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# Course Profile

## Executive Briefing of Data Communications

**ETS302**

**Duration:** 1 day

**Objectives:**

**P**rovide an explanation of the key concepts of data networks

**E**xplain the interaction between data networking and the business requirements of an organisation without becoming too involved in the details of the technologies.

**P**rovide an understanding of both positive and negative impacts of the different technologies, with particular attention being paid to security issues.

**D**escribe the key business issues and how these are influenced by the networking technologies described.

**Who should attend:**

Any executive requiring a greater understanding of the impact of data Communications on the business environment.

**Pre-requisites:**

None.

**Course Style:**

The course is presented as a mixture of explanation and discussion, with questions and contributions from delegates being especially welcome. The overview concludes with a discussion on key business issues.



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### Data Networking Applications

Each of the key requirements for a data network is discussed using some common applications as examples. A brief history of the development of the industry is given, and the overall structure is described.

#### Key requirements

Throughput  
Delay  
Reliability  
Security

#### Common Applications

E-mail  
File Transfer  
Web Access  
Remote Login

#### A brief history of the development of the industry

Public Networks  
Local Area Networks  
The Internet

#### An overview of the structure of the industry

Public Data Networks  
Local Area Networks  
Software  
Hardware  
Standardisation and Regulation  
Regulation



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### **Application Standards**

Two of the most common applications are described in more detail, with emphasis on the use of the World Wide Web.

- E-mail
- Web Access
- World Wide Web
- Browsers
- Servers
- Markup Languages

### **Wide Area Networks**

The use of telephony networks and packet switched networks are compared, and the three generations of packet switching are described.

- Common Factors
- Leased Lines
- Dial-up Lines
- Packet Switched Networks
- X.25
- Frame Relay
- ATM



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### **Local area Networks**

The key LAN technologies are compared, and the reasons for the domination of Ethernet are explained. The impacts of the changes from traditional LANs to modern switched networks are discussed.

Common Factors

Ethernet

Token Ring

FDDI

Switched LANS

VLANs

Wireless LANs

### **The Internet**

A brief overview of the Internet and the application of the technologies to internal networks is given. The main services offered by an ISP are explained.

The Structure

The organisations

Addresses, DNS Names and URLs

The Company Intranet

The Company Extranet

The ISP

### **The Infrastructure**

This section describes the underlying infrastructure of data transmission. It compares copper cable, optical fibre, and wireless technologies as used internally in local area networks and in the wide area with particular emphasis on accessing ISPs.

Internal

Cables

Optical Fibre

Wireless Technologies

Wide Area/Internet

Leased Lines

Dial-up

Modems

ISDN

Always-On

DSL

Fixed Wireless

Mobile



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### Security Issues

The prime security requirements are explained, followed by the current technologies, and where they are used. The specific security issues in the three types of network are discussed with particular emphasis on Internet technologies. Finally the impact of security on the network performance and management is examined.

#### Security Requirements

- Confidentiality
- Integrity
- Non-Replay
- Authentication
- Non-repudiation

#### Security Technologies

- Symmetric Key Encryption
- Public Key Encryption
- Message Digests
- Digital Signatures
- Digital Certificates

#### Security on Public Networks

#### Security on LANs

#### Security on the Internet

- Firewalls
- Tunnels
- VPNs
- Commercial Applications

#### Performance issues

- Throughput
- Management

### Business Issues

The overview will conclude with a discussion of the key business issues, and how they are impacted by the technology described above. This will include the impact of voice and data convergence, multimedia and wireless.



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