

HCIA Datacom

Duration	Delivery Method	Level
5 days	Online / Instructor Led	Professional

The HCIA-Datacom covers: Basic knowledge of the TCP/IP protocol stack; Basic principles of the Open Shortest Path First (OSPF) routing protocol and its implementation in Huawei routers; Ethernet technology, spanning tree, VLAN, stacking technology and their implementation in Huawei switches; Network security technology and their implementation in Huawei routing and switching devices; WLAN technologies and basic principles and their implementation on Huawei wireless devices; Basic principles of network management (such as SNMP); Basic principles of WAN protocols (such as PPP) and their implementation on Huawei routers; Basic knowledge of IPv6 and basic principles and implementation of ICMPv6 and DHCPv6; Basic principles of SDN and implementation of Huawei products and solutions; Basic principles of programming automation

Audience Profile

- Engineers who need to master basic datacom knowledge and capabilities, and have capabilities in small- and medium-sized network planning and design, deployment implementation, and O&M optimisation
- Who wants to become Data Communication
- Engineers Who wants to obtain the HCIA-Datacom Certification

Prerequisite

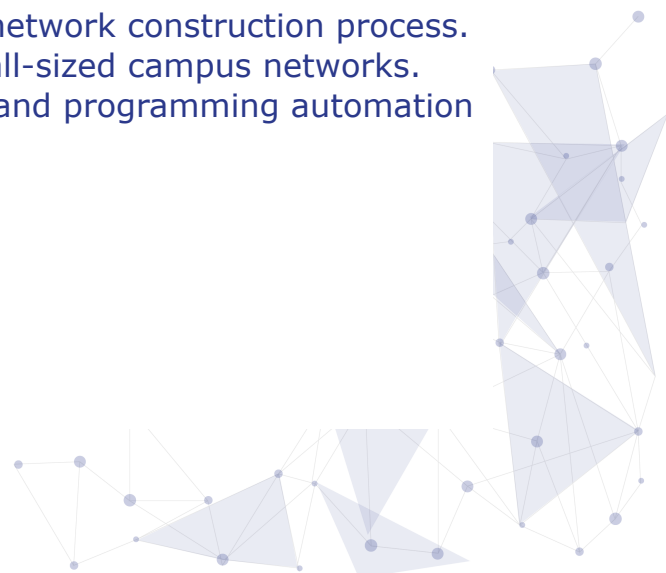
Before attending this course, delegates must:

- Be familiar with PC operations.
- Basic understanding of IT technologies and network knowledge.



What you will learn

- Understand the definition of data communication and the capability model of data communication engineers.
- Understand the network reference model and the entire data communication process.
- Be familiar with the VRP system and be able to perform basic operations.
- Understand IPv4 address protocol and related concepts
- Understand the forwarding principles of Layer 3 devices such as routers and Layer 3 switches.
- Understand the concept of routing and use static route or OSPF to build a Layer 3 network.
- Understand basic Ethernet concepts and describe the functions and working principles of Layer 2 switching devices.
- Be familiar with common Ethernet protocols, such as VLAN, Spanning Tree Protocol , link aggregation and stacking.
- Configure ACLs and AAA to provide basic security solutions for the network.
- Be familiar with the NAT protocol and master the NAT configuration in different scenarios.
- Master the configuration of common services on enterprise networks, such as DHCP, FTP and Telnet.
- Understand basic WLAN concepts and complete basic configurations of small or medium-sized WLAN networks.
- Understand basic WAN concepts and WAN solutions such as MPLS and SR.
- Have general knowledge of basic concepts of enterprise network management.
- Be familiar with traditional network management and SDN-based network management solutions.
- Have a good command of IPv6 protocols and be able to build small-scale IPv6 networks.
- Have a good command of the campus network construction process.
- Be able to independently construct small-sized campus networks.
- Understand the basic concepts of SDN and programming automation and master the basics of Python.



Course Outline

Data Communication and Network Basics

1.1 Data Communication Network Basics

- Basic Concepts of Data Communication
- Data Transfer Process
- Network Devices and Basic Functions
- Network Type and Topology Type
- Network Engineering
- Network Engineers

1.2 Network Reference Model

- What is Data and Data Transfer
- Common Standard Protocols
- Layered Model Concept
- Application Layer and Related Protocols
- Transport Layer and Related Protocols
- Network Layer and Related Protocols
- Data link Layer and Related Protocols
- Physical Layer and Related Protocols
- Data Transfer, Encapsulation and Decapsulation

1.3 Huawei VRP Basics

- Common Network Devices
- VRP Basics
- CLI Command Views
- Basic Commands and Function Keys of the CLI

Constructing an Interconnected IP Network

2.1 Network Layer Protocol and IP Addressing

- Network Layer Protocol
- Concept, Classification, and Special IP Addresses of IPv4
- IP Network and IP Subnet Calculation
- IP Network Address Planning

2.2 IP Routing Basics

- Basic Working Principles of Routers
- Routing Table Concepts
- Routing and Forwarding Features
- Static Route Configuration

2.3 OSPF Basics



- Basic Features of OSPF
- OSPF Application Scenarios
- Working Principle of OSPF
- Basic OSPF configurations

Constructing an Ethernet Switching Network

3.1 Ethernet Switching Basics

- Basic Concepts of Ethernet
- Concept of MAC Address
- Working Process and Principles of Layer 2 Switches
- Composition and Formation of a MAC Address Table

3.2 VLAN Principles and Configuration

- Background of VLAN
- Basic Concepts and Principles of VLAN
- VLAN Data Communication Process on a Layer 2 Network
- Basic VLAN Configuration

3.3 Spanning Tree Protocol

- Background of STP
- Basic Concepts and Working Principles of STP
- Basic Concepts of RSTP and Improvements Compared with STP
- Basic STP Configuration
- Other Layer 2 Loop Elimination Technologies

3.4 Ethernet Link Aggregation and Switch Stacking

- Basic Concepts of Link Aggregation
- Working Principles of Manual Link Aggregation
- Working Principles and Features of Link Aggregation in LACP Mode
- Basic Concepts of iStack and CSS

3.5 Implements Communication Between VLANs.

- Working Principles of Sub-interfaces
- Working Mechanism of Layer 3 Switches
- Sub-interface Configuration
- VLANIF Configuration

Network Security and Network Access Basics

4.1 ACL Principles and Configuration

- Basic Principles and Functions of ACLs
- Basic Structure and Matching Order of ACL Rules
- Usage of Wildcard mask
- Basic ACL Configuration

4.2 AAA Principles and Configuration



- Basic Principles and Application Scenarios of AAA
- Basic Configuration of the Local AAA

4.3 NAT Basics

- Background of NAT
- NAT Classification and Technical Principles
- NAT Configuration in Different Scenarios

Network Services and Applications

5.1 Network Services and Applications

- Principles of TFTP, FTP, DHCP, and HTTP
- Configuration of FTP and DHCP

WLAN Basics

6.1 WLAN Overview

- Basic Concepts of WLAN and History of 802.11 Protocol suite
- WLAN devices
- WLAN Networking Mode
- WLAN Working Process
- Basic WLAN Configuration

WAN Basics

7.1 WAN Technology Basics

- Basic WAN Concepts
- Common WAN Technologies
- Working Principles of PPP and PPPoE
- Configuring PPP and PPPoE
- Basic Concepts of MPLS/SR

Network Management and O&M

8.1 Network Management and O&M

- Basic Concepts of the NMS and O&M
- Common NMS and O&M Methods and Tools
- Working Principle of SNMP
- SDN-based NMS and O&M Solution

IPv6 Basics

9.1 IPv6 Basics

- Comparison Between IPv6 and IPv4
- Basic Concepts of IPv6
- Format and Principle of the IPv6 Packet Header
- IPv6 Address Format and Address Type
- IPv6 Address Configuration Method and Procedure
- Static and Dynamic IPv6 Address Configuration
- IPv6 Static Route Configuration



SDN and Automation Basics

10.1 SDN and NFV Basics

- Basic SDN Concepts
- Huawei SDN Products and Solutions
- Basic NFV Concepts
- Huawei NFV Products and Solutions

10.2 Network Programming and Automation

- Traditional Network O&M Status Analysis
- Implementation of Network Automation
- Programming Language
- Python Coding Specifications
- Implement Basic Automatic O&M Using Python telnetlib.

Typical Campus Network Architectures and Practices

11.1 Typical Networking Architecture and Cases

- Campus Network Architecture
- Campus Network Lifecycle
- Campus Network Construction Cases
- Campus Network Construction Practice

