CTR8740 Routing & MPLS FEATURES

TRN-CTR8740-IPMPLS A/B/C/D

Course Specifics

Duration:	5 days
Class capacity:	10 students
Materials provided:	Student Handbook (e-Book)

Course Description

The Aviat Networks Advanced MPLS Features course is recommended for design, field and operations personnel who design, deploy, configure, and operate IP networking equipment involving advanced routing protocols and IP/MPLS. This Five-day instructor-led course builds on foundational routing and networking knowledge and introduces MPLS. This is followed by an in-depth overview of MPLS technology, including concepts, services, architecture, configuration, design issues, operations, and troubleshooting of OSPF, BGP, LDP, Segment Routing, L2-VPNs, and L3-VPNs.

The course content is enriched with hands-on labs (nearly 50% of the course duration) and case studies that offer students scenarios they will face in real deployments in their networks. All labs are conducted on the Aviat CTR8740 microwave router platform equipment enriched with the latest MPLS Advanced software.

Courses are **conducted by AVIAT expert trainers** in a mentoring environment backed by their deep technology expertise and experience in implementation of microwave wireless and IP/MPLS networks.

Target Audience

This course is intended for engineers requiring an advanced knowledge of IP routing and MPLS concepts within an IP/MPLS network.

Prerequisites

- Participants must have basic knowledge of Routing and Switching including the OSI Stack, IP addressing, and Carrier Ethernet.
- Each student must have a laptop with administrative rights.

Objectives

Upon successfully completing this course, participants will be able to:

- Understand IP Routing concepts, terminology, objectives, and applications.
- Understand MPLS concepts, terminology, objectives, and applications.
- Develop a strong understanding of implementing MPLS-based applications using L2VPNs and L3VPNs.

Course Outline

IP Routing Concepts
- Understanding Routing Protocols
- Autonomous Systems
- Administrative Distance
- Interior vs Exterior Gateway Protocols
- Static Routes

CTR8740 IP Setup
- System Overview
- CLI and Web Browser GUI
- Management Port Configuration
- IP Interface Configuration
- High Availability
- Setup Lab

OSPF
- Understanding the OSPF routing protocol
- OSPF Neighbors
- OSPF Network Types
- Single and Multi-area OSPF
- OSPF Configuration
- OSPF Labs

BGP
- Understanding the BGP routing protocol
- Internal and External BGP
- BGP Peers
- BGP Attributes
- BGP Full Mesh and Route Reflectors
- BGP Configuration
- BGP Labs

MPLS Concepts
- Objectives of MPLS
- Applications of MPLS
- MPLS Architecture
- Ingress & Egress Label Edge Routers
- Forward Equivalence Class
- MPLS Labels and Label Stack
- Forwarding Labeled Packets

Label Distribution Protocol (LDP)
- LDP Protocol definition and advantages
- LDP traffic flow control plane
- IP routing process versus MPLS LDP
- LDP messaging
- Label distribution mode
- Label retention mode
- LDP convergence
- Penultimate Hop Popping
- Targeted label distribution mode

Segment Routing (SR)
- Understanding Segment Routing
- SR Terms
- OSPF with Segment Routing
- Topology Independent Loop Free Alternate (TI-LFA)
- SR Configuration
- SR Lab

MPLS Virtual Private Network Technology
- Introducing Virtual Private Networks
- Introducing MPLS VPN Architecture
- Introducing the MPLS VPN Routing Model
- Forwarding MPLS VPN Packets

MPLS-Based Applications - L2 VPNs
- L2 VPN Overview, VPWS and VPLS
- VPWS Point to Point Solutions
- VPWS Frame Forwarding
- Pseudowire Architecture
- ATOM
- Pseudowire Discovery and Signaling
- Label Mapping Message TLVs
- The Control Word
- MPLS QoS
- Ethernet over MPLS (EoMPLS)
- EoMPLS Port mode and VLAN Mode
- MPLS VPLS (L2 Multipoint-to-Multipoint service)
- VPWS and VPLS Configuration
- VPWS and VPLS Labs

MPLS-Based Applications - L3 VPNs
- CE-PE Interfaces
- Virtual Routing and Forwarding Instance (VRF)
- Label stacking
- Use of MP-BGP within L3 VPNs
- Route Distinguisher
- Route Target
- Route distribution in MPLS L3 VPNs
- Route and Label advertisement
- CE-PE Routing Options
- L3VPN Configuration
- L3VPN Lab

Required Equipment for Training Sessions at Customer Sites

RADIO	Not Applicable.
OTHER EQUIPMENT	At least 5 Routers or Router HA Pairs with IP_MPLS licensing for onsite classes
CLASSROOM SET UP	Sufficient in size to handle all participants, instructor, desks, chairs, classroom equipment. The room must have enough AC power and air conditioning to operate equipment, all student's PC's and the equipment as required. Classroom Equipment • Overhead projector and screen or equivalent • White board with markers Desk and Chairs • Desks or workstations with enough room for each student to write have open books, client PC and / or, keyboard and monitor. Internet Access • Internet access is required if connecting to remote equipment.

Pricing & Scheduling

Please contact your Aviat local sales team for a quote or email aviatcareeducate@aviatnet.com and request pricing for the following items:

TRN-CTR8740-MPLS-A	CTR 8740: Configuration and Maintenance, MPLS - ILT, 5 DAYS, Aviat Training Center - Open Enrollment -per Student
TRN-CTR8740-MPLS-B	CTR 8740: Configuration and Maintenance, MPLS - ILT, 5 DAYS, Aviat Training Center- 10 Students Max
TRN-CTR8740-MPLS-C	CTR 8740: Configuration and Maintenance, MPLS - ILT, 5 DAYS, Customer Location- 10 Students Max
TRN-CTR8740-MPLS-D	CTR 8740: Configuration and Maintenance, MPLS - ILT, 5 DAYS, Customer Location-with Equipment- only for US- 10 Students Max