broadcast communications

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# Training Course Description

**Course:** **TCP / IP and Networking Essentials for Broadcast and TV Engineers**

**Course code:** **ESS106**

**Duration:** **3 day**

### Format:

Classroom explanation, demonstration and practical work.

### Supporting materials:

Each delegate completing the course will receive the following:

- A full set of course notes
- Certificate of attendance

### Overview:

The course provide delegates with an understanding of the technologies, vocabulary and techniques and used in network, Ethernet and Internet Protocol technologies, and the use of practical diagnostic techniques.

### Who should attend:

Technical staff working with network based technologies who need to become familiar with the specific methods, concepts and terminology used in this field.

### Prerequisites:

A general familiarity with technical concepts and an understanding of binary arithmetic is assumed, prior knowledge of networking or the computer industries is not necessary. Due to the high hands-on contents delegates will require access to individual PCs. Internet access from the classroom would be highly beneficial.

### Key benefits:

At the end of the course delegates will be able to:

- Describe the key functionality of a networked system
- Describe the physical processes of an Ethernet system
- Describe networking and internetworking processes and protocols
- Understand the unicast, multicast and broadcast IP processes
- Describe the creation of networks and subnetworks.
- Understand the use of Ethernet and IP diagnostic commands and tools
- Create IPTV multicasts

## Course Content

**Networking Concepts**

- OSI Open Systems Interconnection (OSI 7 layer model)

**Ethernet**

- X base T physical connection systems
- Coaxial and optical Ethernet physical implementations
- CSMA / CD
- VLAN and tagging
- Ethernet Frames and Jumbo Frames
- Repeater, Bridges, Hubs & Switches
- 10, 100 & 1000 Mbit/s Ethernet

**Internet Protocol**

- Internet Protocol RFCs (Requests for Comment)
- The IP Datagram
- IP Address classes
- IP communication over Ethernet
- Address Resolution Protocol (ARP) {RFC 826}

**IP Routing**

- Simple IP Routing
- Multiple hop routing
- Sub nets and subnet masks
- Segmenting network traffic
- Hostnames and Aliases

**TCP and UDP**

- Sockets, Ports and Services
- Transmission Control Protocol (TCP)
- Universal Datagram Protocol (UDP)
- IP Multicasting
- IPTV and Video over IP
- NAT - Network Address Translation

- **Real Time Protocol (RTP)**

- **The Domain Name System (DNS)**

**Use of IP commands**

- arp
- ping, pathping and tracert
- ipconfig
- netstat
- telnet

- **FTP (File Transfer Protocol) and TFTP (Trivial File Transfer Protocol)**

**SNMP**

- OIDs (Object Identifiers) and MIBs (Management Information Bases)
- Messages and Traps
- Structure of SNMP messaging

- **Creation and reception of IPTV multicasts using the VLC application**

- **Practical network traffic analysis and trouble shooting using the Wireshark "packet sniffer"**