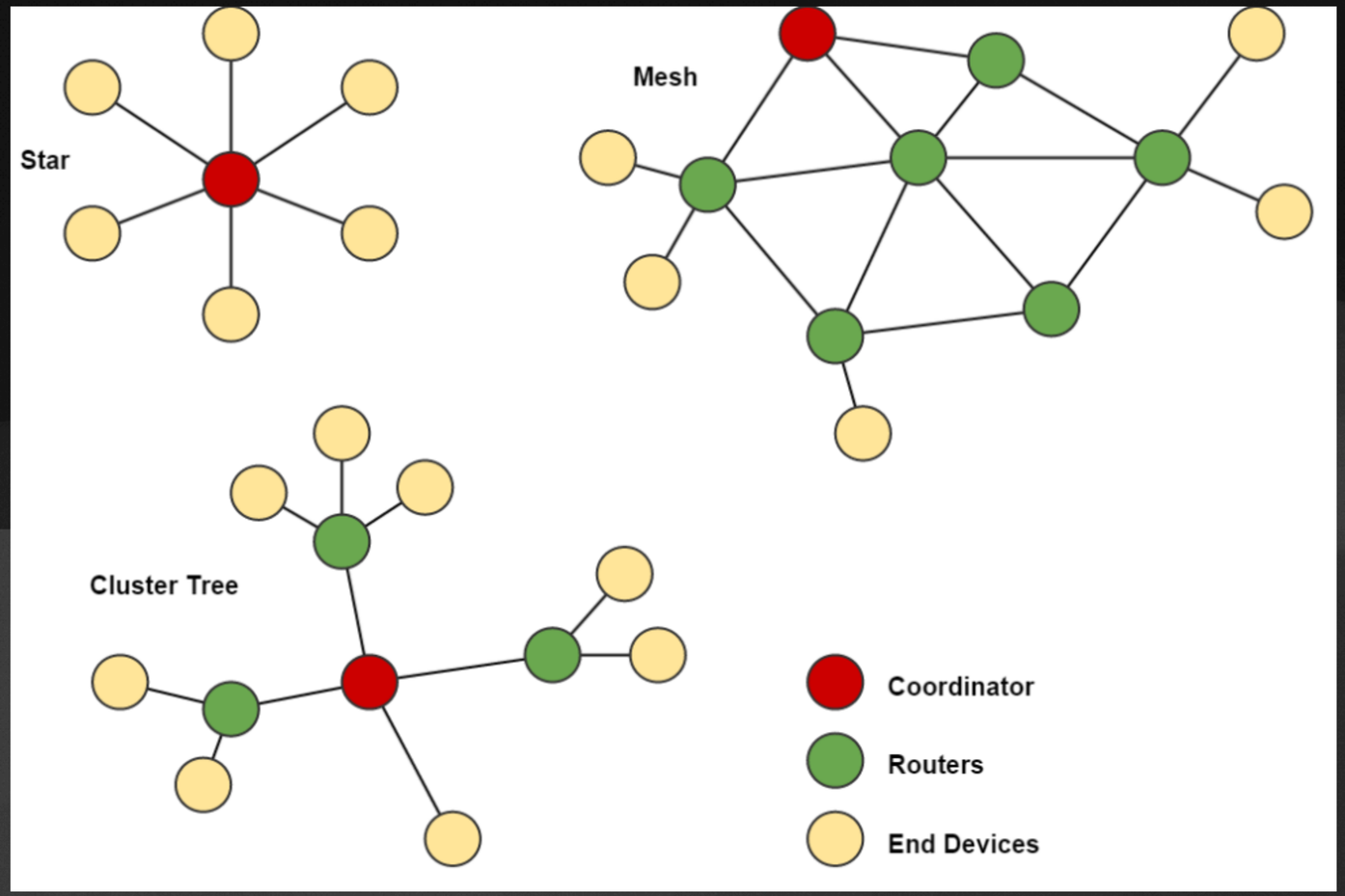
What is the Mesh WIFI as a network and components?

Distributed Systems

Jesus Ernesto Galvan Valdez (0222460)

What Is a Mesh Network?



A wireless mesh network (WMN) is a mesh network created through the connection of wireless access point (WAP) nodes installed at each network user's locale.

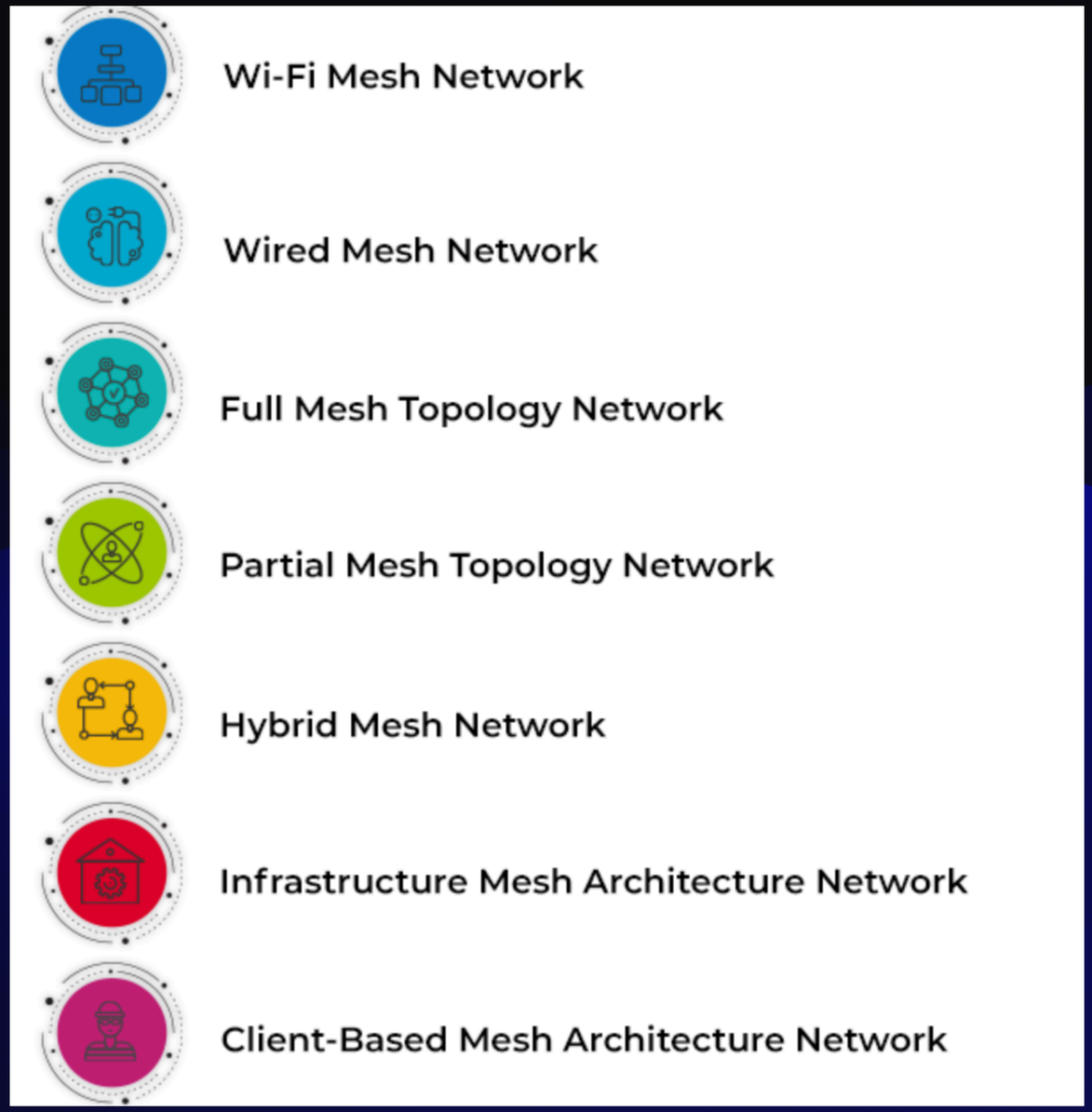
The networking infrastructure is decentralized and simplified because each node need only transmit as far as the next node.

WMNs may or may not be connected to the internet.

Uses

- home Wi-Fi networks;
- public Wi-Fi access provided by cities and municipalities;
- Wi-Fi and networking in temporary locations, such as construction sites;
- connecting internet of things (**LOT**) devices, such as sensors, security systems, smart appliances and monitoring systems;
- building networks in developing communities that lack internet wiring infrastructure; and
- providing consistent wireless access to hospitals, educational campuses and warehouses.

Types of Mesh



How does it works

Wireless mesh networks work through **nodes**, **mesh clients** and **gateways**.

- **Mesh nodes** are WAP devices with multiple radio systems. Nodes act as mesh routers and endpoints. Firmware enables them to share data between other nodes in the network.
- **Mesh clients** are wireless devices, such as laptops, mobile phones and tablet computers.


TechTarget

Advantages

- requires only one node in the network to be physically wired for internet connection;
- provides collaborative, redundant backup technology, which ensures data security in the event of disk failure;
- is able to be configured dynamically for speed.
- uses less power;
- offers increased reliability, as each node is connected to several other nodes and, if one drops out of the network, its neighbors simply find another route;
- uses the same set of standards as most Wi-Fi networks -- 802.11a, b and g;
- is scalable, as it is typically easy to add nodes to the network; and
- can effectively provide coverage to home Wi-fi mesh networks without reducing bandwidth, unlike Wi-Fi range extenders.

Disadvantages

- Networks with low processing capabilities may have more latency, as data often must hop through several different nodes.
- The lack of a central server can make mesh systems more complicated to monitor, control and troubleshoot.
- The lack of centralization can make routing and resource management processes more complex than with other types of wireless networks.
- Initial network setup can be complex, as ideal node placement across different points in the area will likely involve some trial and error.
- For homes, node devices can be less cost-effective than traditional router/modem Wi-Fi networks.