

# Cable Internet Access and Digital Subscriber Line in Various Networks and their Types

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## Abstract

The switching method known as Asynchronous Transfer Mode (ATM) is used in telecom networks. Data is encoded into small, fixed sized cells using asynchronous time-division multiplexing. This is different from other protocols that use packets or frames of varying sizes, like Ethernet and the internet protocol suite. Both circuit switched networking and ATM share similarities. As a result, it is an excellent option for a network that must simultaneously handle real-time, low-latency content like voice and video as well as conventional high throughput data traffic. The connection-oriented model of ATM requires the creation of a virtual circuit between two endpoints prior to the actual data exchange.

**Keywords:** Asynchronous Transfer Mode (ATM); Universal Mobile Telecommunications System (UMTS); Personal Area Network (PAN); Storage Area Network (SAN); Local Area Network (LAN)

firewalls or switches make up the majority of intermediate nodes. Although general purpose computers lack specialized hardware, they may offer limited performance when it comes to packet forwarding and routing. On the basis of routing tables, which keep track of the routes to various network destinations, the routing process directs forwarding. The majority of routing algorithms only make use of one network path at a time. Multiple alternative paths can be used with multipath routing techniques. The fact that routing assumes that network addresses are structured and that similar addresses indicate proximity within the network sets it apart from bridging. A single entry in the routing table can be used to represent a group of devices using structured addresses. In large networks, routers' structured addressing performs better than bridging's unstructured addressing. On the Internet, structured IP addresses are used. On Ethernet and other similar local area networks, bridging is done with unstructured MAC addresses. Physical capacity, organizational purpose, user authorization, access rights and a variety of other characteristics are all examples of properties or features that can be used to define a network. The physical extent, also known as the geographic scale, is yet another distinctive method of classification [2].

## Introduction

### Packet switched networks and circuit switching networks

The last mile or connection between a home user and an Internet service provider, still relies on ATMs. The following are some of the various digital cellular standards: Digital Enhanced Cordless Telecommunications (DECT), Digital AMPS (IS-136/TDMA), Universal Mobile Telecommunications System (UMTS), Global System for Mobile Communications (GSM), General Packet Radio Service (GPRS), CDMA2000, Evolution-Data Optimized (EV-DO) and Enhanced Data Rates for GSM Evolution (EDGE) and integrated Digital Enhanced Network (iDEN) [1]. The selection of network paths along which to route network traffic is known as routing. There are many different kinds of networks that can be routed, including packet switched networks and circuit switching networks. In bundle exchanged networks, steering conventions direct parcel sending through halfway hubs. Network hardware devices like routers, bridges, gateways,

## Description

### Cable internet access and digital subscriber line

A nanoscale network employs physical principles distinct from macro scale communication mechanisms and has key components implemented at the nanoscale, such as message carriers [3]. Personal Area Network (PAN) is a computer network used for communication among computers and other information technological devices that are close to one person. It extends communication to very small sensors and actuators, such as those found in biological systems and also tends to operate in environments that would be too harsh for other communication methods. Personal computers, printers, fax machines, telephones, PDAs, scanners and video game consoles are all examples of devices that are utilized in a PAN. A Container might incorporate wired and remote gadgets. A PAN typically has a range of 10 meters. A wired PAN is typically constructed using USB and FireWire connections, whereas a wireless PAN is

typically constructed using Bluetooth and infrared communication [4]. A Local Area Network (LAN) is a type of network that connects computers and other devices in a small area, like a home, school, office building or group of buildings that are close together. Ethernet technology is typically used as the foundation for wired LANs. A wired LAN can be created using existing wiring, such as coaxial cables, telephone lines and power lines, using other networking technologies like ITU-T G.hn. A router can connect a LAN to a WAN. A residential local area network, also known as a home area network, is a type of Local Area Network (LAN) that is used to communicate with digital devices that are typically located in the home, typically a small number of personal computers and accessories like printers and mobile computing devices. The sharing of Internet access, typically a broadband service provided by a cable Internet access or Digital Subscriber Line (DSL) provider is an essential function. Storage Area Network (SAN) a specialized network that gives users access to consolidated, block-level data storage is known as a Storage Area Network (SAN) [5]. Disk arrays, tape libraries and optical jukeboxes are examples of storage devices that can be made accessible to servers through SANs. This allows the storage to appear as locally attached devices to the operating system.

## Conclusion

Most of the time, a SAN has its own network of storage devices that other devices can't access through the local area network. At the beginning of the 2000's, SAN costs and complexity fell to levels that made them more accessible to enterprises as well as small and medium sized businesses. A university campus network, for instance, is likely to connect a number of campus buildings to connect academic colleges or departments, the library and student housing. A backbone network is a component of the infrastructure of a computer network that serves as a route for the transfer of information between various LANs or sub networks. A backbone can connect multiple networks within a single building, between buildings or across a large area. A big

business, for instance, might set up a backbone network to connect departments all over the world. The backbone of the network is the equipment that connects the departmental networks. Network congestion and performance are essential considerations when designing a network backbone. In most cases, the capacity of the backbone network is greater than that of the individual networks that are connected to it. The internet backbone is another example of a backbone network. It is a huge, global network of fibre optic cables and optical networking that carries most of the data between WANs, metro, regional, national and transoceanic networks. A Metropolitan Area Network (MAN) is a massive computer network that typically spans a city or a significant campus. Wide area network, also known as a WAN, is a type of computer network that spans across entire continents or even a city or country. A Wide Area Network (WAN) makes use of a communications channel that connects a variety of media, including cables, radio waves and telephone lines. Common carriers like telephone companies often provide transmission facilities for WANs. The OSI reference model's lower three layers are typically where WAN technologies operate: The physical layer, the layer of data links and the layer of the network.

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