Wireless Networks and Protocols

Protocol can be defined as a set of guidelines or accepted rules meant for the communication purpose. While communicating, it is essential to make an agreement on how it should be done. Communications only work when both the parties speak the similar language, otherwise it fails.

Wireless networking protocols:

Wireless networks are described by the presence of stations, nodes or users that are attached to each other by the means of wireless links. According to the description, one of the prominent features of these networks is flexibility or suppleness which outcomes in forceful topology when the location of the stations or nodes modifies in time.

The guidelines meant for the purpose of communication on the internet or the set of communication protocols are called TCP/IP. In reality, it is a set of different protocols, each having their own particular purpose or function. Their establishment has been done by the international standard bodies and is employed in nearly all kinds of platforms across the world in order to make sure that a successful communication is going on among all the devices on the internet.

1. **Wireless LAN and its protocols**

Wireless LAN stands for the 'Local Area Network' that employs radio waves of intensified frequency rather than using cables for the connection of the devices. It can be perceived as a

group or a set of wireless devices such as laptops, all collaborating through the radio signals. Users linked to WLANs are mobile and can move around being inside the region of network coverage. Majority of WLANs are established on the basis of IEEE 802.11 or Wi-Fi.

Types of WLAN Protocols:

Wi-Fi or IEEE 802.11 consists of several variations, some of which are the following:

- **802.11a Protocol**:

  Transmission speed of 54Mbps

  Frequency of 5GHz range

  Uses Orthogonal Frequency Division Multiplexing (OFDM)

- **802.11b Protocol** –

  Frequency range of 2.4GHz

  11Mbps speed

  Employs Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA) with Ethernet protocol

- **802.11g Protocol** –

  Have the features of 802.11a and 802.11b protocols.

- **802.11n Protocol** –

  Bandwidth up to 600Mbps

  Provides signal coverage

  Uses Multiple Input/Multiple Output (MIMO)

2. Wireless WAN and its protocols:

WAN or 'Wide Area Network' protocols are characterized by their proficiency in well deliverance of the data over lengthy and extensive distances, like hundreds of miles. This is normally needed to link the data among multiple or various LANs. The world's largest WAN is the internet. Modems, routers and other WAN devices have a function to convey the information or data over numerous mediums, fiber cabling being the common one. In today's time, some of commonly used WAN protocols are "Frame Relay," "X.25," "Integrated Services Digital Network," or "ISDN," and "Point-to-Point Protocol," or "PPP."

3. Wireless LAN Security:

WLAN security or Wireless local area network security is a system of security intended for the protection of the networks from the safety breaches to which wireless communications are vulnerable. This kind of security is essential because WLAN signals have no physical border restrictions, and are disposed to to unlawful contact over the network assets, causing in the susceptibility of the confidential and private data. Network processes and accessibility can also be negotiated or adjusted in case of a WLAN security breech. In order to solve these problems, different methods are employed such as invisibility, authentication, encryption, and other administrative controlling practices employed in WLANs. Corporate and business WLANs in particular need sufficient steps of security in order to identify, avoid and block all kinds of intruders, piggy backers, and eavesdroppers.

References

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