Introduction

This one-day, Instructor-led (soon to be web-based also!) course dives into the nuts and bolts behind the North American **S**ynchronous **O**ptical **NET**work, or SONET. The course provides an understanding of the evolution of optical communications and the adoption of an optical networking standard. The course discusses SONET network elements, as well as network topologies and protection schemes. In general, the ***Introduction to SONET*** course offers the following:

- SONET framing structure, data rates, payload mapping, and network architectures
- Details of the SONET hierarchy and the different types of overhead
- SONET protection schemes and network failure tolerance and recovery

The following outline details the ***Introduction to SONET*** course:

Introduction to SONET

- Historical Background
- Basic Optical Communication Principles
- Optical Carrier Modulation Techniques
- Line Coding
- Scrambling
- Interpreting 1's and 0's at the Receiver
- Need for Structured Framing

SONET Hierarchy and Framing

- SONET Hierarchy
- Section, Line, and Path
- Framing Basics
- SONET Frame Structure
- STS-1 and STS-N Frames

SONET Transport Overhead

- SONET Section Overhead
- Details of Section Overhead Bytes
- SONET Line Overhead
- Details of Line Overhead Bytes

SONET Pointers and Payload Pointer Processing

- Synchronous vs. Asynchronous Networks
- Differences in Clocks and the Need for Pointers
- H1, H2, and H3 Overhead Bytes
- Pointer Values
- Positive and Negative Pointer Adjustments

SONET Payloads

- Payload/Path Overhead
- Details of Path Overhead
- Concatenated Payloads
- Mapping of SONET Payloads
- Virtual Tributaries (VTs) and Virtual Tributary Groups (VTGs)
- VTG Interleaving
- VT Overhead Structure

SONET Network Architectures and Protection

- Linear Networks
- Ring Networks
- APS
- UPSR
- BLSR
- Drop and Continue

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