

Data Communication

Course Overview

This module provides basic concepts and terminology of networking, media types, TCP/IP and subnetting, installing a wired and wireless networking and troubleshooting network problems using hardware and software tools.

Course Contents

Module 1: Introduction to Networking

- Introduction of Networking
- Need of Computer Network
- Types of Network
 - By Components Role : Server/Client, P2P
 - By Geographical Area : LAN, CAN, MAN, WAN
 - By Topology : Bus, Star, Ring, Mesh
- Components for Networking
 - PC, Network Card, Hub, Switch, Router
- VLAN, VPN

LAB : File sharing in Linux and Windows

Module 2: IP Addressing

- What is IP address?
- Difference between Public and Private IP Address
- Network Address Translation (NAT)
- Difference between Dynamic and Static addresses
- Binary Numbers
- Subnetting and CIDR
- Explain special IP addresses

LAB : Configure IP Address in a PC

Module 3: Internetworking Devices

- Explain switch, working of switch and different switching methods
- Explain the working and features of routers
- Explain routing protocols
- Explain gateway
- Troubleshoot different networking devices

LAB :

Module 4: Wired Network

- Cables: RJ45
- Cabling tools: Punch down tool, RJ45 crimping tool
- Working with cables: patch cable, crossover cables, color code, crimping cables, modular outlet

LAB : Crimping RJ45 Cables

Module 5: Wireless Network

- 802.11 wireless networking
- Operation of wireless networking

LAB : Configure Wireless Router and connect to Laptop

Module 6: Testing and Troubleshooting Networks

- Identify the tools used for troubleshooting physical networks
- Discuss the troubleshooting process
- Explain cable testing
- Explain network management and troubleshooting
- Explain diagnostic utilities for troubleshooting TCP/IP

LAB : Testing connectivity in LAN