

DS1/DS3/SONET Fundamentals & Test Applications

Course Number	Delivery Method	Course Length	Language of Instruction
TT-DS1/3/SONET	Instructor-Led at Customer Site	3 Days	English
TT-DS1/3/SONET-OE	Instructor-Led at JDSU Site	3 Days	English

Synopsis

DS1, DS3 and SONET technical theory and basic test applications are covered in detail, providing a solid foundation of knowledge that will benefit both experienced participants and those unfamiliar with the technology. Demonstrations of test applications reinforce theory and participants learn to test, monitor, turn-up, and troubleshoot SONET using JDSU's test set(s).

Prerequisites

Introduction to Telecommunications (TT-TELCOM) or equivalent.

Who Should Attend

Technicians, engineers, and technical support personnel who are directly or indirectly responsible for installing and maintaining DS1, DS3 and SONET networks, and network operation center staff who monitor those networks.

Course Goals

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

- Describe the four steps involved in preparing information for transmission over a DS1 network
- Describe three timing methods used in DS1 network equipment
- Describe three methods used to guarantee ones density requirements on a DS1 network
- Describe the two-stage multiplexing process for channelized DS3 signals
- Describe the advantages of C-bit framing over M13 framing
- Describe the uses, evolution, and advantages of SONET technology
- Draw and label a typical SONET configuration including ADM, DCS, IDLC, optical regenerators, SONET-based terrestrial radio, and optical peripherals
- Define SONET's protocol layers and describe how they interact to allow SONET to transmit information
- Define components of the SONET frame structure
- Describe the recommended strategy for testing a SONET network

Course Outline

DS1 Basics

- Orientation and course goals
- DS1 background
- DS1 networks
- DS1 network elements
- How DS1s are carried
- Outline of four steps to a DS1

DS1 Details

- Building a DS1
 - Pulse code modulation
 - Time division multiplexing
 - Framing and overhead
 - Line coding
- DS1 timing
- Putting it all together

To order and schedule training, call toll free 1-866-228-3762
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TT-DS1/DS3/SONET-v1.2



DS1/DS3/SONET Fundamentals & Test Applications

DS1 Test Applications

- DS1 test access points
- Test set status LEDs
- In-service monitoring of live DS1 circuits
- Out-of-service testing of DS1 circuits
- DS1 alarms
- Alarm indication signal

DS3 Fundamentals

- DS3 network overview
- DS3 framing structure
- DS3 timing
- DS3 line coding
- Error types/alarms
- Test patterns

DS3 Testing Applications

- Network access points
- Out-of-service testing
- In-service monitoring

SONET Basics

- Orientation and course goals
- Advantages of SONET
- Attributes of SONET
- SONET network elements
- SONET architecture layers
- SONET frame structure
- SONET: How it works
- Creating a SONET signal

SONET Details

- Forming higher-level STS-N signals
- SPE
- SONET mapping
- SONET multiplexing
- SONET overhead
- SONET timing
- SONET networks

SONET Basic Testing Applications

- Physical medium testing
- SONET in-service faults
- Bit error rate test (BERT)
- End-to-end SONET testing
- End-to-end payload constituent testing
- SONET alarm testing

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