Scientech

Understanding of Local Area Network (LAN) Scientech 5002A provides the understanding of all the fundamentals of networking. It helps the users to gain knowledge on all network layers, cable designing and building of complete network of computers. The users can understand and actually implement various topologies using different standards given by IEEE. Actual connections can be made in different topologies and data can be transferred. The users will understand the protocols, topologies used in networking, measurement of error rate, throughput and effect of errors on protocols. The versatile software provided with Scientech 5002A will assist the users to observe the various effects and configurations on network along with the graphical representation.

Features

- PC to PC communication with IEEE 802.3
- Peer to Peer network
- Client - Server network
- Design of Star topology using 100Base-Tx
- Design of Ring topology using DB9
- Simulation of Distance Vectors and Link State Algorithms
- Socket Programming exercise for LINUX
- Encryption/Decryption Technique
- User can send any file over LAN.
- Detailed introduction to TCP/IP Model (4 Layer Model)
- Video Tutorials for software operation
- Creation of cables for network connections
- Network design using RJ45 & DB9 connectors
- Wireless LAN with 803.11b/g

- Socket programming and processing
- Network monitoring
- LAN Protocols - stop and wait
- Data rate up to 100Mbps
- Variable packet size
- Variable packet delay
- Error generation (Manual and Auto)
- Color coded real time graphical representation of entire transmission & reception
- Graphical Analysis of LAN performance with various parameters and protocols
- Save / Print option for graphs
- User friendly software
- Switch faults in both hardware & software

Scope of Learning

- Study of Addressing in TCP/IP

- Study of Ping Command

- Study & Implementation of cable designs in Networking

- Implementation of PC to PC with IEEE 802.3

- Implementation of Peer to Peer Network

- Implementation of Client- Server Network

- Implementation of Star topology using 100Base Tx

- Ethernet LAN protocol to create scenario and Study the performance of CSMA/CD (Carrier Sense Multiple Access with Collision Detection) Protocol through simulation

- Implementation of Wireless LAN Protocol to create scenario and study the performance network with CSMA/CA protocol and compare with CSAMA/CD protocol

- Implementation and study of Stop and Wait protocol

- To create the scenario and study the performance of token bus protocols through simulation

- Implementation of Ring topology using DB9

- To create the scenario and study the performance of token ring protocols through simulation

- Implementation of Distance Vector Routing algorithm

- Implementation of Link state routing/Dijkistra's algorithm

- Implementation of Data Encryption and Decryption

- Study of Socket programming

- Study and implementation of Subnet calculation using software

- Study and implementation of CRC Technique using software

Technical Specifications

Hardware :

PC to PC using RJ-45 Connector

Star topology using RJ45 Connector

Ring topology using DB9 Connector

Data transmission speed: 10/100 Mbps

4 Nodes

Software:

Star, Bus & Ring selection

Protocols: CSMA/CD, CSMA/CA, Stop N Wait, Sliding Window, Token Bus, Token Ring

Packet size: 128, 256, 512, 1024, 2048, 4096, 8192, 16384

Inter Packet delay: $1000 - 5000$ ms

Error generation: Acknowledgment lost, bad packet, auto error generation Complete analysis of Network & Protocols

Graphical Representation:

Real time Graphic representation of data on s/w screen with packet details

Network details:

Indication of computer name, IP address, MAC address, Port number, status of network.

Network & protocol analysis:

Indication of packet serial number, file name, file size, file number, receiver name, receiver IP address , total packets, packet length, time out, protocol, topology, receiver, MAC address, port number, file send start time, file sent completion time, transmission time data rate(Mbps),percentage error.

Dimensions (mm)	:	W 326 x D 252 x H 52
Power Supply	:	100V - 240V AC, 50/60Hz
Weight	:	1.5Kg (approximately)
Operating Conditions	:	0-40°C, 85% RH
Included Accessories	:	Rj45 – RJ45 Connector Cable -4nos.

USB dongles - 4nos.

DB9 connector cable -4nos.

END Terminators -2nos.

Patch cords 16" (2mm) -8nos.

Mains cord -1no.

USB to serial converter -4nos