topology

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Wireless Topology Paper

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Introduction

Wireless communication technology is one of the most popular mediums of transmission of information from one particular gadget to another device. Through the use of this technology, the information can be transferred through the air without the need for any cable or wires or other electronic conductors, through the use of electromagnetic waves, for instance, IR, RF, satellite among others (Tse & Viswanath 2005). Today, the wireless communication devices include the smartphones, computers, tabs, laptops, Bluetooth technology, Wi-Fi technologies, and printers. Network topology involves the network's topology examines the layout of a network, how the different nodes in a network are linked to each other and how they communicate. The paper will discuss the configuration topologies used in wireless communication, provide the scenario for using every topology and finally identify the at least one limitation of using each topology.

Pont to point topology

A Point to Point Topology is a basic type of network topology that typically links two nodes directly together. The point to point topology is a simple topology that shows the network of exactly two hosts including the computers, servers, switches or the routers linked with a capable. Notably, point to point topology is widely utilized in the computer networking and computer architecture. Besides, it is also applied in the telecommunication systems when an individual talk about communication connection of two nodes or the endpoints. In the point to point configuration, there is no particular channels are added or released in the common sites. Additionally, the point to point wireless connections can go from a short distance link connecting two locations which are just a few hundred meters apart to a long distance point to point topology that links to place tens of miles away from one another. In a point to point wireless connection, the distance is influenced by the height of

every Ethernet radio device, the frequency used, the power level, and the environmental interference. Typically, the connection that has a single network transmitter together with a single receiver is known as the point-to-point topology (Ni et al., 2007).

Scenario

There are various situations where the point to point topology may be appropriate in wireless communication. Specifically, WAN connection between the two offices situated in different locations or cities. It is a point to point topology because tether is only one particular sender that is office A in City A and one receiver including the office B in the city B.

Disadvantages

- Vulnerable to failure in primary components
- Limited scalability

Point to multipoint topology

Point to multipoint communication involves the communication that is achieved through a distinct and particular form of one-to-many links, providing several paths from one single location to different places (Stallings, 2009). It is frequently abbreviated as PTMP, P2MP, or PMP and is majorly used in the telecommunications. Nonetheless, Point-to-Multipoint topology is a typical network architecture for the external wireless networks to link multiple locations to one distinct central location. Notably, in the point to multipoint wireless Ethernet network, every remote location does not directly communicate with one another but have a single connection towards the centre of the star system where one or more base station is typically situated. Most outdoor point to multipoint systems typically execute a centralized medium access control protocol or integrate the TDMA-based protocol synchronizing every radio gadgets with a GPS device to avoid the hidden terminal and

exposed terminal concerns. The outdoor point to multipoint wireless solutions is very common both for the Wireless Internet service Providers and for the outdoor video surveillance systems.

Scenario

In the outdoor wireless video-surveillance systems, every camera in ten fields is linked to a wireless client device, and then the base station is fixed on top of a tall building and acts as the central gadget or device and the coordinating point of the point-to-multipoint wireless network. In a P2MP wireless CCTV system, all video streams coming from the remote cameras are collected at the central location at the centre of the P2MP wireless system and then transferred to a control room through the use of fibre backhaul.

Disadvantage

- Most of the point-to-multipoint systems are contention based.
- It is always prone to failure

Multipoint-to-point

The multipoint-to-point network topology provides a two-way system interactive communication between a central hub earth station and multiple remote user terminals. The connectivity is usually used in the wireless communication system because it reduces the technical needs of the remote locations. Every remote VSAT must have the capability of transferring data back to the same satellite as the hub utilizes to broadcast out. In a multipoint-to-point network, transmission data rates are always asymmetrical, meaning that the hub transfer at a much higher data rate than every remote VSAT.

Scenario

A significant scenario of the multipoint-to point topology is the broadcast transmission for media, for instance the radio stations that transfers radio waves without concerning the number and amount of receivers.

Disadvantage

The whole operation of the topology requires a line of sight access between the client antenna and the base station. The limitation disallows the installation in some locations because of trees and hills.

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