

# SONET Fundamentals

<b>Course Length:</b>	1 Day
<b>Course Code:</b>	1350
<b>Prerequisites</b>	None, however a basic understanding of telecommunications principles will be useful for students taking this course.
<b>Course Overview:</b>	This course is designed as an overview of SONET technologies. Special emphasis will be focused on understanding the functions of SONET equipment as well as proper installation and maintenance procedures.
<b>Required Equipment:</b>	It is highly recommended that the student bring any SONET test equipment to class.

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## Course Outline

### SONET Overview

- Drivers
- Market
- Comparison to other technologies

### Review of the Building Blocks

- DS0
- DS1/T1
- DS3/T3

### Fiber Optic Basics

- Care and cleaning
- Single-mode fiber
- Multi-mode fiber
- Basic testing



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## SONET Basics

- Building the SONET signal
- Synchronous Transport Signal (STS)
- Synchronous Payload Envelope (SPE)
- Section, Line and Path
- SONET Framing and Overhead
- Virtual Tributaries
- Optical Carriers (OC-x)
- SONET Rates and Capacity
- SONET Equipment: ADM, TM, Regenerators
- Alarms
- Errors
- Pointer Errors
- Concatenated SONET signals
- Network Topologies: Linear Configuration (Point-to-Point), Ring Configuration

## SONET Installation and Maintenance

- Proper Installation Techniques: redundancy, protection
- Types of SONET test equipment
- End-End v/s Loop testing
- In-Service v/s Out-of-Service Testing
- Testing and Isolation methods using SONET specific alarms and errors