huawei campus network, WLAN, data centre network, and WAN solutions.

Training Content

IP Routing Basics

- **Introduction to Network Devices**
 1. Hardware modules of modular switches
 2. Three planes of network devices
 3. Packet processing on network devices
- **IP Routing Basics**
 1. RIB and FIB
 2. Route import scenario

OSPF Core Knowledge

- **OSPF Basics**
 1. Introduction to dynamic routing protocols
 2. Basic OSPF concepts
 3. Process of establishing an OSPF neighbor relationship
 4. Basic OSPF configuration
 - **OSPF Route Calculation**
 1. Intra-area route calculation
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2. Inter-area route calculation
3. External route calculation

- **OSPF Special Areas and Other Features**

1. Stub area and totally stub area
2. NSSA area and totally NSSA area
3. Inter-area route summarization and external route summarization
4. OSPF Features

IS-IS Core Knowledge

- **IS-IS Implementation and Configuration**

1. Basic concepts of IS-IS
2. IS-IS working principle
3. Basic IS-IS configuration

BGP Core Knowledge

- **BGP Basics**

1. BGP overview
2. Basic concepts of BGP
3. Basic BGP configuration

- **BGP Path Attributes and RRs**

1. BGP Path Attributes
2. BGP RRs

- **Preferred BGP Route Selection**

1. Preferred BGP Route Selection

- **BGP EVPN Basics**

1. MP-BGP
2. EVPN overview
3. Common EVPN routes
4. Typical EVPN application scenarios

Routing and Traffic Control

- **Routing Policy and Routing Control**

1. Route matching tool
2. Routing policy tool
3. Route control cases

- **Traffic Filtering and Forwarding Path Control**

1. Policy-based routing
 2. MQC
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3. Traffic filtering

Switching Core Knowledge

- **Introduction to Typical Campus Network Technologies**

1. Ethernet switching basics
2. Wireless access
3. Network reliability
4. Network service and network management
5. Network security
6. VPN
7. Multicast
8. IPv6

- **RSTP Implementation and Configuration**

1. RSTP overview
2. Improvements of RSTP over STP
3. RSTP working process
4. Basic RSTP configurations

- **MSTP Implementation and Configuration**

1. MSTP overview
2. Basic concepts of MSTP
3. Working principles of MSTP
4. Basic MSTP configuration

- **Stack and CSS Features of Switches**

1. Overview of Stack and CSS technologies
2. Stacking principles
3. CSS principles
4. Basic configuration

Multicast Basics

- **IP Multicast Basics**

1. Basic concepts of IP multicast
2. Multicast data forwarding principle

- **IGMP Implementation and Configurations**

1. IGMP working principle
2. Introduction to the IGMP feature

- **PIM Implementation and Configurations**

1. PIM basics
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2. PIM-DM

3. PIM-SM

IPv6 Core Knowledge

- **Introduction to IPv6**

1. IPv6 overview
2. Introduction to IPv6 addresses

- **ICMPv6 and NDP**

1. ICMPv6 overview
2. NDP overview
3. Router discovery
4. Duplicate address detection
5. Redirection

- **IPv6 Address Configuration**

1. IPv6 address configuration mode
2. Stateless IPv6 address autoconfiguration
3. DHCPv6
4. Implementation of IPv6 address autoconfiguration

Network Security Basics

- **Huawei Firewall Technology**

- Firewall overview
- Basic concepts of firewalls
- Basic firewall configuration

- **Security Features of Network Devices**

- Security hardening policies for common devices
- Network device security hardening deployment example

- **Introduction to VPN Technology**

- VPN technology overview
- Common VPN technologies

- **Introduction to VRF**

- Basic Concepts of VRF
- Typical VRF Configuration Examples

Network Reliability

- **BFD Implementation and Configuration**

- BFD Overview
 - BFD working principle
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- BFD application scenarios
- Basic BFD configurations

- **VRRP Implementation and Configuration**

- VRRP overview
- VRRP working principles
- Typical VRRP application
- Basic VRRP configuration

Network Service and Management

- **DHCP Implementation and Configuration**

- DHCP background
- DHCP working principle and configuration
- DHCP Relay working principle and configuration

- **Introduction to Network Management Protocols**

- Development of network management
- Functional features of network management
- Network management protocols
- Application scenarios of network management

Large-scale WLAN Architecture

- **Large-Scale WLAN Deployment**

- Overview of large-scale WLAN networking
- VLAN pool
- DHCP technology
- Roaming technology
- High reliability technology
- Network Admission Control technology

Network Solution

- **Introduction to Enterprise Datacom Solutions**

- Campus
- Data center
- SDN-WAN
- SD-WAN

Associated Certification & Exam

You need to pass the following exam(s) to obtain the certificate.

HCIP-Datacom-Core Technology

Exam Code: H12-821

Exam Type: Written examination

Exam Format: Single-answer Question, Multiple-answer Question, True or false, Short Response Item, Drag and Drop Item

