

## Understanding Cisco Service Provider Network Foundations

**Duration: 5 Days**    **Course Code: SPFNDU**    **Version: 1.1**    **Delivery Method: Company Event**

### Overview:

The Understanding Cisco Service Provider Network Foundations (SPFNDU) course is designed to provide you with the foundational knowledge for the suite of Cisco® CCNP® Service Provider courses. The course expands what you learned from the Cisco CCNA® course with a focus on theoretical and practical knowledge needed for the Service Provider environment. Through a combination of lessons and hands-on practice, you will learn about architectures, protocols, software and hardware platforms, and solutions within the Service Provider realm.

### This course is worth 30 Continuing Education (CE) Credits

#### This course will help you:

Acquire the foundational knowledge to understand the Cisco Service Provider Network methodologies, tools, and functions  
Learn the skills to manage the software and hardware platforms, structures, and protocols within the service provider real  
Qualify for professional-level job service provider roles

#### Company Events

These events can be delivered exclusively for your company at our locations or yours, specifically for your delegates and your needs. The Company Events can be tailored or standard course deliveries.

### Target Audience:

Individuals looking to gain a foundation-level understanding of Cisco Service Provider architectures, protocols and software solutions.

### Objectives:

- **After completing this course you should be able to:**
- Describe network architectures, devices, and software used by service providers
- Describe the various Internet governance organizations, their roles, and tools available for governance information verification
- Configure Cisco Internetwork Operating System (Cisco IOS®) and Cisco IOS XE routers
- Describe Cisco IOS XR software, perform initial configuration, and explain platform daily tasks
- Describe various access and core technologies used by service providers
- Describe various major switching technologies used by service providers
- Describe major overlay technologies and their usage, and configure Virtual Extensible LAN I (VxLAN)
- Describe various major routing protocols used by service providers
- Configure Layer 3 services used by service providers
- Describe Multiprotocol Label Switching (MPLS), components, protocols, and MPLS usage
- Describe usage of various services used and maintained by service providers
- Introduce Linux networking, Bourne Again Shell (BASH) scripting, and their usage within Cisco IOS XR software

### Prerequisites:

#### Attendees should meet the following prerequisites:

- Knowledge of IPv4 and IPv6 Transmission Control Protocol/Internet Protocol (TCP/IP) networking
- Familiarity with typical service provider environment
- Basic knowledge about networking devices and their roles

### Testing and Certification

#### Recommended as preparation for the following exams:

- There are no exams currently aligned to this course

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### Follow-on-Courses:

- SPCOR - Implementing and Operating Cisco Service Provider Network Core Technologies
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## Content:

### Introducing Service Provider Architectures

- Bus Topology
- Ring Topology
- Star Topology
- Mesh Topology
- Clos Topology
- Device Roles
- Physical Devices
- Virtual Devices
- Cisco IOS XE Software Overview
- Cisco IOS XR Software Overview
- Internet Service Providers
- Internet Exchange Points
- Cloud Service Providers

### Describing Internet Governance Organizations

- Internet Engineering Task Force
- Institute of Electrical and Electronics Engineers
- International Telecommunication Union
- Metro Ethernet Forum
- European Telecommunications Standard Institute
- Internet Assigned Number Authority
- Regional and Local Internet Registries
- Network Operators Group
- Other Bodies and Tools

### Configuring the Cisco IOS and Cisco IOS XE Router

- Access and Initial Configuration
- Configuration Management
- Day Zero Provisioning
- Connectivity and Connectivity Verification on Cisco IOS XE Software
- Monitoring Hardware

### Configuring Cisco IOS XR Router

- Access and Initial Configuration
- Configuration Management
- Connectivity and Connectivity Verification on Cisco IOS XR Software
- Monitoring Hardware

### Introducing Access and Core Technologies in the Service Provider Environment

- Optical Connectivity
- DWDM Connectivity
- xDSL Lines
- Cable Connectivity
- Wireless Usage in Service Providers
- Ethernet and Ethernet Evolution

### Introducing Routing Technologies in Service Provider Environment

- Routing Protocols Overview
- Link-State Protocols
- IS-IS Overview
- OSPF Overview
- Distance Vector Protocols
- RIPv2 and RIPng Introduction
- BGP Introduction

### Describing MPLS

- MPLS Overview
- MPLS Features and Benefits
- MPLS Architecture
- MPLS Labels
- Label Distribution Protocol
- Label-Switched Path
- MPLS Applications Overview

### Implementing Layer 3 Services

- IP SLA Overview
- First Hop Redundancy Protocols
- Hot Standby Router Protocol
- Virtual Router Redundancy Protocol
- Gateway Load Balancing Protocol
- VRF Overview
- VRF Usage
- VRF Monitoring

### Introducing Switching Technologies in the Service Provider Environment

- Metro Ethernet Overview
- E-Line Service
- E-LAN Service
- E-Access Service
- E-Tree Service
- VLAN Overview
- QinQ Overview
- Provider Backbone Bridging

### Introducing Overlay Technologies

- VXLAN Overview
- VXLAN Gateway
- EVPN Overview

### Implementing Service Provider Services

- DHCP Overview
- DHCP Configuration
- DNS Introduction
- NTP Overview
- Precision Time Protocol

### Introducing Programmability on Cisco IOS XR Routers

- Linux Primer for Network Engineers
- Linux Networking
- Cisco IOS XR Application Hosting and Programmability

### Labs:

- Discovery Lab 1: Review Lab Environment
- Discovery Lab 2: Examine Governance Data
- Discovery Lab 3: Perform an Initial Cisco IOS XE Configuration
- Discovery Lab 4: Configure Connectivity and Connectivity Verification on Cisco IOS XE Devices
- Discovery Lab 5: Perform Initial Cisco IOS XR Configuration
- Discovery Lab 6: Configure and Verify Connectivity on Cisco IOS XR Devices
- Discovery Lab 7: Configure IS-IS
- Discovery Lab 8: Configure RIPv2 and RIPng
- Discovery Lab 9: Configure Basic BGP
- Discovery Lab 10: Configure MPLS
- Discovery Lab 11: Configure IP SLA
- Discovery Lab 12: Configure HSRP with Object Tracking
- Discovery Lab 13: Configure VRFs
- Discovery Lab 14: Configure NTP
- Discovery Lab 15: Use Linux CLI
- Discovery Lab 16: Configure Cisco IOS XR Using a Bash Script

## Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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