Understanding Cisco Service Provider Network Foundations

Duration: 180 Days **Course Code: SPFNDU** **Version: 1.1** **Delivery Method: Elearning (Self-paced)**

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

e-Learning

Interactive self-paced content that provides flexibility in terms of pace, place and time to suit individuals and organisations. These resources also consist of online books, educational podcasts and vodcasts, and video-based learning.

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 prerequsites:

- Knowledge of IPv4 and IPv6 Transmission Control Protocol/Internet Protocol (TCP/IP) networking
- Familiarity with typical service provider environment

Testing and Certification

Recommended as preparation for the following exams:

- There are no exams currently aligned to this course

- Basic knowledge about networking devices and their roles

Follow-on-Courses:

- SPCOR - Implementing and Operating Cisco Service Provider Network Core Technologies

Content:

Introducing Service Provider Architectures

- Bus Topology
- Ring Topology
- Star Toplogy
- Mesh Topology
- Clos Toplogy
- 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
- Precison 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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