Introduction Enterprise TCP/IP

Course Summary

Description

This course offers an overview of the primary concepts of TCP/IP (Transmission Control Protocol / Internet Protocol). The class begins with a general introduction to networking, which is discussed in terms of both computers and the Internet. Next, the course progresses through TCP/IP protocols, implementation and management. In addition, the instructor will incorporate labs and exercises throughout the course where appropriate to let the student apply what they have learned in real world scenarios. Finally, TCP/IP internetworking equipment and security issues will be discussed during the class.

Objectives

At the completion of this course, the student will be able to:

- Understand the history of TCP/IP and its evolution as a network protocol
- Relate the binary (base 2) number system and the decimal (base 10) number system
- Conceptually design a network
- Describe the concepts behind routing and the logical flow of data
- Understand the security issues and possible ways to protect a network
- Use basic TCP/IP utilities and tools

Topics

- Simple Networking concepts
- Wide Area and Remote Connectivity
- Networking and Data Transmission Standards
- IP Addresses
- Domain Name System (DNS)
- Routing
- Internet Control Message Protocol (ICMP)
- Security
- Managing a TCP/IP Network
- IPV6

Audience

This course is intended for those who want to learn about TCP/IP's structure and its implementation. Since TCP/IP is such a widely used protocol, technicians, network managers and almost any person who deals with a TCP/IP network in some way or another could benefit from this class.

Prerequisites

The student should have a basic operational knowledge of computers.

Duration

Three days

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Course Outline

I. Introduction
- A. Class logistics
- B. Course overview

II. The Basics
- A. Definitions
  - i. Network
  - ii. Protocol
- B. TCP/IP
  - i. History
  - ii. Benefits
- C. Intranets and Extranets

III. Networking 101
- A. The two number systems
  - i. Binary
  - ii. Decimal
- B. Logic Tables
- C. Topologies
  - i. Star
  - ii. Bus
  - iii. Ring
- D. Network Mediums
  - i. Ethernet
  - ii. Token ring
  - iii. ISDN
  - iv. Frame Relay
  - v. SMDS
  - vi. FDDI
  - vii. ATM
  - viii. DSL

IV. Wide Area and Remote Connectivity
- A. Protocols
- B. Extending the network
  - i. Repeaters
  - ii. Bridges
  - iii. Routers

V. Standards
- A. OSI Model (Seven layer)
- B. TCP/IP Alternative
- C. RFCs
- D. TCP/IP vs. OSI

VI. IP Addresses
- A. Classes
- B. Network vs. Host Address
- C. Subnetting and Segmentation

VII. Domain Name System (DNS)
- A. Numbers to Names
- B. Structure
- C. Hierarchical Order

VIII. Routing
- A. ARP-Address Resolution Protocol
- B. Reverse ARP
- C. Types of Routing
  - i. Direct
  - ii. Static
  - iii. Dynamic

IX. Internet Control Message Protocol (ICMP)
- A. Error Messages
- B. Query Messages

X. Security
- A. Access
- B. Planning
- C. Passwords
- D. Firewalls

XI. Managing a TCP/IP Network
- A. Network Health
- B. Troubleshooting
- C. Ping
- D. Traceroute
- E. IP Tunneling
- F. TCP/IP Applications
  - i. FTP
  - ii. Telnet
  - iii. SMTP, etc.

XII. The Future-IPV6

XIII. Course Review

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