

Advanced Services' Cisco ONS Time-Division Multiplexing Synchronous Digital Hierarchy Release 9.0 (SDH) v1



This lab-intensive course introduces you to the Cisco® Optical Network System (ONS) time-division multiplexing (TDM) family of transport products. The ONS 15454 SDH and ONS 15310 SDH are synchronous digital hierarchy (SDH) transport system components that can be mixed and matched to create high-speed optical transport networks. You will learn about the SDH optical hierarchy STM-1 (155 Mbps), STM-4 (644 Mbps), STM-16 (2.5 Gbps), and STM-64 (10 Gbps). You will learn how E-1 (2 Mbps) and E3 (35 Mbps) electrical signals are carried in the SDH optical links. Included in this course is how to configure and build circuits through the ADM10G card, a TDM card in the ONS 15454 DWDM system. The course covers electrical, Ethernet, and optical protection options; linear and ring topologies; circuit building; and troubleshooting. Each student team has an ONS 15454 SDH and ONS 15310 SDH to work with.

Duration

Five days.

Target Audience

This course is for technical professionals who:

- Perform maintenance on SDH networks
- Design and engineer SDH networks
- Need an understanding of SDH transport network components, interconnection, circuit building, and maintenance

Course Objectives

Upon completion of this course, you will be able to:

- List and describe the major features and benefits of the Cisco ONS SDH products
- Set up and use the PC to connect to the ONS SDH network
- Provision the shelf for 1:1 and 1:N electrical protection
- Provision the shelf for optical protection MSP, path ring, and line ring

- Create circuits at the VC3 and VC12 levels
- Provision Ethernet ports and create circuits between Ethernet components
- Provision the ADM-10G protection and install low-order tunnels and circuits
- Move circuits using the bridge-and-roll capability of the Cisco SDH system

Course Prerequisites

Following is the prerequisite for this course:

- Knowledge of E1, E3, and SDH

To locate Cisco courses that cover the listed prerequisite, go to the Cisco Training and Events webpage at www.cisco.com/web/learning/index.html.

Course Outline

The course outline is as follows:

- ONS 15454E and 15310E Product Overview
- Introduction to SDH
- Safety in ONS Systems
- Optical Fiber Practices
- Cisco ONS Documentation
- Cisco ONS 15454E MSPP Shelf Layout and Components
- Cisco ONS 15310E Shelf Layout and Components
- Cisco ONS System Setup and Login
- Timing for SDH
- Cisco ONS Protection Groups
- Point-to-Point and Linear Add-Drop Multiplexer Configurations
- Cisco ONS Circuits and Cross-Connections
- Cisco ONS Path Protection Rings
- Cisco ONS VC Tunnels and Circuits
- Cisco ONS Line Protection Rings
- Maintenance and Performance Monitoring
- Loopbacks in Fiber, Copper, and Coax
- ADM10G Introduction
- Protection in the ADM-10G Subnetwork
- Circuits in the ADM-10G Subnetwork
- Introduction to Ethernet
- Cisco ONS Multiservice over SDH Applications and Layer 1 Circuits
- Rapid Packet Ring Network and Circuits
- Bridge-and-Roll Circuit Feature
- Delete a Line-Switched Node
- Add a Line-Switched Node

Lab Outline

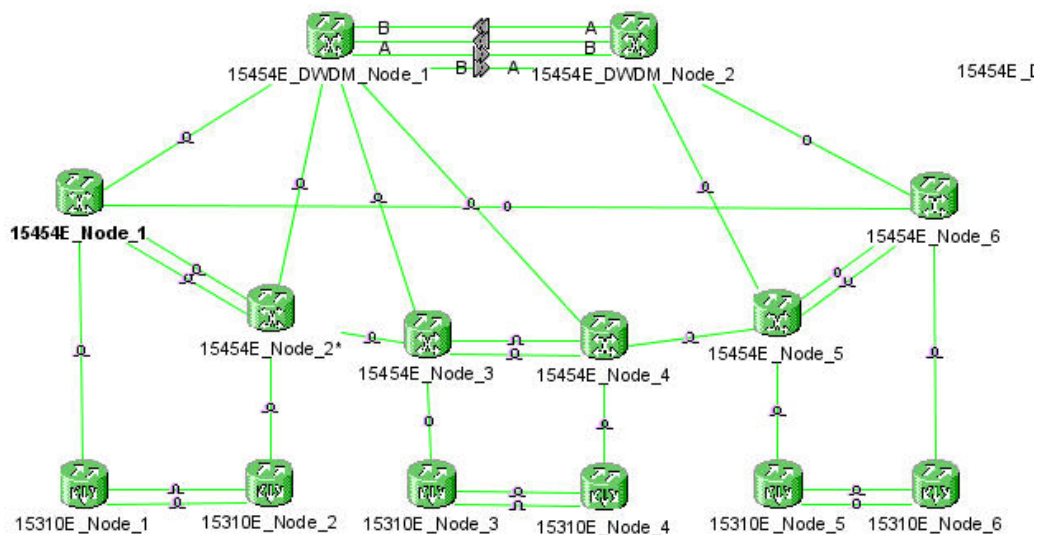
The lab outline is as follows:

- Lab 1: Cisco Transport Controller Setup and Login
- Lab 2: Configuring SDH Timing
- Lab 3: Setting Up Protection Groups
- Lab 4: Provision and Test a Point-to-Point Network
- Lab 5: Create Manually Routed E3 Circuits
- Lab 6: Create a Path-Protected Ring
- Lab 7: Create VC12 Tunnels and Circuits
- Lab 8: Create a Two-Fiber Line-Protected Ring
- Lab 9: Create and Test Ethernet Circuits at Layer 1
- Lab 10: Create and Test RPR Ethernet Ring at Layer 2
- Lab 11: Set Up SDH Links to ADM-10G with Protection
- Lab 12: Configure Circuits in ADM-10G Subnetwork
- Lab 13: Bridge-and-Roll Circuits
- Lab 14: Delete Line-Switched Node
- Lab 15: Add Line-Switched Node
- Lab 16: Troubleshooting Lab

Lab Topology

Figure 1 shows the lab topology that is used in this course.

Figure 1. Lab Topology of ONS_TDM_SDH



Registration Information

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

For More Information

For more information about Advanced Services Education course offerings, including custom training options, as well as Advanced Services Curriculum Planning Services and the Advanced Services Technical Knowledge Library (TKL), refer to the Advanced Services Education website at www.cisco.com/go/ase.



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