

IP Multicasting

Course No. 1202

Duration: 2 Days

Course Overview:

Today, telecommunications networks are delivering data and multimedia services to users. The next step in Internet technology is its distribution to multiple individual hosts without overloading the network. IP Multicasting allows a station to send a single stream of packets into the network in order to be delivered to the subscribing users. This is the basis for many new networking applications, such as conferencing, distance learning or software and data distribution.

This course provides an understanding of how IP multicasting works and once completed it, attendees will be able to: Describe the application and basic function of Multicast IP - Identify the IP Multicast model - Understand multicast protocols such as IGMP, PIM, MOSPF and others - Understand the issues of deploying applications based on multicasting.

Who should attend?

Developers of Advanced Communication Applications, particularly application developers of Video/Voice Over the Internet.

Prerequisites:

Delegates must have a good knowledge of IP, Routing concepts and protocols such as RIP, OSPF and BGP and LAN concepts, including basic Ethernet.

Course Content:

1. Introduction

- What is multicasting?
- Why multicast?
- Multicast applications

2. IP Multicast Model

- Basic Concepts
- Routers & End Stations

3. Addressing

- IP Addressing basics
 - Address Classes A, B, C and D
 - Sub-network Addressing
 - Classless Addressing
- Addressing for Multicast IP
- Multicast address blocks
- GLOP
- IPv6 Multicast and Anycast
- Ethernet and IEEE 802
 - Addressing
 - Multicasting over 802 Networks
 - Mapping layer 3 addresses onto layer 2 multicast addresses

4. End Station to Router

- The Internet Group Management Protocol
 - IGMPv1
 - IGMPv2
 - IGMPv3
 - IGMP Proxy
- Switches and multicasting
 - Controlling multicast traffic
 - IGMP Snooping
 - CGMP (Control Group Management Protocol)
 - GMRP (GARP Multicast Registration Protocol)
 - RGMP (Router-port Management Protocol)

5. Router to Router: Multicast Routing Protocols

- Basics
 - Distribution trees
 - Source Distribution Tree
 - Core based trees
 - Shared Distribution Tree
 - Rendezvous Points
 - Reverse Path Forwarding (RPF)
 - Dense Mode & Sparse Mode
- Protocols
 - Distance Vector Multicast Routing Protocol (DVMRP)
 - Multicast Open Shortest Path First (MOSPF)
- Protocol-Independent Multicast (PIM)
 - PIM Dense Mode
 - PIM Sparse Mode
 - PIM-SSM
 - Bidirectional PIM

6. Interdomain Multicasting

- The Multicast Source Discovery Protocol (MSDP)
- MBGP

7. Multicast Applications

- Overview
 - One to Many
 - Many to Many
 - Many to One
- Service requirements
- Application example: IPTV

8. Summary