Learning Services

Cisco Optical Technology Advanced (OPT300) v1.2

Overview

The Cisco Optical Technology Advanced (OPT300) version 1.2 Cisco® Training on Demand course provides you with the skills needed to deploy advanced features of the Cisco ONS 15454 Multiservice Transport Platform (MSTP) and Cisco Network Convergence System (NCS) 2000 Series network.

This course provides you with the knowledge necessary to use the Cisco Transport Planner Design Tool for creating network topologies and to create advanced topologies. It also teaches you how to use advanced Dense Wavelength-Division Multiplexing (DWDM) features such as G.709 encapsulation, generic framing protocol G.7041, Layer 1 circuits, Quality of Service (QoS), crossponder networks using T1 over Ethernet, and encryption. You also learn about the following cards: the Cisco ONS 15454 40-Channel Wavelength Cross-Connect (WXC), 100-Gbps transponder, 10-Gbps muxponder and transponder, 10-Gbps enhanced data multiplexer, any-rate muxponder and crossponder, 10GE-XP and enhanced GE-XP, 100-Gbps and 200-Gbps transponder and muxponder, and 10-Gbps network encryption cards.

Duration

The OPT300 v1.2 Training on Demand course consists of 20 modules totaling more than 24 hours of video instruction along with 15 hands-on lab exercises.

Target audience

The primary audience for this course is designers, system engineers, network operators, and technical support personnel.

Objectives

After completing this course, you should be able to:

- Identify the purpose of Transport Planner
- Start and operate the Cisco Transport Controller to provision and maintain the ONS 15454 and NCS 2000 systems
Describe problems with interconnecting circuits between rings, the ONS 15454 MSTP 40-/80-channel manual Multiring feature, and hardware components
Perform the ONS 15454 MSTP node turn-up procedure
Describe the Optical Channel Network Connection (OCHNC) prerequisite requirements for provisioning circuits in an ONS 15454 MSTP network
Describe the Single-Module Reconfigurable Optical Add/Drop (SMR ROADM)-based configurations
Describe the OCHNC circuit provisioning for SMR rings
Identify the advantages G.709 encapsulation brings to optical transponder cards
Describe the 10-Gbps transponder and muxponder cards
Install and provision the any-rate cards
Describe the Any-Rate Muxponder Crossponder (AR MXP/XP) cards
Identify the principles of Ethernet related to the operation of Cisco optical networking products
Configure the 10GE_XP/XPE and GE_XP/XPE cards, install Layer 1 circuits, and read the performance counters for Layer 1 Gigabit Ethernet circuits
Describe ingress policing and basic egress queuing strategies, and implement the customer QoS scheme into the ONS 15454 crossponder network
List the 10GE_XP and GE_XP card options
Describe the fundamentals of the T1, DS1, and DS3 circuits
Describe the 100-Gbps and 200-Gbps cards
Turn up an encrypted network and test to ensure that information being passed is secure
Add a node to an existing DWDM ring
Describe the ONS 15454 MSTP Troubleshooting Guide

Course prerequisites
The knowledge and skills necessary before attending this course are:
- Cisco Fundamentals of Fiber Optics Technology (FFOT) video training
- Cisco Optical Technology Intermediate (OPT200) course

Course outline
- Module 1: Cisco Transport Planner (CTP) Design Tool
- Module 2: Cisco Transport Controller (CTC) Operations
- Module 3: Manual MultiRing and Mesh Network Using the ONS 15454 40-WXC Card
- Module 4: Node Turn-Up
- Module 5: Optical Channel Network Connection (OCHNC) Circuits
- Module 6: MSTP M6 SMR-Based Rings
- Module 7: Optical Channel Network Connection (OCHNC) Circuits in SMR
- Module 8: G.709 Encapsulation 10G and 100G Transponder Settings
- Module 9: 10-Gigabit Muxponder and Transponder Cards
- Module 10: Generic Framing Protocol G.7041, Any-Rate Cards, and Encapsulation Options
• Module 11: Any-Rate Muxponder and Crossponder Cards
• Module 12: Ethernet and VLANs
• Module 13: 10GE-XP and GE-XP Enhanced Cards, Settings, and Circuits Layer 1
• Module 14: Quality of Service
• Module 15: XP-E Cards Protected Ring, CoS Marking by Port, Customer VLAN, and QoS
• Module 16: T1 over Ethernet in a Crossponder Network
• Module 17: 100 and 200 Gigabit Transponders and Muxponders
• Module 18: Cisco 10G Network Encryption Card
• Module 19: Add-a-Node Design and Installation
• Module 20: Basic Troubleshooting

**Labs outline**

This course contains 15 hands-on virtual lab exercises, powered by Cisco Learning Labs and Cisco IOL (Cisco IOS® Software on Linux).

**Topology for all labs in the course:**

![Topology Diagram]

The labs included in this course are:

• OPT300 Lab 1: Start the CTP software and create a DWDM Network
• OPT300 Lab 2: Cisco Transport Controller
• OPT300 Lab 3: Establish Six-Node 32/40/80 Channel Mesh Network
• OPT300 Lab 4: Create OCHNC Circuits and View Power levels in the WXC Network
• OPT300 Lab 5: Establish 40 Channel SMR1/2 Mesh Network
• OPT300 Lab 6: Create OCHNC Circuits and View Power Levels in SMR Network
• OPT300 Lab 7: Configure 10G Transponders Using 10x10 Standalone Mode
• OPT300 Lab 8: Any-Rate Crossponder card 8:2 DME-P Lab
• OPT300 Lab 9: 1G Crossponder Layer 1 Ethernet Network
Data sheet
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- OPT300 Lab 10: Gig-E 10Gig-E Enhanced Crossponder Layer 2 Ring Configuration
- OPT300 Lab 11: Circuits to carry T1 over Ethernet
- OPT300 Lab 12: 10 Gigabit Transponders and 10x10 Muxponders
- OPT300 Lab 13: 10 Gigabit Optical Encryption Line Card
- OPT300 Lab 14: Add-a-node to Existing DWDM Ring Network
- OPT300 Lab 15: MSTP Troubleshooting

Instructor Bio
Grega Modrijan has been designing, implementing, and troubleshooting optical networks for more than 15 years. He has been teaching Cisco optical technologies with enthusiasm and passion for more than 10 years. In addition to his optical network experience, he specializes in Cisco security technologies and is a Certified Information System Auditor (CISA).

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