

Wi-Fi Security : Problems & Solutions

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ABSTRACT

Technology is making rapid progress and is making many things easier. Networks fit into this because the technology has been around long enough and can provide enough benefits. In recent years, a significant increasing in development of Wireless networks is noticed; they become an entire part of the Internet and demonstrate effectiveness in handling communication for reduced public LAN and military applications. Wi-Fi allows to connect your device to the internet without wires. It is a wireless technology like cell phones, Wi-Fi enabled computers send and receive data indoors and outdoors; anywhere within the range of the base station. In addition, the best thing of all, Wi-Fi is fast. In fact, it is several times faster than the fastest cable modem connection. In this paper, we discussed about the problems and solutions of network security.

Keywords : Wireless LAN, Security.

I. INTRODUCTION

Wi-Fi stands for Wireless Fidelity. Wi-Fi is the popular wireless networking technology that broadcast the data by using the radio waves. Wi-Fi is based on the IEEE 802.11 family of standards and most of times a local area networking (LAN) technology designed to provide in-building broadband coverage. Wireless networks really provide the convenient and easy approach to communications between different areas. We can connect computers anywhere in a home or office without the need of any wires with this technology. The computers connect to the network using radio signals, and they can be up to 100 feet or so apart.

Wi-Fi allows to connect to the internet from anywhere virtually at speed of up to 54Mbps. The computers and handsets enabled with this technology use radio technologies based on the IEEE 802.11 standard to send and receive data anywhere within the range of a base station. Wi-Fi goes beyond wirelessly connecting computers and it also connects people. In fact, due to the flexibility, effectiveness and low cost wireless networks became an essential tool of communication. In Wireless networks, communication management is

handled by WEP, WPA and WPA2 protocols designed for protecting communications.

If we talk about the working of Wi-Fi then, it is based on transmission process. In this process, the data has to be transmitted in the form of radio signals, and then the device transmits these signals to antenna that is used for transferring the data. The antenna, which is used for transmission purpose, is connected with a wired LAN. A router is also connected with the device, which is able to receive the signals and help in decoding them. Then this information is spread on internet.

II. Related Work

Most of the devices are using Wi-Fi, so wireless is in everywhere like:

- Cell phones
- Digital cameras
- Printers
- Video game controllers
- Televisions
- Speakers
- Refrigerators etc.

Features of Wi-Fi Security:

There are some important features of Wi-Fi security, which are responsible of reliability as follows:

- Confidentiality
- Data Integrity
- Access Control
- Encryption
- Association
- Authentication

1) Wi-Fi Security Problems and Solution:

2) There are so many security problems of Wi-Fi or wireless LAN that let the wireless LAN down. Some of the major problems with their solutions are given below

1. Modulation Spectrum Technique: In the early technology of Wi-Fi, the technique, which was used of spectrum modulation, has very low security that anyone can use your network and hack your code of activity.

Solution: The suggested solution for this problem is that we can use the latest technology of modulation spectrum to protect or secure the Wi-Fi network.

2. Change Default Passwords : There are some hackers who can hack your default password that was assign by manufacturers. Hackers used all the default passwords and hack your Wi-Fi network.

Solution: To avoid this problem of hacking you should change the default passwords of your network time to time.

3. Wireless Equivalent Privacy (WEP): There is also a suggestion, which is suggested by some people, that is to use Wireless Equivalent Privacy (WEP) to have a secure working on Wi-Fi network. But sometimes it is very insecure to use WEP technology because it is very easy to break the encryption of WEP.

Solution: This security problem of Wi-Fi cannot be removed completely but it can be reduced by upgrading the wireless encryption to Virtual Private Network (VPN).

4. Crackers: There is another major problem of Wi-Fi security that is crackers.

Solutions: We can prevent the crackers by using the no. of methods of recovery of Wi-Fi security such as by placing the access points in the desired area, as Wi-Fi is the combination of both wireless and the wired devices so, by dividing the both portions in the different segments we can avoid the problem of crackers.

5. Service Set Identifier (SSID):

Another major security problem of Wi-Fi security is breaking of the service set identifier SSID. The service set identifier SSID is very easy to brake by anyone with the help of any kind of sniffing tool.

Solution: This problem of Wi-Fi can be resolved by using the encryption technology such as RADIUS (Remote Authentication Dial-In User Service) etc. To protect our SSID we can apply the encryption of data.

III. Conclusion

To secure the Wi-Fi networks there are many technologies or protocols but every protocol or technology has its own demerits or limitation, until now there is no protocol, which can provide the 100% security to it. Wi-Fi security is not an easy task. Wireless network security is more difficult than the wired network security. The researchers are searching the best protocols, which can provide the as much as possible security to the network. The recent technology to secure the Wi-Fi network is WiMaX (*Worldwide Interoperability for Microwave Access*) but it has also some deficiencies.

IV. WEBREFERENCES

- [1]. <http://wifinotes.com/wifi-security-problems-and-solutions.html>
- [2]. <http://www.sciencedirect.com/science/article/pii/S18770509150347052004/WirelessSecurityBoyd>
- [3]. wireless-networks-security-problems-solutions-172
- [4]. www.howstuffworks.com