

TCP/IP

Protocols, Addressing, Routing

In the IT world, the TCP/IP protocol stack plays a predominant role. Even applications such as telephony, which formerly had nothing to do with IP, are increasingly being migrated to IP. No networker can do without knowing this protocol.

Course Contents

- TCP/IP Protocol Family
- Encapsulation of IP
- Public and Private IP Addresses
- IP Networks and Subnetmask
- Address Resolution (ARP)
- NAT and PAT
- Domain Name Service (DNS)
- Routing and Routing Protocols (RIP, OSPF, IS-IS, and BGP-4)
- ICMP for Troubleshooting
- TCP: Ports, Flow Control, and Acknowledgement
- UDP and its Particularities
- Standardized Applications: HTTP, Telnet, SSH, DHCP, FTP...
- Voice over IP
- MPLS
- Hands-On Exercises at the Test Network

In this course from the ExperTeach Networking series, each participant will receive the comprehensive ExperTeach course documentation.

Target Group

This course constitutes the networkers' ABC and therefore addresses everyone dealing with communications networks.

Knowledge Prerequisites

Basic network know-how is the prerequisite for a successful participation in this course.

Course Objectives

The know-how imparted in theory and practice enables the participants to actively plan, set up, operate, and administrate IP-based networks.

Reservation and Registration

We will be glad to make a free and non-binding course reservation for you for the duration of two weeks. On www.experteach-benelux.com under *Registration*, you can conveniently make course reservations, registrations, and hotel reservations. Alternatively, call us under +31 (0)76 52 32 950.

For closed groups of participants, we can modify the course contents according to your requirements. Do not hesitate to contact us!



3 days €1,395 exclusive of V.A.T.

Course date (dd.mm.yy)/Location

Course dates available on request

Up-to-date information: www.experteach-benelux.com

INIP



EXPERTeach





- 1 An Overview of the TCP/IP World**
 - 1.1 The Basic Concept
 - 1.2 Typical Scenarios with IP
 - 1.2.1 IP in the LAN
 - 1.2.2 IP in the Internet
 - 1.2.3 IP in the Enterprise Network
 - 1.3 The Protocol Family
 - 1.4 Layer 2
 - 1.5 The Standards
- 2 The Internet Protocol in Detail**
 - 2.1 The Header—Format and Functions
 - 2.1.1 Version and Length Field
 - 2.1.2 Type of Service
 - 2.1.3 Fragmentation
 - 2.1.4 Time to Live
 - 2.1.5 Options of the IP Header
 - 2.2 IP Addresses and IP Networks
 - 2.2.1 IP Networks
 - 2.2.2 Subnet Mask
 - 2.2.3 Broadcast Addresses
 - 2.2.4 Multicast Addresses
 - 2.2.5 Practical Application of Subnetworks
 - 2.2.6 Route Aggregation and CIDR
 - 2.2.7 History: Classful Networks
 - 2.2.8 Unambiguousness of the IP Addresses
 - 2.2.9 Private Addresses with NAT and PAT
 - 2.3 Auxiliary Protocols
 - 2.3.1 ARP—The Address Resolution
 - 2.3.2 ICMP—Troubleshooting and Diagnosis
- 3 Hands-On Exercises in an IP Network**
 - 3.1 The Test Network
 - 3.2 Configuration of the End Devices
 - 3.3 Erroneous IP Address
 - 3.4 The Address Conflict
 - 3.5 Erroneous Netmask
- 4 IP Routing—The Path through the Network**
 - 4.1 Data Transport
 - 4.2 Routing Protocols
 - 4.2.1 Static or Dynamic Routing
 - 4.2.2 RIP
 - 4.2.3 OSPF and IS-IS
 - 4.2.4 BGP-4
 - 4.3 MPLS
- 5 Applications of the TCP/IP World**
 - 5.1 The Transport Protocols
 - 5.1.1 UDP—Connectionless and Unacknowledged
 - 5.1.2 TCP—Connection-Oriented and Acknowledged
 - 5.2 Standard Applications of the TCP/IP World

- 5.2.1 DHCP for Automated IP Configuration
- 5.2.2 DNS—Working with Names
- 5.2.3 Remote Access via Telnet or SSH
- 5.2.4 SNMP for Network Monitoring
- 5.2.5 File Transfer with FTP
- 5.2.6 E-Mail—Electronic Mail
- 5.2.7 HTTP—World Wide Web
- 5.3 Voice over IP (VoIP)

- 6 IPv6—The Next Generation**
 - 6.1 The New Header Format
 - 6.2 The New Addressing Concept
 - 6.3 New Functions of IPv6?
 - 6.4 Interworking with IPv4

- A Useful Commands**
 - A.1 ARP
 - A.2 IPCONFIG
 - A.3 PING
 - A.4 ROUTE
 - A.5 TRACERT
 - A.6 PATHPING
 - A.7 NETSTAT



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