Course Description

Next generation networks are likely to need to deliver High Speed Internet (HSI), Voice and IPTV. High Definition IPTV may require very high access bandwidth so new loop installations will probably require fiber loops. There are many new options for loop and access aggregation network design.

This Hands-On course will examine the new fiber technologies now available, consider the advantages of each and provide an understanding of how a Next Generation Access network can take advantage of Ethernet over fiber options.

Students Will Learn

- Describe The Different Fiber Optic Technologies Available For Next Generation Loops
- Consider In Detail The Advantages Of Each Technology
- Consider The Sizing And Design Of A NGN Access And Aggregation Network
- Select The Appropriate Ethernet Technology Standards For Deployment
- And Much More...

Course Outline

Module I: Next Generation Network Design Requirements

Next Generation Network Networks
Functions and Requirements
Loop Requirements
Application Requirements
Backhaul
Example Next generation Applications
Module II: Fiber Optic Technology Options

Fiber optics subsystems
FTTH, FTTA, FTTP, FTTC, FAITH,
Multi-mode and Single mode fiber engineering
Transmitters and Receivers
Wavelength Considerations:
Wavelength Division Multiplexing (WDM)
Dense Wavelength Division Multiplexing (DWDM)
Course Wavelength Division Multiplexing (CWDM)
Difference between Passive and Active Optics

Module III: Access Subsystems

Passive Optical Networks (PON)
ITU-T G.984
ATM Passive Optical Networks (APON)
Broadband Passive Optical Networks (BPON)
Gigabit capable Passive Optical Networks (GPON)
Ethernet Passive Optical Networks (EPON)
Transition from SONET/SDH to Ethernet based systems
Carrier Ethernet-Based Converged Services Infrastructure

Module IV: Ethernet in the First Mile and the Backhaul

IEEE 802.3 options
Optical Ethernet Options
Ethernet in the first mile
1000BASE-LX, 1000BASE-SX
10GBASE-SR, 10GBASE-LX4, 10GBASE-ER
10GBASE-LR, 10GBASESW, 10GBASE-LW, 10GBASE-EW
IEEE 802.1Q VLANs
Q-in-Q and MAC-in-MAC

Module V: Aggregation and Protection Options

Aggregation Options
Building Aggregated Backhauls
Rapid Packet Ring (RPR)

Module VI: Near Future Evolution

New ways of delivering fiber loops
Mechanisms for fiber sharing
Cost comparisons and financing

Equipment Requirements
(This apply’s to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

2 Days