**Popular LAN Technologies**

**ETHERNET**

It was one of the most popular technology among all LAN technologies. It is the technology that is covered under IEEE standard 802.3. Its features such as low-cost investment, backward compatibility, noise resistance, etc. make it a popular choice over other LAN technology. Ethernet will work on layer 1 and layer 2 of the OSI (Open System Interconnection) model. Ethernet has evolved significantly in the last few years

**POWER OVER ETHERNET**

This standard can transmit electric power and data on the same cable. Generally known as Poe, this standard is used to connect devices such as Internet Protocol (IP) cameras, and Voice over Internet Protocol (VoIP) phones. It makes use of the Ethernet Cable 5 or higher category. It doesn’t require any external AC cord or adapter. Owing to its distinct advantages Poe has emerged as a popular Ethernet standard over the years and is today used to connect various types of wireless Ethernet devices.

**TOKEN RING**

This technology was developed by IBM and it uses three-byte frames to connect computers. These three-byte frames are known as tokens, and they travel along servers or computers forming a logical structure of ring. The token ring network has data transfer rates of 4, 16, and 100 Mbps. These networks were largely used in corporate environments, but today are getting replaced by Ethernet.

**ASYNCHRONOUS TRANSFER MODE (ATM)**

It is a fast communication technique, which is cell-based. **This telecommunication standard is defined by ITU and ANSI.** It is used for transferring various types of signals in the network. One of the key advantages of ATM is that it requires no separate overlay networks for signal transmission. ATM can connect points in close and farther geographical locations.

**ARCNET**

It stands for **Attached** **Resource Computer Network**, which was used for connecting microcomputers in the 1980s. It was mainly used for automation tasks in offices. This technology is nowadays used in industrial controls.

**FDDI**

This stands for fiber distributed data interface and is another LAN technology in use today. It made use of fiber optic cables, and can transmit up to 100 Mbit/seconds. This LAN technology can deliver up to 200 kms, and it uses two rings. The first ring acts as a primary backup and second ring acts as a secondary backup. The primary ring has 100 Mbit/seconds capacity, the secondary ring can also carry another 100 Mbit/seconds, thereby adding to 200 Mbit/s.

## LAN ARCHITECTURE AND VIRTUAL LAN

## IMPORTANT FOR LONG

## WHAT IS A VIRTUAL LAN?

**Definition:**

 Virtual LAN can be defined as, the network that contains logical workgroups, servers, and all other physical devices that are connected to each other to work virtually within the large physical network on one local area network using a switch or bridge irrespective of the location. It is generally called as VLAN (Virtual Area Network). It allows the users and computers to communicate with each other without any interruption because they work on a single LAN and multicasting and broadcasting domains are shared.

### VLAN IN COMPUTER NETWORK

The**virtual LAN in the computer networking** can be implemented due to the various benefits which are discussed below,VLAN is a computer network that is widely used to enable faster communication, greater scalability, improves network management, allows the users and computers to work and communicate within the same LAN irrespective of work location and servers. It is easy to divide LAN into the group of logical segments into various broadcasting domains.

* VLAN [architecture](https://www.watelectronics.com/difference-between-von-neumann-and-harvard-architecture/) is shown in the below figure. The below diagram shows that all the computers are functioning within the same virtual LAN.
* The network that is formed with one or more physical LANs is known as a virtual LAN.
* The one or more physical LANs networks are connected together using a switch or bridge to work virtually. By using a single switch, multiple networks can be organized and managed accordingly. It reduces the cabling and reconfiguration of physical devices. It is more flexible than LAN and very easy to configure the connections.
* The switch is used to transmit the data between the computers within the same VLAN

#### **VIRTUAL LAN TECHNOLOGY**

Virtual LAN technology is very simple, less expensive, and easy to modify and maintain. Ethernet VLAN technology with IEEE 802.1Q was introduced as the first edition in 2003. It allows the network administration, separates the network devices with the configuration of routers without any use of cables.

**ADVANTAGES**

The **advantages of virtual LAN** includes

* The use of VLAN reduces the traffic of broadcast and multicasting domains in computer networks. So, that data packets easily reach the destinations.
* Enhances performance.
* It forms the workgroups and logical groups virtually to increase the communication between the users within the workgroups
* Easy to control and manage the VLAN’s because there is no need to reconfigure the routers reduces the use of devices on the network topology and cablings.
* Reduces the installation and maintenance cost
* It increases the security during the broadcasting of sensitive data on the computer network by controlling firewalls, intrusions, and restrict access to the network.
* Easy to resolve all the broadcasting issues and reduce the size of the domains of broadcast on the network.