Course Catalog

Advanced Courses

IP LANs, WANs and Network Services [Two Days]

Prerequisites: ***Basics of Data (Packet-Switched) Networks*** or comparable basic understanding of data technologies

Who should attend: Any employee who needs to understand, sell, or support the applications, functions, systems, and workings of an IP-based Data Network

Description: This course teaches the student the terms, "myths", realities, functions and applications of an IP-based network (e.g.: Internet, Intranet, and Extranet). Since data-networking professionals expect competency in their vendors, this course will teach the precise terms and architectures of data networking (and how they're used in sales and support activities). After learning IP Protocol Basics and how IP operates across a global network, the following sections will show IP's use in Local Area and Wide Area Networks. Supporting technologies (access, Frame Relay, and ATM) will be explained and different service features, such as Virtual Private Networks, will be highlighted.

1. Introduction and Overview
    a. Mainframes versus LANs
    b. Evolution or Revolution
    c. Rosetta-Stone Chart
    d. Services By-the-Layers
2. Internet Protocol Basics
    a. IP Functions
    b. Addresses (Public/Private)
    c. Who's running the Show?
    d. What's "unreliable" about IP?
    e. Debunking the IP "myths"
3. Local Area Networks
    a. Applications
    b. Bus, Ring, and Star
    c. NICs and Software
    d. Hubs, Switches and Routers
    e. In-building networking
4. Routers and Routing
    a. Router Functions
    b. What is 'brain cloning'?
    c. Router Security
    d. Private Addressing (NATs)
    e. Future directions
5. Access Alternatives
    a. Telco challenges
    b. xDSL services
    c. Fiber, SONET/SDH, WDM
    d. Cable access
    e. Wireless access
    f. Emerging access technologies
6. Wide Area Networks
    a. Services By-the-Layers
    b. Why not Private Lines
    c. Frame Relay & ATM
    d. IP-based alternatives
    e. IP versus ATM
7. Virtual Private Networks
    a. Intranets Defined
    b. The need for Extranets
    c. Tunneling versus Encapsulation
    d. Build or Buy Alternatives
    e. Quality of Service and SLAs
8. Course Review and Summary

IP, Networking and VPNs (Technical & Support Focus) [Two or Three Days]

Prerequisites: ***Basics of Data (Packet-Switched) Networks*** or comparable basic understanding of data technologies

Who should attend: Any employee who needs a detailed understanding of the applications, functions, systems, and workings of an IP-based Data Network

Description: This course teaches the student the details of how an IP-based network functions. The student will be taught the terms, "myths", realities, functions and applications of an IP-based network (e.g.: Internet, Intranet, and Extranet). Since data-networking professionals expect competency in their vendors, this course will teach the precise terms and architectures of data networking (and how they're used in design and support activities). After learning IP Protocol Basics and how IP packets are routed across a global network, the following sections will show supporting technologies (physical access, Frame Relay, and ATM) and overviews of different service features, such as Voice over IP, Network Security and Virtual Private Networks.

1. . Introduction, Overview and Models
    a. The beginning for IP
    b. Why the interested in IP
    c. The benefits of IP
    d. "Network Rosetta Stone Model"
2. Layer 4 and Layer 3 Protocols
    a. Definitions for TCP(UDP)/IP
    b. Problems solved with IP
    c. What is "unreliable" about IP?
    d. Structure of IP headers
    e. URLs versus DDNs
    f. Assignment of IP addresses
    g. Structure of TCP (UDP) headers
3. Routers and Routing
    a. How routers operate
    b. Static and Dynamic Addressing
    c. Public and Private Addressing
    d. DHCP and NATs
    e. Overview of RIP, OSPF, BGP
    f. Three Network models
4. Layer 2 and Layer 1 Access Protocols
    a. Layer 1 Telco "Wired" access
    b. Coax, Fiber, and Wireless
    c. Layer 2 Alternatives
    d. Ethernet MANs
    e. Network Services Chart
5. Voice over Internet Protocol (VoIP)
    a. The main benefits
    b. Five functions of a Gateway
    c. H.323 versus SIP
    d. Softwitch Overview
6. Network Security
    a. Where the risk REALLY IS
    b. Encryption and Tunneling
    c. Security Options (per layer)
7. Virtual Private Networks (VPNs)
    a. Three cost-savings for VPNs
    b. Build or Buy your VPN
    c. Elements to a VPN
8. Appendix