



VALIDATION OF LAN SYSTEM

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1.0 DESIGN PARAMETERS

- 1.1 Define the Lan Model
 - The Open System Interconnection (OSI)
 - Others
- 1.2 Define the various protocols used

The Physical Layer

Transmits raw data bits over a communication channel (mostly mechanical and electrical issues)

The Data Link Layer

Guarantees to the network layer that there are no transmission errors by breaking the input data stream up into frames and sending back acknowledgement frames

The Network Layer

Controls the operation of the involved subnet; main issues are routing (determine a way from source to destination) and dealing with problems of heterogeneous networks, e. g. different size requirements of transmitted data blocks

The Transport Layer

Splits up data from the session layer if necessary (segmentation) and ensures that the pieces arrive correctly

The Session Layer

Allows users on different computer systems to establish a session between them, i. e. they are able to transfer files or log into a remote system; the conditions of communication are laid down, for example full-duplex or half-duplex

The Presentation Layer

Unlike the layers before it is concerned with the syntax and semantics of the transmitted information; it is concerned with all aspects of information representation such as data encoding, data compression and encryption

The Application Layer

Contains a variety of commonly needed protocols like handling with different terminal types and file systems; a label to identify the communication process, its origin and destination application is added to the transmitted information



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Define true end-to-end layers, i. e. the layer on the source system carries on a communication process with the same layer on the destination system.

Define the other layers i.e. the lower layers wherein the protocols are between a system and its immediate neighbor

1.3 Define Medium Access Control (MAC) sublayer, which determines how the devices are attached to the network.

1.4 Define the intended speed of computer networks. The speed is measured in terms of the amount of information units (bits) that can be transmitted per second. Often, to transmit one character of a text, eight bits are necessary. Thus, if a network would have a speed of 8 bits per second (bps), one character per second could be transmitted. The speed of real networks is much higher. Usually Kilo, Mega, and Giga bits per second are common measures (Kbps, Mbps, Gbps), which mean thousands, millions or billions of transmitted bits per second.

1.5 Define the intended speed for running individual application softwares

1.6 The topology of a network (representation of how the devices in this network interact)

- Bus topology
- Ring topology

1.7 Define the transmission media used

Twisted pair

Two insulated copper wires twisted together in a regular spiral pattern; one pair establishes one communication link; it transmits electromagnetic signals. Twisted pairs are distinguished between shielded and unshielded twisted pairs according to their protection against electromagnetic fields

Coaxial cable

A single insulated inner wire is surrounded by a cylindrical conductor which is covered with a shield; it transmits electromagnetic signals. Coaxial cable is classified into two categories: base band (uses digital signals) and broadband (uses analog signals) coaxial cable

Optical fiber

Consists of three concentric sections, the core (a fiber conducting optical rays), the cladding (reflecting optical rays) and the jacket (surrounding one or many



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fibers to protect them); transmits optical signals, which must be transformed to electromagnetic signals

1.8 Defining Objectives

Define what the system is supposed to do. This should be as quantitative as possible and related to the creation, storage, transfer, and processing of information. The goals must be based on the present situation, which can certainly be improved. The whole environment of the planned system should be looked at; there should be no restrictions at that point of the process. This leads to some key product goals from which more specific system requirements can be derived.

1.9 Determine Communication Needs

Explain how information has to be moved what the network has to do. Network requirements have two major points: compatibility (the possibility to connect the devices) and capacity (maximum performance of the net). Thus, the selection of a network should take into account interconnection with other networks and future growth of the network.

1.10 Define other objectives

The network has to meet the established requirements and to provide the needed services

- Network must be expandable with only incremental costs
- Network is reliable (total network failures are prevented)
- Network can handle equipment supplied by several vendors
- Ease of installation, maintenance, reconfiguration, interconnection
- Software availability
- Limited Access capability
- Biometrics
- Data Migration and Archiving from one computer to the other
- Software access from multi-user versions of the software
- Audit trail
- Read Only/Read and Edit features
- Electronic Time

1.11 Correct storage retrieval Meta data

1.12 Communication with Printer,

- Scanner and other peripheral
- Devices for all points

1.13 Correct Function of special Application Software for all USERS



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2.0 PERFORMANCE QUALIFICATION

2.1 Data Access

Prepare Test cases with slightly distrtal combination of Login ID and password and attempt access.

Designated ID

S.No.	Similar ID /Password	Access feature at				
		1	2	3	4	5

2.2 Audit Trail

2.2.1 File to be checked :

2.2.2 Persons having access :

2..2.3 Data

S.No.	Operation	Time	Person who accessed to File
1.	First access	09.00 AM	
2.	First Change	10.00 AM	
3.	Second Change	11.00 AM	
4.	Third Change	12.00 noon	
5.	Fourth Change	01.00 PM	

2.3 Communication with Peripheral

2.3.1 Peripheral to be checked -Printer :

2.3.2 File to be checked :

2.3.3 File Size :

S.No.	User No.	Communication Print	Result when compared with standard print
1.	1		
2.	2		
3.	3		
4.	4		
5.	5		



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2.4 Data Integrity

S.No.	User No.	File Access	Defects Observed in format/ Computer
1.			
2.			
3.			
4.			
5.			