

Bluejacking Technology: A Review

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Abstract: This paper is about sending of unsolicited messages over Bluetooth to Bluetooth-enabled devices such as mobile phones, PDAs or laptop computers, sending a vCard which typically contains a message in the name field to another Bluetooth-enabled device via the OBEX protocol. 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 blue jacking. 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 provides an overview of the Bluejacking Technology.

Keywords: Blue Jacking, Blue Jack Addict, Bluetooth Exchange, Obex, Vcard.

I. INTRODUCTION

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. Bluejacking is instigated by an attacker (termed as bluejacker or bluejack addict) who forwards unsolicited messages to a user of Bluetooth-enabled device. When the connection goes through, the bluejacker tries to send a message to the recipient. The actual message sent to the user's device does not cause detriment, but is used to inveigle the user to counter react in some manner or add the new contact to the device's address book.

II. BLUEJACKING TECHNOLOGY



As we know that bluejacking is the sending of unsolicited messages over Bluetooth to Bluetooth-enabled devices such as mobile phones, PDAs or laptop computers, sending a vCard which typically contains a message in the name field (i.e. for bluedating or bluechat) to another Bluetooth enabled device via the OBEX protocol.

III. BLUETOOTH TECHNOLOGY

Bluetooth Technology was developed to solve the simple problem of eliminating the connector cable. The idea is to replace the cables that are needed to accompany portable devices carried by many mobile travelers with a low-cost, secure, robust RF link. Originally Bluetooth marketed to small handheld devices such as cell phones and laptops. As the Bluetooth standard emerged successfully into society, the world demanded more. It is reported on Lets Go Digital in an article written by IlseJurrien that three new Bluetooth products are qualified every day and 10 million Bluetooth units are shipped per week. Bluetooth is so efficient, effective, and secure that even the IEEE approved the 802.15.1 Standard for Wireless Person Area Networks based on the Bluetooth specification.



IV. BLUETOOTH PICONETS

The cordless telephone has one Bluetooth transmitter in the base and another in the handset. The manufacturer has programmed each unit with an address that falls into a range of addresses it has established for a particular type of device. When the base is first turned on, it sends radio signals asking for a response from any units with an address in a particular range. Since the handset has an address in the range, it responds, and a tiny network is formed. Now, even if one of these devices should receive a signal from another system, it will ignore it since it's not from within the network. The computer and entertainment system go through similar routines, establishing networks among addresses in ranges established by manufacturers. Once the networks are established, the systems begin talking among themselves. Each piconet hops randomly through the available frequencies, so all of the piconets are completely separated from one another. Now the living room has three separate networks established, each one made up of devices that know the address of transmitters it should listen to and the address of receivers it should talk to. Since each network is changing the frequency of its operation thousands of times a second, it's unlikely that any two networks will be on the same frequency at the same time. If it turns out that they are, then the resulting confusion will only cover a tiny fraction of a second,

and software designed to correct for such errors weeds out the confusing information and gets on with the network's business.

V. BLUETOOTH USAGE

Bluetooth in many ways is like a jack of all trades, yet master of none. Seriously, we've had this technology up and running for more than 10-years, yet is unable to do what it sets out to do perfectly. But who cares, Bluetooth is available on almost every mobile device, so we can't escape this ancient piece of tech. Have some files on your smartphone you want to place on your computer? No worries, just connect your device via Bluetooth and send the files over to your computer. This is easy as saying your ABCs, so don't worry about any possible complications that might follow. Still, we should point out that transferring files via a wired connection is much better. It is not only possible to connect your headphone to your smartphone or computer via Bluetooth. For those who are interested, know that there are Bluetooth mouse and keyboards on the market. Users can even connect a Bluetooth game pad or even a speaker to get their music on. It's fun, but only if these devices are in the right range.

Advantages of Bluetooth

1. The main advantage of Bluetooth is that it can be full duplex mode.
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.
3. It's a very cheap, in fact free and easy way to send data
4. It does not depend on the network provider or on your phone number.
5. It is robust.

Disadvantages of Bluetooth

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

VI. OBEX PROTOCOL

The heart of file transfer over Bluetooth is called Object Exchange, or OBEX protocol, a binary file transfer protocol run over not merely Bluetooth but also Infrared and even generic TCP/IP. It is a session layer protocol designed to enable systems of various types to exchange data and commands in a resource sensitive standardized fashion. The OBEX protocol is optimized for ad-hoc wireless links and can be used to exchange all sorts of objects, like files, pictures, calendar entries, and business cards. It also provides some tools to enable the objects to be recognized and handled intelligently on the receiving side. 3) OBEX's operating functionality and resemblance to HTTP: OBEX is designed to provide push and pull functionality in such a way that an application using OBEX does not need to get involved in managing physical connections. The application only takes an object and sends it to the other side in a "point-and-shoot" manner. This is similar to the role that HTTP serves in the Internet protocol suite, although HTTP is designed more for data retrieval, while OBEX is more evenly balanced for pushing and pulling data.

VII. V-CARD FUNCTIONALITY

Address Book exchanges contact information with other programs primarily through vCards. vCard is short for virtual

business card. More and more email programs send and receive these electronic business cards, which can be identified by their .vcf filename extensions. The vCard standard has been around since 1996 and the current version, version 3.0, is specified by the IETF. The vCard or Versitcard was originally proposed in 1995 by the Versit consortium, which consisted of Apple Computer, AT&T Technologies (later Lucent), IBM and Siemens. In December 1996 ownership of the format was handed over to the Internet Mail Consortium, a trade association for companies with an interest in Internet e-mail.

V-Card Features

vCards are structured blocks of text data that provide what is more or less an electronic business card. The data can include name, address, telephone numbers (home, business, fax, pager, cellular, ISDN, voice, data, video), e-mail addresses and related internet URLs. vCards can also include graphics and multimedia, including photographs, company logos, audio clips, along with geographic and time-zone information. vCards are also designed to support multiple languages and are transport and operating system independent. 4) Applications of vCard. Infrared Exchange , Bluetooth Exchange , Internet Mail iv. Computer/Telephony Applications , Video and data conferencing

VIII. SOFTWARE TOOLS FOR BLUEJACKING

The procedure for bluejacking as stated or explained earlier are very long and confusing. To avoid this we have developed some software to do bluejacking in an easier way. So by downloading that software on your personal computer or on your Bluetooth configured mobile phone you can do it directly by just searching the enabled Bluetooth device and send unsolicited messages to them. There are many software tools available in the market and their name is according to their use. Some of them are as follows:

1. BlueSpam

BlueSpam searches for all discoverable Bluetooth devices and sends a file to them (spams them) if they support OBEX. By default a small text will be sent. To customize the message that should be sent you need a palm with an SD/MMC card, then you create the directory /PALM/programs/BlueSpam/Send/ and put the file (any type of file will work .jpg is always fun) you would like to send into this directory. Activity is logged to /PALM/programs/BlueSpam/Log/log.txt. BlueSpam also supports backfire, if you put your palm into discoverable and connectable mode, BlueSpam will intercept all connection attempts by other Bluetooth devices and starts sending a message back to the sender.

2. Meeting point

Meeting point is the perfect tool to search for Bluetooth devices. You can set your meeting point to a certain channel and meet up with people you've not met before. Combine it with www.studymafia.org 19 any bluejacking tools and have lots of fun. This software is compatible with pocket PC, palm, Windows.

3. Freejack

Freejack is compatible to java phone like Nokia N-series.

4. Easyjacking (eJack)

Allows sending of text Messages to other Bluetooth enabled devices.

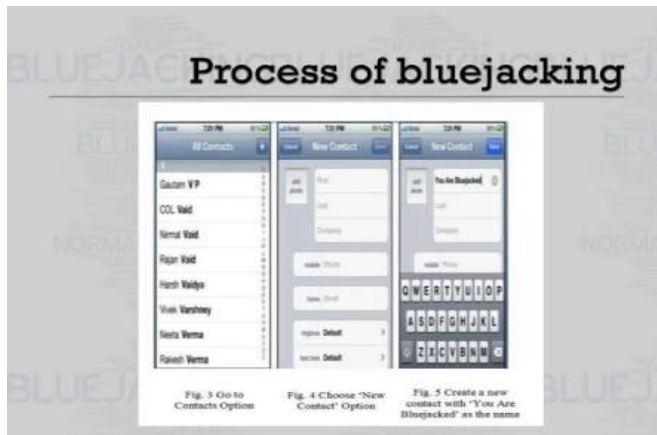
1. Proximitymail.
2. Freejack.

IX. BLUEJACKING AS THE MARKET CHANNEL

Bluetooth offers a new communications channel to marketers. But the technology needs to be respected if they are to avoid alienating consumers according to a white paper from Rainier PR. Stephen Waddington, managing director of Rainier PR, turns wireless sleuth. The marketing industry is never slow to jump on a new communication channel and exploit it for its own ends. The telephone, email, SMS text messaging and the web have all become a standard part of the marketing toolkit, the latter having a marked impact on the way in which organizations communicate with their audiences. Now there is a new mobile communication platform called Bluetooth and both the marketing and technology community are debating whether it offers a new opportunity to be exploited for marketing gain. Marketing opportunity This mechanism by which messages can be sent between Bluetooth devices - predominantly mobile phones - has provoked discussion within the marketing community as to whether Bluetooth could be used as a promotional communication channel.

Process of Bluejacking

The fundamental course of action of bluejacking is quite concise, trouble-free and effortless. It can be implemented by using the following steps:



Step 1: Go to contacts in the phone book (if using mobile) or address book program like Outlook (if using PCs/laptops).

Step 2: Choose the “New Contact” option. Consecutively, create a new contact.

Step 3: Enter the desired message into the ‘name’ field with which one wants to bluejack the other device. Messages like ‘you have been bluejacked!’ startle the victim.

Step 4: Press Done/OK option. Save this new contact in the phone/address book of mobile phone/laptop respectively.

Step 5: Click on the contact created. Go to action. Choose “via Bluetooth” or “Send to Bluetooth” option. **Step 6:** Click the ‘Search’ option for discovering active Bluetooth devices. Select a device from the list. **Step 7:** After the selection of the device, the message would be transmitted to it. Henceforth, the device would be bluejacked.

Applications of Bluejacking

1. Viral communication

Exploiting communication between consumers to share content such as text, images and Internet references in the same way that brands such as Budweiser, Honda, Trojan Condoms and even John West Salmon, have created multimedia content that has very quickly been circulated around the Internet

2. Community activities

Dating or gaming events could be facilitated using Bluetooth as a channel to communicate between participants. The anonymous nature of bluejacking makes it a superb physiological tool for communication between individuals in a localized environment such as a café or pub.

3. Location based services

Bluejacking could be used to send electronic coupons or promotional messages to consumers as they pass a high street shop or supermarket. To date SMS text messaging has been used with mixed success as a mechanism to send consumer’s location based information. Rainier PR believes that viral communication and to a lesser extent event based activities offer the greatest opportunity for bluejacking as a marketing mechanism.

Advantages of Bluejacking

1. Usually, a bluejacker will only send a text message, but with modern phones it's possible to send images or sounds as well
2. People can send any image or sound but not insulting.
3. Any copyright sound files will only be sent with the written consent of the copyright holder.
4. We can easily transfer data from mobile to laptop or from mobile to mobile in a short period.
5. We can even enjoy music by wireless headphones through Bluejacking.

Disadvantages of Bluejacking

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. These may even cause irritation in any person as these are just unwelcomed messages or some jokes.
2. They can annoy anyone very easily.

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. 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, Or people will stop using Bluetooth even and only bluejackers will be playing with each other, Or some new way could be developed in order to find the location of the device sending a blue jack request and their location can be traced. If they keep sending annoying messages, we can find them out and can register a complaint against them. By this way, Bluetooth will be made more reliable.

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. Best practices to mitigate the Bluejacking threats against the Bluetooth are: user awareness, disable device when not in use, use an unidentifiable device name, employ security mode 3 or 4, disable unused services and profiles, set device to non-discoverable mode when not in use, use non-guessable PIN codes of at least 12 or more alphanumeric characters and perform pairing only when absolutely required.

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