Data Networking Fundamentals

~~Course Length~~: 2 days

~~Description~~: Data Networking Fundamentals will give you the knowledge necessary to more effectively understand today's data and packet networks. The course starts with an overview of terms and concepts. From there, it explains the various protocol layers and how they are used today.

~~Course Outline~~:

- **Introduction to Data Communications**
  - ✓ Overview and terms
  - ✓ Networks and topology
  - ✓ Protocols
  - ✓ Standards
  - ✓ Circuit-switching and Packet-switching
  - ✓ Transmission modes
  - ✓ Multiplexing
  - ✓ Analog and Digital transmission

- **The OSI Reference Model**
  - ✓ The layered architecture approach
  - ✓ OSI seven-layer model
  - ✓ Protocol examples – TCP/IP, SS7, SNA

- **Physical Layer**
  - ✓ Interfaces
  - ✓ Modems and cable modems
  - ✓ Cable and fiber
  - ✓ Wireless media

- **Multiplexing**
  - ✓ Frequency-division multiplexing (FDM)
  - ✓ Time-division multiplexing (TDM)
  - ✓ Wave-division multiplexing (WDM)
  - ✓ Digital Subscriber Line (DSL)

- **Layer 2 (Data Link) Protocols**
  - ✓ Asynchronous versus synchronous
  - ✓ Character-oriented versus bit-oriented
  - ✓ Framing
  - ✓ SDLC and HDLC
  - ✓ Frame Relay
  - ✓ ATM
  - ✓ Ethernet

- **Local Area Networks (LANs)**
  - ✓ IEEE Project 802
  - ✓ MAC / LLC
  - ✓ Ethernet
  - ✓ Token bus and token ring
  - ✓ Fiber Distributed Data Interface (FDDI)
  - ✓ 802.11 wireless LANs

- **Frame Relay and ATM**
  - ✓ Advantages and disadvantages
  - ✓ Architectures
  - ✓ Switching
  - ✓ Protocol layers
  - ✓ Applications

- **Networking and Internetworking**
  - ✓ Bridges
  - ✓ Routers
  - ✓ Gateways
  - ✓ Routing algorithms
  - ✓ IP addresses & Subnets

- **TCP/IP and the Internet**
  - ✓ TCP/IP protocol suite
  - ✓ Client-server concept
  - ✓ Domain Name system (DNS)
  - ✓ File Transfer Protocol (FTP)
  - ✓ Hypertext Transfer Protocol (HTTP)
  - ✓ World Wide Web (WWW)
  - ✓ IP version 6 (IPv6)

Exercises are provided throughout the course, reinforcing a practical understanding of the material. This gives the student practice in analyzing the protocol and understanding how the data being sent and received is used.

What You Will Learn: You will learn fundamental data communications and how networks communicate with each other to carry application information. From the various interfaces at the physical layer to the upper layers, terms and concepts are introduced and reinforced to give you a better overall understanding of how devices talk to each other locally and around the world.

Who Will Benefit From This Course: This course will be valuable for those individuals responsible for planning, designing, marketing, managing or supporting data networks or data equipment. People new to data communications would also benefit.

Course Prerequisites: A basic knowledge of mobile telephony and signaling would be helpful, but not essential.

Instructors: All of our instructors have years of experience developing and teaching technical courses at Telcordia Technologies (Bellcore) Learning Services in Lisle, IL.. They are all SS7 certified and CompTIA CTT+ Certified Professionals.

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