ENG-302 - Digital Networks: TX, DSX AND XDSL

Description

A 3-day training course to provide participants with an understanding of the fundamental concepts of digital networks and of Tx, DSx and xDSL technologies and their applications.

Objectives

- Explain the fundamental concepts of digital transmission systems
- Define Synchronous Digital Hierarchy (SDH)
- Distinguish between different digital transmission systems
- Provide an in depth understanding of the following digital technologies and their applications: T1 and T3, DS1, DS3 and DS4, and the xDSL family

Topics

Digital technology fundamentals

- Market motivation
- Business applications
- Vendors
- Interoperability, scalability and future proof
- Benefits of digital carriers
- Digital network standards (ISDN, SONET, SDH, PDH)
- A/D conversion
- Signalling

DS1 – DS3

- DS0, DS1 and DS3 characteristics
- Digital Signal hierarchy (DS0 – DS4)

- Digital signal coding
- Signal levels and standards
- Digital carrier framing
- DS1 frame format
- DS3 frame format
- Super Frame (D4 or SF) and Extended Super Frame (ESF)
- Channels Service Unit (CSU)
- Data Service Unit (DSU)
- Combined CSUs/DSUs
- Multiplexers (MUX)
- Channel banks
- B7Sub/B8Sub
- Zero Code Suppression (ZCS)
- ZBTSI
- Bandwidth loss, frequency response
- AMI, B8ZS, NRS, AM, FM, PSK, QAM
- Synchronous and asynchronous transmission
- HDB3/B3ZS
- Formatted vs. non-formatted

T1 technology

- T1/T3 hierarchy
- T1 channel banks
- T1 networking
- Development of T-carrier system
- T1 fundamentals
- Multiplexers
- What is fractional T1?
- T1 equipment

- Applications
    - Digital Access Cross-connect System (DACS)

    - D4 channel bank
    - Private Branch eXchange (PBX)
    - CSU functions
    - T1-MUX
    - FT series fractional T1 DSU/CSU

T3 technology

- T3 networking
- T3 fundamentals
- T3 formats, standards and protocols
- T1 and T3 equipment
- T3 applications

- Tx T-extenders

T1 and T3 services

- Types of service providers
  - Local Exchange Carriers (LEC)
  - Inter-eXchange Carriers (IXC)
  - Access providers
- Ordering carrier services
- Costs and tariffs
  - Pricing components
  - Distance calculations

ADSL

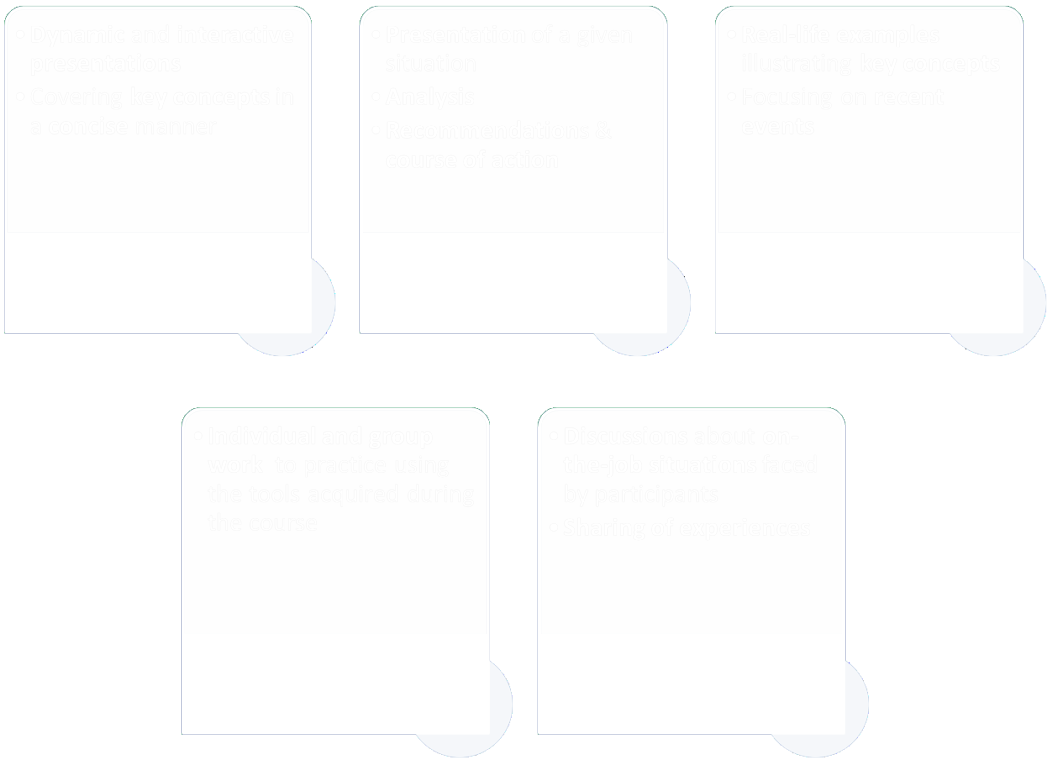
- Evolution and background
  - Analogue local loop – copper
  - Digital PSTN – ISDN services
  - High-speed Internet access
- xDSL technologies
  - Evolution of xDSL technologies
  - ADSL overview
  - xDSL family
  - IP-based services over ADSL
  - Distance vs. speed limitations
  - xDSL equipment
- ADSL architecture
- ADSL framing
- DSL Access Mux (DSLAM)
- ADSL physical layer issues

Target Audience

- Telecommunications managers and personnel responsible for or working with digital networks
- Managers looking to complement their skill-set by gaining a good understanding of digital networks

Methodology

A combination of engaging activities and dynamic presentations to stimulate and maximize participants' learning.



Location

A selection of Neotelis' training courses is held in various cities around the world. Please contact us at training@neotelis.com for the complete Yearly Training Calendar.

Neotelis can also deliver in-house sessions of this course specifically for your organization. Please contact us at training@neotelis.com for more information and a Proposal.

About Neotelis

Neotelis provides training, consulting, conferences and publications to the telecommunications industry worldwide. Its team of senior experts has trained thousands of executives and managers working for operators, regulators, policy-makers and governments in over 120 countries around the world.

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