Learning Services
Cisco Optical Technology Intermediate

The Cisco Optical Technology Intermediate (OPT200) training course provides you with the skills necessary to deploy Cisco Optical Networking System (ONS) 15454 Multiservice Transport Platform (MSTP) and Cisco Network Convergence System (NCS) 2000 Series Dense Wavelength-Division Multiplexing (DWDM) networks from installation to protection. This course covers installation, configuration, circuit protection, maintenance, and basic troubleshooting using the Cisco Transport Controller for the Cisco ONS 15454 M6 and M12 shelves and the Cisco NCS 2015 shelf.

You will review DWDM terminology and components, explore the available chassis and cards, and discuss hardware installation. You will learn to use the Cisco Transport Controller server software to connect to the nodes, perform network turn-up and circuit creation, deploy linear and Single-Module ROADM (SMR) DWDM multishelf topologies, configure Raman amplifiers and Any Rate cards, and configure protected and unprotected circuits. The course covers a variety of card options: controllers, transponders, multiplexer-demultiplexer, add/drop, Raman amplifiers, and Cisco Any Rate muxponder cards. You will use the various cards to configure terminal, amplifier, mesh, split, Optical Service Channel (OSC) regenerator, and Reconfigurable Optical Add/Drop Multiplexer (ROADM) nodes. Finally, you will learn how to use many of the tools and features available with the Cisco Transport Controller to perform maintenance, testing, and basic troubleshooting of an optical network.

1 Course content is dynamic and subject to change without notice.
Duration
Instructor-Led Training (ILT): 4 days.
Virtual Instructor-Led Training (VILT): 5 days.

Target audience
- The primary audience for this course is system installers, system integrators, system administrators, network administrators, and solutions designers.

Course objectives
After completing this course, you should be able to:
- Identify platform chassis that use the Cisco ONS 15454 DWDM cards
- Identify the main categories of DWDM cards
- Use the Cisco Transport Controller to connect to an ONS 15454 MSTP or NCS 2000 Series chassis and navigate within the GUI
- Provision DWDM circuits by using the Cisco Transport Controller
- Identify node configurations according to card population
- Perform Raman amplifier initialization
- Configure Any Rate cards
- Configure circuit protection options
- Perform basic DWDM troubleshooting using the Cisco Transport Controller

Course prerequisites
Completion of Cisco Fundamentals of Fiber Optics Technology (FFOT)

Recommended prerequisites
Cisco recommends that you have the following prerequisite knowledge and skills:
- Basic knowledge of optical transport and protocols
- Basic knowledge of data network principles

Course outline
- Module 1: DWDM Optical Platform Foundation
  - Introducing DWDM Terminology and Components
  - Exploring DWDM Network Topologies
  - Introducing the Management Software and Documentation
  - Using Functional View
- **Module 2: Chassis and Cards**
  - Investigating Chassis and Common Equipment
  - Exploring Controller Cards and the OSC
  - Exploring Add/Drop (Multiplexer/Demultiplexer) Cards
  - Exploring Transponder Cards
  - Exploring Muxponder and Crossponder Cards
  - Exploring Client Port Modules
  - Exploring Amplifier Cards
  - Exploring Tunable Dispersion Compensator Cards, PSM Cards, and Passive Auxiliary Modules

- **Module 3: Hardware Installation**
  - ONS 15454 MSTP Equipment to Rack Mount
  - 15454 M12 Shelf Installation
  - 15454 M6 Shelf Installation
  - NCS 2000 Series Equipment to Rack Mount
  - NCS 2015 Shelf Installation
  - Intrashelf Fiber Connections

- **Module 4: Node Turn-Up and Circuit Creation**
  - Performing Node Turn-Up in Cisco Transport Controller
  - Creating OCHNC Circuits
  - Creating an OCHCC Circuit

- **Module 5: Node and Multishelf Configurations**
  - Exploring DWDM Node Configurations
  - Configuring Multishelf Nodes

- **Module 6: SMR-Based Rings**
  - SMR-Based ROADM Configurations
  - 4-Degree Mesh Using SMR2
  - Viewing SMR-Based Ring Power Levels

- **Module 7: 10Gb Circuit Protection**
  - Exploring 10Gb Circuit Protection Options
  - Investigating Client Protection with Two Signals
  - Configuring Circuit Protection with a Y-Cable
  - Configuring Circuit Protection with Protected Transponders
  - Configuring Circuit Protection with PSMs
● Module 8: Any Rate Card Configuration
  ◦ Exploring AR MXP/XP Card Features
  ◦ Investigating Card Modes
  ◦ Exploring Mixed Mode Scenarios
  ◦ Provisioning a Cisco Transport Controller AR_XP Example

● Module 9: Raman Amplifiers
  ◦ Introducing Raman Amplifier Theory of Operation
  ◦ Cabling the RAMAN-CTP and -COP Cards
  ◦ Connecting Raman Nodes for Communication
  ◦ Examining Installation Requirements
  ◦ Executing the Raman Day 0 Tune Wizard

● Module 10: Maintenance and Basic Troubleshooting
  ◦ Exploring Network Maintenance Features
  ◦ Exploring Node Maintenance Features
  ◦ Exploring Shelf Maintenance Features
  ◦ Exploring Card Maintenance and Performance Features
  ◦ Upgrading Shelves to Release 10.6.2
  ◦ Installing and Managing Licenses
  ◦ Performing Basic Troubleshooting

Lab outline

● Lab 1: System Setup and Login
● Lab 2: Node Turn-Up
● Lab 3: Creating Direct Circuits (OCHNC)
● Lab 4: Creating Transponder Optical Client Circuits (OCHCC)
● Lab 5: Configuring an Amplified SMR Ring with Direct Circuits
● Lab 6: Installing 10Gb Transponder Cards with Y-Cable Protection
● Lab 7: Configuring PSM and OUT-2 10Gb Protection
● Lab 8: Configuring Any Rate Cards
● Lab 9: Configuring a Linear Topology with Raman Amplifiers
● Lab 10: Maintenance and Performance Monitoring
● Lab 11: MSTP Troubleshooting
Lab Topology

Registration email
For more information about schedules and registration for this course, contact aeskt_registration@cisco.com.

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