Understanding Cisco Service Provider Network Foundations

Duration: 5 Days   Course Code: SPFNDU   Version: 1.0

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. While this course does not lead directly to a certification exam, it does cover foundational knowledge critical to the success in the Service Provider Technology track.

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
- 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

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
- Day Zero Provisioning
- 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:

- Review Lab Environment
- Examine Governance Data
- Perform an Initial Cisco IOS XE Configuration
- Configure Connectivity and Connectivity Verification on Cisco IOS XE Devices
- Perform Initial Cisco IOS XR Configuration
- Configure and Verify Connectivity on Cisco IOS XR Devices
- Configure IS-IS
- Configure RIPv2 and RIPng
- Configure Basic BGP
- Configure MPLS
- Configure IP SLA
- Configure HSRP with Object Tracking
- Configure VRFs
- Configure NTP
- Use Linux CLI
- Configure Cisco IOS XR Using a Bash Script

Further Information:

For More information, or to book your course, please call us on 00 971 4 446 4987

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