Cisco Optical Technology Advanced (OPT300) v2.0

What you'll learn in this course

The **Cisco Optical Technology Advanced** (OPT300) v2.0 course gives you the skills you need to deploy advanced features of the Cisco® Optical Networking Services (ONS) 15454 Multiservice Transport Platform (MSTP) and Cisco Network Convergence System (NCS) 2000 Series. In this course you'll learn to how to use the Cisco Transport Planner Design Tool to create network topologies and advanced network topologies. You will learn 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.

The course also covers the following cards: Cisco ONS 15454 80-Channel Wavelength Cross-Connect (WXC), 100-Gbps transponder, 10-Gbps muxponder and transponder, 10-Gbps enhanced data multiplexer, any-rate muxponder and crossponder, 10-Gigabit Ethernet Xponders 10GE-XP and enhanced GEXP, 100-Gbps and 200-Gbps transponder and muxponder, 10-Gbps network encryption cards, and the Cisco NCS 2000 400 Gbps Xponder Card.

Course duration

- Instructor-led training: 4 days in the classroom with hands-on lab practice
- Virtual instructor-led training: 5 sessions of 4 hours or less each, on 5 consecutive days
- E-learning: Equivalent of 5 days of instruction with hands-on lab practice

How you'll benefit

This course will help you:

- Gain an in-depth understanding of how to install, deploy, and maintain a Cisco ONS 15454 MSTP network
- Practice what you learn through hands-on labs

Who should enroll

This course is intended for the following technical professionals who need to use advanced features of fiber optics technology:

- System installers
- System integrators
- System administrators
- Network administrators
- Solutions designers

How to enroll

- For instructor-led training, visit the Cisco Learning Locator.
- For private group training, visit Cisco Private Group Training.
- For digital library access, visit Cisco Platinum Learning Library.

Technology areas

- Optical
- Routing and switching

Course details

Objectives

After taking this course, you should be able to:

- Perform the ONS 15454 MSTP node turn-up procedure
- Describe first generation mesh topologies
- Describe the Optical Channel Network Connection (OCHNC) prerequisite requirements for provisioning circuits in an ONS 15454 MSTP network
- Describe the ONS MSTP advanced protocols
- Describe the OCHNC circuit provisioning for Single Module (SM) Reconfigurable Optical Add-Drop Multiplexer (ROADM) rings
- Describe the Any-Rate Muxponder Crossponder (AR MXP/XP) cards
- Describe how the Pseudo Command Line can be used to configure muxponder cards
- Identify the advantages G.709 encapsulation brings to optical transponder cards
- Install and provision the Any Rate cards
- Describe the 100-Gbps and 200-Gbps cards
- Describe the NCS 2000 400-Gbps Xponder line card and how it is configured
- Describe the SM ROADM (SMR)-based configurations
- Describe the 10-Gbps transponder and muxponder cards
- List the 10GE_XP and GE_XP card options
- Describe ingress policing and basic egress queuing strategies, and implement the customer QoS scheme into the ONS 15454 crossponder network
- 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
- Turn up an encrypted network and test to ensure that information being passed is secure
- Add a node to an existing DWDM ring
- Describe problems with interconnecting circuits between rings, the ONS 15454 MSTP 80-channel manual Multiring feature, and hardware components
- Describe the ONS 15454 MSTP Troubleshooting Guide

Prerequisites

- Cisco Fundamentals of Fiber Optics Technology (FFOT) video training
- Cisco Optical Technology Intermediate (OPT200) course

We also recommend that you have the following knowledge and skills:

- Basic knowledge of optical transport and protocols
- Basic knowledge of data network principles

Outline

- Cisco Transport Planner Design Tool
- First-Generation Mesh Topologies
- OCHNC in a Mesh Network
- Advanced Protocols
- Any Rate Muxponder and Crossponders
- 100-Gbps and 200-Gbps Transponders and Muxponders
- Cisco NCS 2000 400-Gbps Xponder Line Card
- Cisco 10G Web Security Essentials (WSE) Network Encryption Card
- Adding a New Location with Cisco Transport Planner (CTP) and Cisco Transport Controller (CTC)
- Crossponders and Layer 1 Networks
- Crossponders and Layer 2 Networks
- Troubleshooting

Lab outline

- Starting the CTP Software and Creating a DWDM network
- Creating OCHNC Circuits View Power Levels in the 80-WXC
- Any Rate Crossponder card 8:2 Muxponder Lab
- 200-GbTransponders, 10x10 Cards, and MR Muxponders
- 400-Gbps Xponder Mux and Optical Transport Network (OTN)
- 10-Gb Optical Encryption Line Card
- Adding a Node to Existing DWDM Ring Network
- 1-Gb Crossponder Layer 1 Ethernet Network
- Gigabit Ethernet and 10-Gigabit Ethernet Enhanced Crossponder Layer 2 Ring Configuration
- Performing the Optical Time Domain Reflectometer (OTDR) Test
- MSTP Troubleshooting

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