IP Foundation for Broadcast Engineers (CCIPFM) v2.0

Course duration: 5 days

Overview

The IP Foundation for Broadcast Engineers (CCIPFM) v2.0 course introduces you to Internet Protocol (IP) networking and the Cisco® IP Fabric for Media (IPFM) solution. You will learn how to migrate from Serial Digital Interface (SDI)-based deployments to an IP-based infrastructure, as well as the basic principles of IP technologies including: Ethernet functions and standards, Transmission Control Protocol/Internet Protocol (TCP/IP) stack, and Cisco IPFM deployment. Through a combination of lessons and hands-on labs, you will explore the Cisco Data Center Network Manager (DCNM) Media Controller, including deploying and troubleshooting the DCNM Media Controller to manage and automate flows through the fabric and configure basic IP functionality.

Target audience

This course is designed for engineers and other professionals including:

- Broadcast engineers
- Network administrators
- Network engineers
- Technical solution architects

Objectives

After taking this course, you should be able to:

- Identify the components of a computer network and describe their basic characteristics
- Describe network fundamentals and explain a simple LAN
- Describe hardware and wiring that is used to build a network
- Describe the Open Systems Interconnection (OSI) reference model
- Explain data link layer characteristics, Ethernet protocol, and switch operation
- Introduce students to key network layer components, definitions, and standards
- Explain the purpose and functions of the transport layer
- Describe end-to-end packet delivery

- Describe basic routing functionalities

- Describe multicast networks, applications, and protocols

- Explain data center architecture in each layer, and describe new leaf-spine topology approaches

- Explain virtualization and Software-Defined Networking (SDN)

- Describe the overall solution and how it works, and identify all components of the solution and their functions

- Understand initial sizing and capacity

- Explain the basic requirements for IPFM

- Describe how Non-Blocking Multicast (NBM) and multicast function in the IPFM

- Demonstrate and verify Precision Time Protocol (PTP) clocking

- Describe the DCNM Media Controller

- Demonstrate the DCNM Media Controller configuration and verification

- Explain how to deploy an IPFM solution in a high-availability manner

- Use the DCNM Media Controller to monitor fabric and to troubleshoot basic connectivity and performance issues

- Understand the approach and basic steps involved in responding to alarms and other notifications

Prerequisites

To fully benefit from this course, you should have the following prior knowledge and skills:

- Basic computer literacy including operation system navigation skills, internet usage skills, IP address knowledge, and understanding of networking protocols

- Knowledge of broadcast industry requirements and standardization

- Familiarity with data center network architectures

- Understanding of TCP/IP networks

- Ability to configure basic unicast and multicast routing

- Familiarity with Cisco Nexus® Command Line Interface (CLI)

- Use of basic Linux commands

Outline

- Describing the OSI and TCP/IP Models

- Understanding Ethernet and Switch Operation

- Describing IPv4 Network Layer Addressing

- Understanding the TCP/IP Transport Layer

- Understanding End-to-End Packet Delivery Process

- Describing Routing

- Understanding IP Multicast

- Describing Data Center Network Architectures

- Virtualization and Software-Defined Networking

- Introducing Cisco IP Fabric for Media

- Media over IP Standardization

- Designing Cisco IPFM Solution

- Building Cisco IP Fabric for Media

- Exploring Non-Blocking Multicast in Cisco IPFM

- Describing Cisco DCNM Media Controller

- Introducing Cisco DCNM PowerOn Auto Provisioning (POAP) Process

- Implementing Cisco DCNM Flow and Host Policies

- Employing PTP

- Cisco IPFM Operations, Administration, and Management

- Cisco IPFM High Availability

- Monitoring and Troubleshooting Cisco IPFM Operation

Lab outline

- Configure VLANs and Trunks

- Configure Multilayer Switching and IP Addressing

- Configure Open Shortest Path First (OSPF)

- Multicast on Cisco Nexus® Switches

- Implement IPFM Without DCNM Media Controller

- Implement POAP Using Cisco DCNM

- Deploy Flows Through Cisco DCNM Media Controller

- Deploy Host Policies Through Cisco DCNM Media Controller

- Configure PTP

- Operate and Administer Cisco DCNM

- Implement Cisco IPFM High Availability

- Troubleshoot Cisco IPFM Operation

Benefits

- Gain a solid foundation in how Ethernet functions and standards, IP, TCP/IP stack, and other technologies are configured and implemented to enhance the agility of modern networks

- Learn how to use Cisco® IP Fabric for Media (IPFM) to deploy a flexible, scalable, and secure IP-based media infrastructure

- Leverage the benefits of the DCNM Media Controller to control flows through the fabric