



ExperTech 2.0: Data Communications Fundamentals

PROGRAM OVERVIEW

The ExperTech 2.0 series is a library of CD-ROM or intranet-based products covering key communications topics. Seminar style presentations provide telecom professionals with easy access to the information they need. Topics are presented by Hill Associates instructors renowned for their technical expertise, industry experience, and outstanding presentation style.

To be successful today, one must understand the technologies that underlie providers' various product and service offerings. This course enables that foundation, covering fundamental concepts beginning with an overview of the relationship between data communications and telecommunications, and introducing the notion of convergence. It then introduces the concepts of network models, protocols, layers, and protocol suites and suggests a five-layer model used in modern networks. The course discusses each of the five layers, exploring the core concepts and functions of each, examples of technologies, protocols, and services present in each layer. As each layer is explained, participants explore a hypothetical network to see where each layer lives.

Data Communications Fundamentals runs 3.9 hours, and includes audio, interactive elements, review slides, section knowledge checks, and a final exam. The participant can expect to spend about twice this amount of time to complete the course.

This program has six primary objectives:

- Define the terms telecommunications and data communications
- Describe today's trend towards convergence in telecommunications
- Define the terms protocol, model, protocol suite and layer
- Describe the OSI Reference Model and the TCP/IP model, and how they come together in a modern network
- Identify and describe the functions provided by each layer of the modern five-layer network model
- Describe example technologies and protocols at each layer of the modern five-layer network model

Specific topics can be developed, or packaged together to create unique and customizable curriculum. All of our standard titles are available for preview at our store (www.hill.com/store).

About Hill Associates

At Hill Associates, we excel at creating custom talent development programs. Our experts help identify and assess your needs, and create training and educational programs that exactly meet those needs. Though we specialize in information technology, we've strengthened companies and organizations in a wide range of industries for over 25 years. Let us help you create a world-class talent development program that moves your business forward.

PROGRAM OUTLINE

Lesson 1: Telecomm, Datacomm & Convergence

- How / where we communicate
- End-to-end view of information
- Understanding four domains of convergence

Lesson 2: Communications Models

- Elements of various networks
- The communication problem
- Defining protocol, model, layer
- The OSI Reference Model
- The TCP/IP Model
- A 5-layer working model

Lesson 3: Physical Layer

- Core functions and applications
- Digitizing voice (sampling, quantizing, companding, encoding per Shannon and Nyquist)

Lesson 4: Data Link Layer

- Core functions and applications
- Examples (PPP, DOCSIS, Ethernet)

Lesson 5: Layer 2 Switching

- Packet switching (datagram/VC)
- Ethernet, Frame Relay, ATM

Lesson 6: Network Layer

- Core functions and applications
- Following a packet
- Routing, address resolution, CoS/QoS

Lesson 7: Transport Layer

- Core functions and applications
- Application addressing

Lesson 8: Application Layer

- Core functions and applications
- Service models
- Examples (FTP, NFS, DNS, HTTP, SMTP, IM, IP Telephony, SMTP, Telnet)