THE NEW AND CLEAR APPROACH TO BLUEJACKIN

Babita Sandooja, Renu Yadav, Arun Gupta, Priyanka Yadav, Preeti Kumari

Student, Department of Computer Science & Engineering Dronacharya College of engineering, Gurgaon-122001, INDIA

Abstract
This research paper is about the technology used for sending unsolicited messages over Bluetooth to Bluetooth-enabled devices such as cell phones or laptop computers, called Bluejacking. Range of Bluetooth is limited and hence the range of bluejacking is also limited. It is around 10 meters for mobile phones, and about 100 meters for laptops with powerful transmitters. This technology allows phone users to send business cards anonymously using Bluetooth wireless technology. Receiver does not know who has sent the message, but it has the name and model of the phone of bluejacker. People who get to receive such messages should not add the contacts into their address book. Devices that are set in non-discoverable, hidden or invisible mode are not susceptible to bluejacking. But remember it does not hijack the recipient's phone, as its name suggests, the phone is not under the control of bluejacker at any time. It has been noted that many people are still not aware of this technology. There are other technologies also which are very similar to it. These are Bluebug, Bluesnarfing, Blueprinting, etc. This paper discusses about Bluejacking and is written to make people aware of it, its use, its misconceptions, prevention measures and also considers its advantages, disadvantages and future prospects.

1.   Definition of Bluejacking.

Bluejacking makes use of the Bluetooth technology to send unsolicited/unwelcomed messages to Bluetooth-enabled devices. Receiver does not get to know who has sent the message to it. It only receives the message along with name and model of the sender's phone. This technology is known as Bluejacking.

1.1 Features Of Bluejacking

1.1.1   Bluejacking does not involve the removal or alteration of any data from the device.
1.1.2   A bluejacker normally send only a text message, but now it has now become possible to send images or sounds also.
1.1.3   Bluejacking exploits a Bluetooth device's ability to discover other nearby Bluetooth devices.[2]

1.2   How is Bluejacking Done?

1.2.1   It is done with the help of OBEX protocol.
1.2.2   To choose the recipients of bluejacks, senders complete a scan using their mobile phones to search for the available Bluetooth-enabled devices in the immediate area.
1.2.3   A bluejacker then picks one of the various available devices (that have their Bluetooth on), composes a message within the body of the phone's contact interface, then sends the message to the receiver and stays close to the receiver to observe any reactions expressed by the person.

1.2.3.1   A bluejacker can also create a phonebook contact and write message there, e.g. 'you are about to be Bluejacked' in the 'Name' field. Then you can start your search for other Bluetooth devices and can send any or all of them that phonebook contact.
1.2.3.2   Now on the receiver's device, a message will be popped up saying "'you are about to be Bluejacked' has just been received by Bluetooth" or may be some other lines also with it.
1.2.3.3   Mostly 'victims' have no idea about the message and how it got displayed onto their phones.
1.2.3.4 Hence you can also send personal messages like "you are looking smart today" and can observe the receiver's expressions by being in their vicinity.
1.2.4   The message is sent via vCard functionality. It has a name field for bluedating or bluechat to another Bluetooth enabled device.
1.2.5   It also allows phone users to send business cards secretly using Bluetooth. These business cards can even contain clever or flirtatious messages instead of simply the phone number and name.
1.2.6   Bluejackers look for the receiving phone to ping or to react.

Fig. 1 how the sender sends the bluejack message [5]

Fig. 2 what does receiver sees on the screen as it receives the bluejack message [5]

2. What is Bluetooth technology?

Bluetooth is a wireless technology that provides short-range communications that is proposed to replace the cables connecting portable and/or fixed devices along with maintaining high levels of security. The Bluetooth standard gives a uniform structure which enables a large number of devices to connect and communicate with each other.

There are three main features of Bluetooth:-
- Robustness
- low power
- Low cost

2.1 How Bluetooth works?

Bluetooth technology works using low-power radio waves, on a frequency of 2.45 gigahertz. This is a special frequency called ISM band. It is an open and unlicensed band kept aside for scientific, industrial and medical devices.

Whenever various Bluetooth devices are switched on at the same time in the same area, they share the same ISM band and can easily locate and communicate with each other, as we can see in case of a pair of walkie talkies which are tuned to the same frequency, can connect.

2.2 Advantage of Bluetooth

2.2.1   The main advantage of Bluetooth is that it can be full duplex mode.
2.2.2   It can handle both data and voice. Bluetooth standard uses both data link layer and application layer and hence supports both data and voice applications.
2.2.3   It's a very cheap, in fact free and easy way to send data.
2.2.4   It does not depend on the network provider or on your phone number.
2.2.5   It is robust.

2.3 Disadvantages of Bluetooth

2.3.1   It is also a doorway to various techniques like Bluejacking, Bluesnarfing (also called Bluetooth hacking).
2.3.2   As the same band is used for all the Bluetooth connections in an area, so it is prone to hack.

3. Advantages of Bluejacking

3.1 Usually, a bluejacker will only send a text message, but with modern phones it's possible to send images or sounds as well.

    3.1.1 People can send any image or sound but not insulting.

    3.1.2 Any copyright sound files will only be sent with the written consent of the copyright holder.

3.2 We can easily transfer data from mobile to laptop or from mobile to mobile in a short period.

3.3 We can even enjoy music by wireless headphones through Bluejacking.

4. Disadvantages of Bluejacking

4.1 But with the increase in the availability of Bluetooth enabled devices, these devices have become vulnerable to virus attacks and even complete takeover of devices through a Trojan horse program.

4.2 These may even cause irritation in any person as these are just unwelcomed messages or some jokes.

4.3 They can annoy anyone very easily.

5. USAGE OF BLUEJACKING

It can be used at many places, in many fields and for various purposes. Various main fields where it is used are:

5.1 It can be used in malls for advertisement purposes. As you cross their shop, you can get a message or any latest scheme they are providing on that day, etc.

5.2 They can be used at railway station to give you information about various general rules and about train timings, etc. Someone can even annoy you by sending useless messages. So, it is advisable to keep it off at these public places.

5.3 It can also be used at café, restaurant, cinema, mobile phone shop or at any electronic shop(e.g. Dixons) to provide you various information regarding them but any other random person can also send you the Bluejack messages and hence can even annoy you.

6. How to prevent yourself from Bluejacking?

Strictly speaking, there is no software available to prevent you from bluejacking. But obviously there are various ways, various solutions to it that can help you in getting rid of it.

    Various available solutions are as follows:

    6.1.1 Phone owners who receive bluejack messages should refuse to add the contacts to their address book. This means they must be fully ignored. Consider them as spam. Usually the typically message come and it may come from an admirer, a jokester or it may come from someone sending a business card.

    6.1.2 Devices could be set in the non-discoverable, hidden or invisible mode in the menu. They are not prone to bluejacking.

    6.1.3 You can turning off your Bluetooth device off at certain public areas like various shopping centers, coffee shops, movie theaters, bars and clubs, public transport vehicles, phone, at various electronic stores and even in parks. It can prevent you from getting their advertisements and even from various other bluejackers because these are actually the best places of them.

    6.1.4 On Bluetooth only when it is required else make it sure that they are in off mode.

7. Misconceptions about Bluejacking

7.1 Some people say that this term is originated by a user named ajack on esato.com. Several people have said that bluejacking comes from Bluetooth plus hijacking. That obviously sounds logical but actually a bluejacker does not hijack anything.

    7.1.1 Bluejacking doesn't give the sender any personal data. Your device remains absolutely safe from any sort of data modification.

    7.1.2 It actually just creates annoyance.

7.2 A bluejacker just simply sends a contact to the recipient's device. Both of them, i.e. sender and receiver have complete control onto their devices, and he will not be able to get control of your device and hence, would not be able to steal any of your personal information.

7.3 Bluejacking is actually harmless, but because bluejacked people don't know what is happening, they think their phone is malfunctioning. Usually, a bluejacker will only send a text message, but with modern phones it's possible to send images or sounds as well.

So, this is a very interesting technology and such misconceptions about it must be removed from our minds.

Hence bluejacking is not actually harmful. It can provide you with lots of information as well as you pass by. You may not notice all such things when you are going through any road, etc. but now by just looking at your phone you can get all the latest information, latest schemes going on in any shop, etc. without even entering that. But obviously for some people, it is only something for fun and only those people are making inefficient use of it and hence making its name bad.

CONCLUSION

In conclusion, it can be said that bluejacking is not at all harmful. By it, we can interact with new people. The only thing it can do at worst is to irritate you or annoy you by sending unsolicited messages but you can still prevent yourselves from these messages by changing the visibility of your Bluetooth to invisible or non-discoverable mode. It can be helpful as well by providing you with lots of useful information as well.

So, use this technology properly as it is intended and get best of it, rather than just making wrong use of it and irritating others.

8. FUTURE ASPECTS OF BLUEJACKING

Looking at its current use and misuse also by few people, it is expected that in the future, it may have the following aspects:

9.1 Either it will be used extensively and people would be able to get all the necessary information on their devices if they have their Bluetooth on.

9.2 Or people will stop using Bluetooth even and only bluejackers will be playing with each other.

9.3 Or some new way could be developed in order to find the location of the device sending a bluejack request and their location can be traced. If they keep send annoying messages, we can find them out and can register a complaint against them.
By this way, Bluetooth will be made more reliable.

9.4 Bluejackers would only be able to send messages/pictures. They will never even try to hack any device for copying or modifying any files on any device or upload any executable files there. By hacking a device, you are supposed to commit an offence under the computer misuse act 1990, which states it is an offence to obtain unauthorized access to any computer. Changes in this law soon will cover all the mobile devices also.

10. References

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