

CIW Foundations Series – Course 3: Networking Fundamentals (March 2002)

Networking Fundamentals is a 12-hour class designed to teach students fundamental networking concepts and practices. Topics include network architecture and standards, networking protocols, TCP/IP, Internet servers, server-side scripting and database connectivity, and security.

Topics

Introduction to Networking

Networks Defined
Networking Evolution
Mainframes
Client/Server Model
Web-based Networking
Networking Categories
Network Topologies
Network Operating Systems
Novell NetWare
Microsoft Windows NT/2000
UNIX

Networking Protocols

The Need for Protocols
OSI Reference Model
Packets
OSI/RM Protocol Examples
Major Networking Protocols: TCP/IP, IPX/SPX, NetBEUI, and AppleTalk, Data Link Control (DLC), Systems Network Architecture (SNA)
Choosing and Combining Protocols

LANs and WANs

Basics of LANs and WANs
Local Area Networks (LANs)
Wide Area Networks (WANs)
Network Access Points (NAPs)
Common Network Components
Transmission Media and Types
IEEE LAN Standards
Additional LAN Standards
WAN Standards
T-Carrier and E-Carrier Systems

TCP/IP Architecture and Internet Addressing

Introduction to TCP/IP
Internet Architecture
Requests for Comments (RFCs)
Internet Protocols
Demultiplexing
Introduction to Routing
Routing Protocols
Port Numbers
Internet Addressing
Internet Address Classes
IP Addressing Rules
Reserved IP Addressing
Subnet Masks
Normal TCP/IP Desktop Configurations
Diagnostic Tools for Internet Troubleshooting

Internetworking Servers

The Role of Servers
Internetworking Servers
File and Print Servers
HTTP Server Essentials
Proxy, Caching, Mail, Mailing List, Media, DNS, FTP, News, Certificate, Directory, Catalog, and Transaction Servers
The Internet Daemon: inetd
Mirrored Servers
Choosing the Ideal Server
Popular Server Products

Server-side Scripting and Database Connectivity

Introduction to Scripting
Client-side and Server-side Scripting
HTTP Gateways
HTML Forms and Form Processing
Common Gateway Interface (CGI)
CGI Alternatives: Server Programming Interfaces, Scripting Technologies, and Java Servlets
Databases, Database Connectivity, and Connectivity Implementations

Network Security Essentials

Reasons for Security
Defining Security and Assets
Security Threats and Attacks
Viruses and the Hacker Process
Defeating Attacks
Auditing
Intrusion-Detection Software
Authentication
Encryption
Country-Specific Encryption Standards
Network-level Protocols and Encryption
Virtual Private Networks (VPN)
Secure Sockets Layer (SSL)
Digital Certificates
Firewalls, Packet Filters, Proxy Servers, and Firewall Topology
Firewall Summary

Target Audience

All professionals required to use the Internet in their daily job functions. Information in this course is required for all levels of specialization in the CIW program.

Job Responsibilities

Understand the common core of Internet knowledge, and apply the foundation skills required for further specialization.

Prerequisites

Students must have completed *Internet Fundamentals* and *Web Page Authoring Fundamentals* or have equivalent Internet knowledge.

Duration

12 hours