CCA-102: Data Communications

ASSIGNMENT

Q.1 What are the different types of networks?

Ans. We put together this handy reference guide to explain the types of networks in use today, and what they're used for.

11 ypes of Networks in Use Today

1.Personal Area Network (PAN):-

The smallest and most basic type of network, a PAN is made up of a wireless modem, a computer or two, phones, printers, tablets, etc., and revolves around one person in one building. These types of networks are typically found in small offices or residences, and are managed by one person or organization from a single device.

2.Local Area Network (LAN):-

We're confident that you've heard of these types of networks before – LANs are the most frequently discussed networks, one of the most common, one of the most original and one of the simplest types of networks. LANs connect groups of computers and low-voltage devices together across short distances (within a building or between a group of two or three buildings in close proximity to each other) to share information and resources. Enterprises typically manage and maintain LANs.

Using routers, LANs can connect to wide area networks (WANs, explained below) to rapidly and safely transfer data.

3. Wireless Local Area Network (WLAN):-

Functioning like a LAN, WLANs make use of wireless network technology, such as Wi-Fi. Typically seen in the same types of applications as LANs, these types of networks don't require that devices rely on physical cables to connect to the network.

4. Campus Area Network (CAN):-

Larger than LANs, but smaller than metropolitan area networks (MANs, explained below), these types of networks are typically seen in universities, large K-12 school districts or small businesses. They can be spread across several buildings that are fairly close to each other so users can share resources.

5. Metropolitan Area Network (MAN):-

These types of networks are larger than LANs but smaller than WANs – and incorporate elements from both types of networks. MANs span an entire geographic area (typically a town or city, but

sometimes a campus). Ownership and maintenance is handled by either a single person or company (a local council, a large company, etc.).

6. Wide Area Network (WAN):-

Slightly more complex than a LAN, a WAN connects computers together across longer physical distances. This allows computers and low-voltage devices to be remotely connected to each other over one large network to communicate even when they're miles apart.

The Internet is the most basic example of a WAN, connecting all computers together around the world. Because of a WAN's vast reach, it is typically owned and maintained by multiple administrators or the public.

7.Storage-Area Network (SAN)

As a dedicated high-speed network that connects shared pools of storage devices to several servers, these types of networks don't rely on a LAN or WAN. Instead, they move storage resources away from the network and place them into their own high-performance network. SANs can be accessed in the same fashion as a drive attached to a server. Types of storage-area networks include converged, virtual and unified SANs.

8. System-Area Network (also known as SAN)

This term is fairly new within the past two decades. It is used to explain a relatively local network that is designed to provide high-speed connection in server-to-server applications (cluster environments), storage area networks (called "SANs" as well) and processor-to-processor applications. The computers connected on a SAN operate as a single system at very high speeds.

9. Passive Optical Local Area Network (POLAN)

As an alternative to traditional switch-based Ethernet LANs, POLAN technology can be integrated into structured cabling to overcome concerns about supporting traditional Ethernet protocols and network applications such as PoE (Power over Ethernet). A point-to-multipoint LAN architecture, POLAN uses optical splitters to split an optical signal from one strand of singlemode optical fiber into multiple signals to serve users and devices.

10. Enterprise Private Network (EPN)

These types of networks are built and owned by businesses that want to securely connect its various locations to share computer resources.

11. Virtual Private Network (VPN)

By extending a private network across the Internet, a VPN lets its users send and receive data as if their devices were connected to the private network – even if they're not. Through a virtual point-to-point connection, users can access a private network remotely.

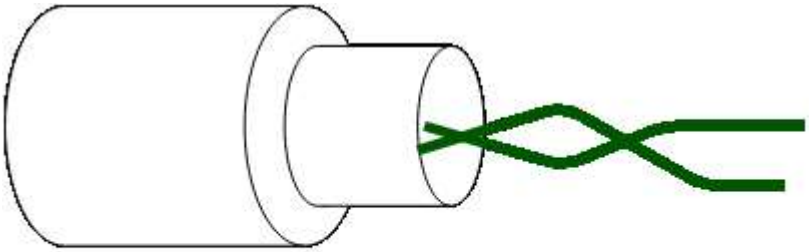
If you have questions about which type of network is right for your organization, or want to learn more about Belden's network solutions that improve uptime, maintain security, and help improve user access, click here

2. Explain the Shielded twisted pair (STP) and Unshielded twisted pair(UTP)

Ans.

STP:-

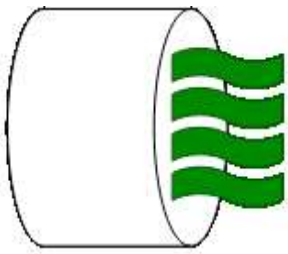
STP is also the type of twisted pair which stands for Shielded twisted pair. In STP grounding cable is required but in UTP grounding cable is not required. in Shielded Twisted Pair (STP) much more maintenance are needed therefore it is costlier than Unshielded Twisted Pair (UTP).



Shielded Twisted Pair

UTP:

UTP is the type of twisted pair cable. It stands for Unshielded twisted pair. Both Data and voice both are transmitted through UTP because its frequency range is suitable. In UTP grounding cable is not necessary also in UTP much more maintenance are not needed therefore it is cost effective.



Unshielded Twisted Pair

Difference between Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) cables:

S.NO	UTP	STP
1.	UTP stands for Unshielded twisted pair.	STP stands for Shielded twisted pair.
2.	In UTP grounding cable is not necessary.	While in STP grounding cable is required.
3.	Data rate in UTP is slow compared to STP.	Data rate in STP is high.
4.	The cost of UTP is less.	While STP is costlier than UTP.
5.	In UTP much more maintenance are not needed.	While in STP much more maintenance are needed.
6.	In UTP noise is high compared to STP.	While in STP noise is less.
7.	In UTP the generation of crosstalk is also high compared to STP.	While in STP generation of crosstalk is also less.
8.	In UTP, attenuation is high in comparison to	While in STP attenuation is low.

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Q.3 What is difference between baseband and broadband transmission?

Ans. **differences between baseband and broadband transmissions**

Baseband transmission	Broadband transmission
Transmit digital signals	Transmit analog signals
To boost signal strength, use repeaters	To boost signal strength, use amplifi
Can transmit only a single data stream at a time	Can transmit multiple signal waves a
Support bidirectional communication simultaneously	Support unidirectional communicati
Support TDM based multiplexing	Support FDM based multiplexing
Use coaxial, twisted-pair, and fiber-optic cables	Use radio waves, coaxial cables, and
Mainly used in Ethernet LAN networks	Mainly used in cable and telephone n

That's all for this tutorial. If you like this tutorial, please don't forget to share it with friends through your favorite social network.

Q.4 What is the difference between a hub, modem, router and a switch?

Ans. **Hubs :-**

A hub is the least expensive, least intelligent, and least complicated of the three. Its job is very simple: anything that comes in one port is sent out to the others. That's it.
If a message[1] comes in destined for computer "A", that message is sent out to all the other ports, regardless of which computer "A" is.