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What is Wireless Network?

Ans: Wireless networks are computer networks that are not connected by cables of any kind. The use of a wireless network enables enterprises to avoid the costly process of introducing cables into buildings or as a connection between different equipment locations. The basis of wireless systems are radio waves, an implementation that takes place at the physical level of network structure.

Wireless networks use radio waves to connect devices such as laptops to the Internet, the business network and applications. When laptops are connected to Wi-Fi hot spots in public places, the connection is established to that business's wireless network.

2. Explain Cdma in Wireless technology

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Code Division Multiple Access CDMA is a sort of multiplexing that facilitates various signals to occupy a single transmission channel. It optimizes the use of available bandwidth. The technology is commonly used in ultra-high-frequency UHF cellular telephone systems, bands ranging between the 800-MHz and 1.9-Ghz.

Code Division Multiple Access system is very different from time and frequency multiplexing. In this system, a user has access to the whole bandwidth for the entire duration. The basic principle is that different CDMA codes are used to distinguish among the different users.

Techniques generally used are direct sequence spread spectrum modulation DS-CDMA, frequency hopping or mixed CDMA detection MDCDMA. Here, a signal is generated which extends over a wide bandwidth. A code called spreading code is used to perform this action. Using a group of codes, which are orthogonal to each other, it is possible to select a signal with a given code in the presence of many other signals with different orthogonal codes.

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3. What is PAN

A personal area network PAN is a computer network for interconnecting electronic devices centered on an individual persons workspace. A PAN provides data transmission among devices such as computers, smartphones, tablets and personal digital assistants. PANs can be used for communication among the personal devices themselves, or for connecting to a higher level network and the Internet where one master device takes up the role as gateway. A PAN may be wireless or carried over wired interfaces such as USB.

Body Area Network

It is a mobile network that moves with a persona range for example when person connects his smart phone to the Bluetooth headphone and moves in the market that refers to a body area network.

Offline Network

In this multiple devices are connected through

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Bluetooth or Wi-Fi. The devices attached to your computer including printers, mouse, speakers, and other appliances are integrated using a Personal Area Network PAN and do not use internet. So a communication network is formed between the devices used in a small single space for example home.

Home Office :

In Home Office setup a separate smaller network is setup for work purpose which is separate from the network used by other home appliances. This network works as a separate body with multiple other devices connected for office work purpose.

Merits:

PAN is relatively flexible and provides high efficiency for short network range.

It needs easy setup and relatively low cost.

It does not require frequent installations and maintenance

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3g and 4g architecture

3G:

Umts Universal Jobile Telecommunications System 1.
Umts, short for Universal Jobile Telecommunications System, is a 3G networking standard used throughout much of the world as an upgrade to existing Gsm module.

Umts makes use of Wcdma, a technology that shares much with Cdma networks used throughout the world, though it is not compatible with them.

Base level Umts networks are generally capable of downlink speeds as 384 kbps.

The Umts architecture takes advantage of the existing GSJ and GPRS networks which serve as a core network in Umts infrastructure.

4G:

LTE-Uu interface has:

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PDCP: The PDCP protocol supports efficient transport of IP packets over the radio link. It performs header compression, Access Stratum security ciphering and integrity protection and packet re-ordering or retransmission during handover.

RLC: In the transmitting side, the RLC protocol constructs RLC PDU and provides the RLC PDU to the mAC layer. The RLC protocol performs segmentation or concatenation of PDCP PDUs during construction of the RLC PDU. In the receiving side, the RLC protocol performs reassembly of the RLC PDU to reconstruct the PDCP PDU. The RLC protocol has three operational modes i.e. transparent mode, acknowledged mode and unacknowledged mode, and each offers different reliability levels. It also performs packet the RLC PDU re-ordering and retransmission.

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Q. what is mobility in wireless technology. Explain Direct and indirect approaches.

The uniqueness of wireless networks is their ability to provide dynamic network connectivity for users, devices, services, and applications without being tethered to any wired hardware. As such, wireless technology is expected to cater to different types of mobility characteristics. The following section details the different types of mobility that wireless networks are subjected to, and their characteristics.

A direct routing approach is taken in routing telephone calls to mobile users inseveral mobile telephone network standards, including GSM Lin 2001. An exten-sion of the mobile IP standard to include direct routing is also under consideration

In the indirect routing approach, the correspondent simply addresses the datagram to the mobile node's permanent address, and sends the datagram into the network, blissfully unaware of whether the mobile

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node is resident in its home network or is visiting a foreign network.

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Answer in Short:

1. What is base station

A base station is a radio receiver which may have one or multiple antenna. It was first used in mobile telecommunication networks. The base station is responsible for maintaining communication between the network and the users, and also among users. The equipment works with a mobile switching station which is responsible for connecting cellular calls to the public switched telephone network PSTN. The geographical area covered by a base station is referred to as a cell. A single base station broadly extends the reach of a telecommunication company.

A base station is company specific, but competing telecommunication companies can have their individual base stations on a physical site.

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COA

A care-of address usually referred to as CoA is a temporary IP address for a mobile device used in Internet routing. This allows a home agent to forward messages to the mobile device. A separate address is required because the IP address of the device that is used as host identification is topologically incorrect - it does not match the network of attachment. The care-of address splits the dual nature of an IP address, that is, its use is to identify the host and the location within the global IP network.

Define following terms :

Home Network:

A home network or home area network (HAN) is a type of computer network that facilitates communication among devices within the close vicinity of a home.

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Visited Network:

In more technical terms, roaming refers to the ability for a cellular customer to automatically make and receive voice calls, send and receive data, or access other services, including home data services, when travelling outside the geographical coverage area of the home network, by means of using a visited network.

Home Agent:

A home agent is a router on a mobile node's home network which tunnels datagrams for delivery to the mobile node when it is away from home. ... A foreign agent is a router that stores information about mobile nodes visiting its network. Foreign agents also advertise care-of-addresses which are used by mobile IP.

Foreign Agent:

A foreign agent is any person or entity actively carrying out the interests of a foreign country while

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located in another host country, generally outside the protections offered to those working in their official capacity for a diplomatic mission. Foreign agents may be citizens of the host country.

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