



Local Area Network (LAN) and Intranet

DL TC74



Objectives:

Training of an engineer for the installation and maintenance of Local Networks, capable of:

- knowing the principles, the standards and the devices that are normally used in LANs.
- installing LANs and Intranet in compliance with the current cabling standards.
- installing the protocols and presetting the configurations on the network computers
- performing maintenance, troubleshooting and tests on LANs.

Educational Path:

The Educational Path of the Training Package covers the following subjects:

- **Introduction to local networks**
What is a local network, Components of a local network, the transmission media, the structured wiring, Network topologies, Network protocols: OSI Model, Technologies and standards for the local networks, Network devices, Network operating systems.
- **Signal coding and transmission media**
Coding techniques, the transmission media, the coaxial cable, the telephone wire, the optical fibres.
- **The OSI model and the protocols LAN IEEE**
The OSI reference model, OSI Model: Physical Level and Line Level, The project IEEE 802: Sublevel LLC, Sublevel MAC and Physical Level.
- **Networks: Ethernet, Fast Ethernet and Gigabit Ethernet**
Standard Ethernet and IEEE 802.3, the sublevel MAC, CSMA-CD access method, the physical level, Ethernet: 10 Mbps (10 Base-T), Fast Ethernet: 100 Mbps, Gigabit Ethernet: 1000 Mbps.
- **Network devices**



The typical devices of an Ethernet networks, Transceivers, Repeaters, Media converters, Hubs, Switches.

- **Structured wiring according to standard EIA/TIA 568A - ISO/IEC11801**

What is the structured wiring, The wiring standards, Content and purpose of the standards, Topology of a structured wiring, Main elements and nomenclature, Horizontal wiring, Dorsal networks.

- **Protocols: NetBIOS, NetBEUI, TCP/IP, IPX/SPX**

The protocols of level 3, 4, 5, 6, 7, The interface NetBIOS, The protocol NetBEUI Network protocols: IPX/SPX, IPX protocol, SPX protocol, Internet protocols: TCP/IP, IP protocol, TCP protocol.

- **Intranet and diagnostics on the networks**

What is an Intranet, Terminal emulation, Files transfer, Electronic Mail, World Wide Web, TCP/IP tools.

- **Architecture of a Peer-to-Peer network Operating System**

General architecture, Redirector and File System, Support of multiple networks, NDIS architecture, TCP/IP architecture, Client and Server Peer architecture, Programming interfaces, Architecture and serial communications.

- **Architecture of a network Server Operating System**

General architecture, NDIS specifications, Network protocols, Transport Driver Interface, Network services: Server, Network services: Workstation, Service DHCP, DNS and WINS.

Composed of:

TC74-MC: LAN structured cabling

This module shows the structure of the cabling of the LAN according to the standard EIA/TIA 568A and ISO/IEC 11801.

It includes:

- Diagram of the structured cabling.
- Sockets RJ45 and for optical fibre.
- Patch panel.
- Users' sockets.

TC74-DS: Switching HUB (Quantity 3)

- IEEE 802.3, 802.3u compatible.
- Transmission speed: 10/100 Mb/s.
- 4 RJ45 ports.
- External power supply.

TC74-DM: Media Converter (Quantity 2)

- Conversion from RJ45 (10Base-T) to optical fibre (10Base-FL).
- Connections: 1 x RJ45, 1 x ST (RX/TX).
- Compatibility with cat. 3, 4, 5, optical fibre cable 62,5/125 ST.
- IEEE 802.3 compatible.

Complete with all accessories and cables and Software package with theory, simulations and questions based on Web technology.

Necessary accessory (not included):

- N.2 Personal Computer with Ethernet network interface and Windows Operating System.