

Useful Knowledge of Network Fundamentals (1 Day, 6 Hours CLE)

Section 1

Circuit Switched Architectures: The Public Switched Telephone Network (9:00 a.m. to 10:00 a.m.)

- a. Network Elements and Vocabulary
 - Loops, Lines, and Trunks
 - Time Division Multiplexing
 - Synchronous Optical Network (SONET)
 - Circuit Switching

- b. Network Interfaces
 - Demarcation
 - Physical Interfaces
 - Wireline and Wireless Access Methodology
 - Twisted Pair
 - Fiber
 - Cellular
 - Fixed Wireless

Break 10:00 a.m. to 10:30 a.m.

Section 2

Packet Switched Architectures (10:30 a.m. to 12:00 p.m.)

- a. Multiplexing Technologies
 - Time Division Multiplexing for Voice
 - Statistical Multiplexing for Data

- b. Frame Relay, ATM, and Internet Protocols: Compare and Contrast
 - Frame Relay Protocol and Network Architecture
 - ATM Protocol and Network Architecture
 - Internet Protocol and Architecture

- c. Technical Challenges to Convergence
 - Transmission characteristics of voice
 - Transmission characteristics of data
 - Delay and Jitter in Packet Networks
 - Quality of Service Schemes
 - a. ATM Classes of Service
 - b. Differentiated Services for IP
 - c. Integrated Services for IP
 - d. Multi-Protocol Label Switching

(Lunch 12:00 p.m. to 1:00 p.m.)

Section 3

Business Models and Rate Analyses (1:00 p.m. to 2:30 p.m.)

- a. Retail Business Model and Rate Analysis
 - Switched Voice
 - Layer 2 Data Services (Frame Relay, ATM)
 - a. Typical Frame Relay Billing Elements
 - b. Typical ATM Billing Elements
 - Internet Service Provider
 - a. Typical Internet Billing Elements

- b. Wholesale Business Model Rate Analysis
 - Incumbent LEC Services and Regulatory Obligations
 - CLEC Services and Regulatory Obligations
 - ISP Services and Regulatory Obligations
 - Reciprocal Compensation
 - Total Element Long Range Incremental Cost (TELRIC)
 - Unbundled Network Element Platform (UNE-P)

- c. Physical and Virtual Co-Location
 - Definition of Physical and Virtual Co-Location
 - Regulatory Implications
 - Business Implications

(Break 2:30 to 3:00 p.m.)

Section 4

Fees and Taxation Basics (3:00 p.m. to 4:30 p.m.)

- a. Local vs. Inter-exchange
 - Exchange Rate Areas
 - Local Access and Transport Areas

- b. Universal Service Fund
 - History
 - Current Structure
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- c. Recovery Fees
 - Local Number Portability
 - Wireless Number Portability
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- d. Federal, State and Local Taxes imposed
 - Taxes on Voice Services
 - Taxes on Data Services
 - Taxes on Internet Services