Wireless Hotspot Networks

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Abstract

This research presents a detailed discussion about wireless hotspot networks, such as an introduction, an overview of their comparison with other wireless networks, advantages, applications, examples, configuration methods, security issues, and relevant additional topics.

Contents

1 Introduction to Hotspot Wireless Network

A wireless hotspot network enables a mobile device to connect to the internet wirelessly through a wireless local area network (WLAN) using a router connected to an internet service provider. Just to clarify, that is the concept of a wireless hotspot, usable in a public space, such as a library, cafe, or airport.

Public hotspots provide an easy method for customers to connect to the Internet. With the increasing number of people emailing, chatting, shopping, uploading and downloading files, surfing the web, and playing games across the Internet, wireless network access is an attractive draw for customers and could potentially lead them to choose one place of business over another. Business travelers can work from their hotel rooms, and special events staff can update schedules, locations, results, and specialized content to their customers without installing kiosks and having lines queued up waiting for a terminal to become available. Employees can work from a local coffee shop while enjoying a coffee or cup of tea. These benefits offer a revenue opportunity for both the service provider and the owner of the site.

Functionally, a public hotspot is a readily available wireless network connection where users with compatible wireless network devices such as PDAs, cell phones, notebook computers, or handheld games can connect to the Internet, send and receive email, and download files. The hotspot can be temporary or permanent in nature: a trade show that runs over 3 days or at a local coffee shop, respectively, but should always mimic the user's native environment with respect to functionality and security. A hotspot is made up of some or all of the following components: [1]

- Mobile Station(s)

- Access Point(s)

- Switches, Routers, Network Access Controller

- Authorization, Authentication and Accounting (AAA) Server

- Internet Service Provider (ISP)

The physical size of the location is the first key factor to consider. This is one element (along with user density) that will determine how many wireless Access Points (APs) must be deployed. A typical AP covers a circular area roughly 300 feet in all directions. Multiple APs are required to provide coverage for large sites.

2 How Hotspot Differs from Other Wireless Networks

Hotspots differ from other wireless networks in several ways: [2]

Wifi:

- Wifi is a wireless communication technology that is used for LAN(Local Area Networks).

- There is no hotspot without wifi.

- Wifi is used between wireless devices and as an access point for interconnection

- Wifi provides high speed as compared to a hotspot in the case of multiple users

- Wifi services are provided by the local area Internet service provider.

- Wifi is more secure in comparison to the hotspot.

- In wifi, electromagnetic waves under the radio frequency band 2.4GHz are used for communication.

- The Wifi is at the end of the receiver of internet services.

- It is a family of protocols.

- Expense is incurred for using the facility of WiFi.

Hotspot:

- Whereas the hotspot provides internet to wireless devices by using wifi.

- Whereas a hotspot is created using wifi.

- While the hotspot is created using an access point device that is connected to the router.

- The hotspot offers a lower speed than wifi in the case of many users.

- Whereas the hotspot services are largely provided by cellular or phone corporations.

- Hotspots are less secure than private wifi as they are typically used in public places.

- Whereas in the hotspot, wifi technology is used in order to connect the devices to the access point for sharing the internet.

- Whereas Hotspot is at the end of the donor of internet services.

- It is a physical location.

- Multiple corporations provide this facility at no expense.

3 Advantages and Application Domain

Wireless hotspots offer numerous advantages:

- **Flexibility:** Wi-Fi hotspots provide users with the freedom to access the internet from virtually anywhere within the hotspot's coverage area [3]

- **Cost-Effective:** Setting up hotspot wireless networks can be more cost-effective compared to wired networks, especially in environments where installing cables is impractical or expensive.

- **Essential Connectivity:** They are critical for anyone who travels or who needs to have constant access to the internet with multiple devices. [4]

Applications include: [5]

- **Public Wi-Fi:** Public Wi-Fi hotspots are widely used in various public spaces, such as cafes, airports, hotels, and libraries. These hotspots provide seamless internet access to users, allowing them to connect their smartphones, laptops, or tablets to the network.

- **Temporary Networks:** Temporary networks are designed to meet these demands by providing reliable internet access to a large number of users within a confined area. like: Events, conferences.

4 Security Issues of Hotspot

Because radio signals can be easily intercepted, Bluetooth devices have built-in security to prevent eavesdropping or falsifying the origin of messages (spoofing). The main security features include the following: [6]

- **Challenge-response routine:** For authentication, which prevents spoofing and unwanted access to critical data and functions.

- **Stream cipher:** For encryption, which prevents eavesdropping and maintains link privacy

- **Session key generation:** Session keys can be changed at any time during a connection.

Three entities are used in the security algorithms:

- **Bluetooth device address :** A public entity that is unique for each device. The address can be obtained through the inquiry procedure.

- **Private user key:** A secret entity. The private key is derived during initialization and is never disclosed.

- **Random number:** Different for each new transaction. The random number is derived from a pseudorandom process in the Bluetooth unit.

5 References:

References

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