

Introduction

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Basically there are two modes by which we can set up any wireless devices. Wireless setup modes are divided into Ad-hoc and Infrastructure mode.

Whenever we are configuring any wireless LANs, there are five ways we can configure. They are peer-to-peer network, client and access point, multiple access points and roaming, using an extension point and using directional antenna.

In this slide, I'm going to show you what are the basic hardware requirements of wireless LANs. These are the different devices required. Basically when we are creating some topologies in real life networks (in Wi-Fi networks), we need to have access point or wireless connecting devices. In end-user devices, we need to have wireless adapter cards.


If you like to configure in between different buildings, we need to have directional antennas, also for extension purpose, like wireless hub when we are extending a network, we use wireless access points. Finally, this entire wireless network needs to be connected to a wired network by LAN cable, that is RJ45 connector (cable).

So, when we're talking about wireless LAN models, we have two types of connectivity, one is call Ad-hoc networking, also known as peer-to-peer networking. Basically, this is used within a small range of devices where different devices are connected with each other in an Ad-hoc mode. In such Ad-hoc network, devices do not require any wired networks. Bluetooth is one of the technology which is widely used in today's world by creating such Ad-hoc network. WiFi hotspot is also one kind of configuration where we can have such Ad-hoc network.

Whenever we are configuring any wireless infrastructure network, we need to have connecting devices like access point or wireless router. The key difference between a structured wireless network and Ad-hoc network is that we need to introduce such connecting device call access point, which we are going to configure.

Before that, let's quickly go through different types of connections:

1. The first thing is basic wireless peer-to-peer network, which does not require any administration and configuration. Two different devices can be connected with each other if they have wireless adapter cards. Normally we can create such Ad-hoc network in among two or three PCs or laptops.
2. When we go for infrastructure mode, we need to have access point where the wireless devices basically connect to the access point. When we talk about access point, access point has two parts; one - it is connected to wired network, and the wireless part - which is providing access to wireless devices. Each client - like PC, smartphone, laptop or wireless printer, can



have connectivity through this access point, so this is basically a wireless switch. In this topology, we are showing single access point but we can have multiple access points, and in such cases we should have a access point controller.

3. The next type of configuration is multiple access points and roaming. When we design any WiFi campus, or enterprise networks where different access points are required for a larger network coverage. When we have multiple access points, we need to have access point controller (AP controller). Basically the goal of having multiple access points is that through roaming, the end-user devices should always have connectivity to the wireless network. Such access point has different limitations in indoor and outdoor. The basic challenges are how many access points are required for the configuration, and how to position the access points, so that we can achieve the better connectivity for the user devices.

4. Now we are going to discuss about what is extension point. Extension points can be used when we need to extend our physical topology. These extension points relay the signal from access point. This gives wider physical area coverage in any WiFi campus.

5. Next, is using directional antenna. In this case we can have a wireless LAN in one building which is a source and the wireless signal is relayed to the destination. Directional antennas need to be situated on the top of buildings. If we are using two directional antennas, then it should face each other, and then they can be connected. For example, in a location if you have two offices that need to be connected in a wireless fashion, we need to install two directional antennas on rooftop, and they can face each other so that connection can be make.