

Overview of Transport Networks



Course Length:	3 days
Course Code:	NFSTP01
Prerequisites:	None. A basic understanding of telecommunications transmission principles will be useful for students taking course.
Course Overview:	This course focuses on an overview of common network transport systems including DS1, HDSL, HDSL2, DS3, SONET, and WDM/DWDM. Special emphasis will be put on network equipment, common applications and maintenance/repair procedures.

*. *This course can be customized or combined with other material to meet specific requirements*

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Course Outline

Overview of DS1 Applications

DS1 Standards

DS1 Basics

- DS1 Network Equipment
- Analog vs Digital
- PCM (Pulse Code Modulation)
- TDM (Time Division Multiplexing)
- Framing
- Line Coding
- Timing

Fractional DS1

SLA (Service Level Agreements)

DS1 Installation and Maintenance

- BERT and Stress Patterns
- DS1 Test Access

Types of Tests
Monitoring Alarms and Errors
Performance Monitoring
Network Synchronization Testing
Jitter

Overview of HDSL/2/4 Applications

HDSL/HDSL2/HDSL4 Standards

HDSL/HDSL2/HDSL4 Basics

HDSL Network Equipment
Conversion Process
Distances, Parameters

HDSL Installation and Maintenance

Qualifying the Loop/Cable
HDSL Test Access
Types of Tests
Monitoring Alarms and Errors

Overview of DS3 Applications DS3 Standards

DS3 Basics

DS3 Network Equipment
Channelized and Non-Channelized Multiplexers, DS3 Repeaters
M13 Framing
C-Bit Framing
Line Coding
Timing

SLAs (Service Level Agreements)

DS3 Installation and Maintenance

BERT and Stress Patterns DS3 DS3 Test Access
Types of Tests
Monitoring Alarms and Errors
Frequency
Jitter

Overview of SONET Applications

SONET Basics

SONET Network Equipment
STS, SPE, and OC-x
SONET Framing/Overhead
Building the Signal



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SONET Rates and capacity
Concatenated SONET signals
Fiber Optic Overview
SONET systems

SLA (Service Level Agreements)

SONET Installation and Maintenance

Testing the Fiber Optic cable
BERT and Stress Patterns
SONET Test Access
Types of Tests
Monitoring Alarms and Errors
Network Synchronization Testing

WDM/DWDM Applications

WDM/DWDM standards

WDM/DWDM Basics

Network Equipment
Building the signal
The signal over Fiber
Types of Systems

WDM/DWDM Installation and Maintenance

Testing the Fiber Optic Cable
Test Access
Types of Tests
Monitoring Alarms and Errors

Ethernet in the WAN

Next Generation Transport Systems



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