

/ Business

Follow

Like

SEARCH WEBPRONEWS ...

HOME

TECH

SEARCH

SOCIAL

BUSINESS

DEVELOPER

GAMING

LIFE

SCIENCE

ALL

TRENDING: BASEBALL FOOTBALL JUSTIN THEROUX WINDOWS PHONE AL QAEDA MOTHER NFL GLEE LANE KIFFIN

» SEND US A TIP!

Help Desk Software
on the Cloud!ManageEngine
ServiceDesk Plus On-DemandExperience SaaS in ITSM Anywhere, Anytime
Try ServiceDesk Plus On-Demand.

SIGN UP FREE

Read WebProNews
With Friends!

f Connect with Facebook

Introduction to Bluetooth and J2ME Part 2

By Jason Lam · December 27, 2004 · 3 Comments

Get the WebProNews Newsletter:

Enter Your Email Address...

Enter Captcha

8exp2v

» Subscribe

Like

0

0

Tweet

0

submit

Share

In Part 1 we went over the basics of Bluetooth technology and some possible development opportunities Bluetooth gives us. Part 2 of this article goes into a little more detail how to create a Bluetooth server and client.

About the Example

In keeping things simplistic as possible proper handling of multiple slaves/clients is not implemented essentially it only works with one server and one client. As well the sample is just that sample code, it is coded from the perspective of getting the two nodes to communicate with each without any real effort in "proper" coding technique/design. Remember the focus is to get you started with the actual Java Bluetooth API.

Discover the fastest way to

FRESHBOOKS
cloud accounting

Before we continue you should download the JSR 82 Java Doc API from <http://jcp.org/aboutJava/communityprocess/final/jsr082/>. Familiarize yourself with the available classes and get feel where things are. We won't go into every single class or explain every single detail mainly because the Java Doc does a good job of this already.

This demo includes three source files / classes:

- BluetoothEchoDemo.java – The main driver that allows you to start a client or server
- EchoClient – The client class
- EchoServer – The server class

This example uses RFCOMM for transferring data the other two options are L2CAP and OBEX. In short RFCOMM is used for streaming data, L2CAP is for packet data and OBEX is for object data.

Client Overview

Let us start with the client, the first thing we need to do is to determine what Bluetooth devices

There's More to ME
Applications Performance Management
Monitor your Cloud, Virtual & Physical Infrastructure
ManageEngine Applications Manager
Powering IT ahead
SEE THE DIFFERENCE >

SiteWatchTool
Part Of WebHeadTools
WE WATCH YOUR SITE
SUBMIT YOUR WEBSITE
EMAIL SENT TO YOU

McDonald's Announces Big Menu Changes

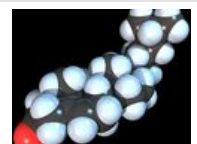
will promote healthier choices for kids and adults

1 Comment



Cholesterol, New Drug May Bring Billions In Revenue

Projected Financial Success Is High



Gas Prices Falling, Lowest Since 2010

Will continue to fall as long as no

and services are there around us. First get the local device and obtain the discovery agent.

```
LocalDevice localDevice = LocalDevice.getLocalDevice();

discoveryAgent = localDevice.getDiscoveryAgent();
```

Now to start searching for Bluetooth devices within the area use the startInquiry method from the DiscoveryAgent class.

```
discoveryAgent.startInquiry(DiscoveryAgent.GIAC, this);
```

DiscoveryAgent.GIAC stands for "The inquiry access code for General/Unlimited Inquiry Access Code" refer to the Java Docs for the other inquiry access code definitions.

Now with the use of the Discovery Listener you have available to you 4 call back methods. As defined in the Java Doc they are:

Method Name	Description
void deviceDiscovered(RemoteDevice btDevice, DeviceClass cod)	Called when a device is found during an inquiry.
void inquiryCompleted(int discType)	Called when an inquiry is completed.
void servicesDiscovered(int transID, ServiceRecord[] servRecord)	Called when service(s) are found during a service search.
void serviceSearchCompleted(int transID, int respCode)	Called when a service search is completed or was terminated because of an error.

That is it for the discovery part! It really is that simple. Now with these calls being triggered you can obtain device information, service information and with that make the appropriate data transmission/communication with the Bluetooth server. (see source code)

In the deviceDiscovered method we obtain some device info which are more or less self-explanatory. Except for the Major and Minor classification, these two attributes let you know what type of device it is. The following is an incomplete sample of the Major and Minor definitions, for a complete list visit www.bluetooth.org. When you run the program you will notice it outputs Major 512 and Minor 4, according to the chart it is a Phone / Cellular.

Major Class	Minor Class	Major Class Description	Minor Class Description
256	4	Computer	Desktop
256	8	Computer	Server
256	12	Computer	Laptop
256	20	Computer	PDA
512	4	Phone	Cellular
512	8	Phone	Household cordless
512	12	Phone	Smart phone
1536	32	Imaging device	Camera
1536	64	Imaging device	Scanner
1536	128	Imaging device	Printer

In the servicesDeiscovered method you can obtain the respective URL needed to open a connection to the available service(s).

```
for(int i=0;i < servRecord.length;i++){
    serviceUrl = servRecord[i].getConnectionURL(0,false);
}
```

Now that you have the url, you can send data through the standard Generic Connector.

```
String msg = "Say Hello World";
conn = (StreamConnection)Connector.open(serviceUrl);
OutputStream output = conn.openOutputStream();
output.write(msg.getBytes());
output.close();
```

Server Overview

major hiccups in production

4 Comments



Alan Mulally Could Run Microsoft

The Ford CEO tops Microsoft's list of new CEO candidates



Dell taps Emerging Markets as Europe, America shrink

Dell taps Emerging Markets as Europe, America shrink



Steve Ballmer had the Time of his Life

Steve Ballmer steps down as CEO of Microsoft



Lumber Liquidators Raid Knocks Stock By 10%

Allegations of stolen wood sales cause company's stock drop 10%



Blackberry Losses \$965M in Second Quarter

With a loss of \$965M, Blackberry faces acquisition



1 Comment

Barilla Pasta: Traditional Families Only in Ads

Barilla Pasta exec wants only traditional families in ads.



1 Comment

Taylor Swift's Red Tour Makes Records

Taylor Swift Makes Touring Records Along With P!nk



1 Comment

eBay Buys Digital Marketplace Bureau of Trade

eBay's second acquisition of the week



'The Office' Season 9 Gets A Netflix Release Date

You can now binge on the entire series



In the server class we need to initialize once again but this time instead of searching for devices we need to setup a server

```
private static String serverUrl = "btspp://localhost:" +
BluetoothEchoDemo.RFCOMM_UUID + ";name=rftcommtest;authorize=true";
.
.
.
conn = null;
localDevice = LocalDevice.getLocalDevice();
localDevice.setDiscoverable( DiscoveryAgent.GIAC );
notifier = (StreamConnectionNotifier)Connector.open(serverUrl);
.
.
.
```

Now make a connection with the same Generic Connector you use when making HTTP calls. The url definition is as follows:

```
scheme://host:port;parameters
```

Name	Description
scheme	Connection type such as http, in the case of Bluetooth you use btspp for RFCOMM or btl2cap for L2CAP
host	The address to connect to or if you are setting up a server then you put in localhost
port	The port of the client connections and for servers it describes the UUID more about this later.
parameters	Specify option parameters ie: like given the service name name=rftcommtest

Now wait for a client response, this pauses the thread until it receives something.

```
conn = notifier.acceptAndOpen();
```

Once a client responds read the data in and send back a message

```
// Read Data Transmission
String msg = BluetoothEchoDemo.readData(conn);
System.out.println("Received Message from Client: " + msg);
// Send Back a Message
msg = "Hello Back from Server";
output = conn.openOutputStream();
output.write(msg.length()); // length is 1 byte
output.write(msg.getBytes());
output.close();
```

Running the Example

Download the source and compile from here.

You will need to invoke the Sun WTK twice because the outputs are displayed in the consoles. Start one instance and select Server, then start a second instance and select Client (Yes you need to start 2 instances of the WTK not just simply hit the "run" button twice on the same instance because the console of the first instance will not show). Like HTTP calls you may need to answer yes for connections being made.

In the end you will see the following in the server console:

```
Starting Echo Server
Server Running...
Received Message from Client: Say Hello World
```

In the client console you will see:



SIGN UP FOR THE FREE WebProNews NEWSLETTER



THE DEFINITIVE GUIDE TO ENGAGING EMAIL MARKETING

Take your email marketing to the next level. Download the Definitive Guide to Engaging Email Marketing and start getting better results today!

DOWNLOAD GUIDE



There's More to ME

Applications Performance Management

Monitor your Cloud, Virtual & Physical Infrastructure

ManageEngine Applications Manager

Powering IT Ahead

SEE THE DIFFERENCE >

Judge Says Gmail Might Be Breaking The Law

Google continues to fight for right to scan your emails



3 Comments

BlackBerry Posts \$965 Million Quarterly Loss

A dismal financial report from a company on the brink



Pursue Your Master's or Bachelor's in Internet Marketing - Learn More

Major Device Class: 512 Minor Device Class: 4

Bluetooth Address: 000060854FBF

Bluetooth Friendly Name: WirelessToolkit

InquiryCompleted

ServicesDiscovered

SERVICE_SEARCH_COMPLETED

Service URL:

btspp://000060854FBF:1;master=false;encrypt=false;authenticate=false

Hello Back from Server

Summary and What is Missing

You should be able to make a basic RFCOMM communication between a Bluetooth client and server. However, even though we went through a lot detail there are still details that were left out or not mentioned. Now that you have a better understanding of Bluetooth with J2ME you need to dive deeper into the following:

- An understanding of Service Discovery Database (SDDB)
- A more in depth look at UUIDs and other Data Elements
- Understand what a Service Record is and what it does
- Understanding the relationship between SDDB, Service Record and Data Elements

As a recap the example in this article the primary goal is to give you an introduction to setting up the communication between a master and slave. Rather than jumping into a full example and getting over whelmed this sample code layouts out the bare bones. Along with more research into the APIs and review of more complete samples of Bluetooth you will be on your way to making some exciting new Bluetooth games/aplications. More complete examples are available with developments kits such as:

- BluetoothDemo comes with the WTK 2.2 Beta (Sun)
- BluePad comes with the SDK from SonyEricsson
- BlueToothCar comes with the SDK from SonyEricsson
- Samples that comes with the Rococo Software SDK

Source Code

[Download Source to Bluetooth Example \(Click Here\)](#)

Development Kits

<http://java.sun.com> (Wireless Toolkit 2.2 Beta includes JSR 82)
<http://forum.nokia.com> (Nokia Developer Suite 2.2 includes JSR 82)
<http://developer.sonyericsson.com> (J2ME SDK 2.1.4 Beta includes JSR 82)
<http://www.atinav.com>
<http://www.rococosoft.com>
<http://www.esmertec.com>
<http://www.smartnd.com>
<http://www.oi-us.com>

Resources

<http://jcp.org/aboutJava/communityprocess/final/jsr082/>
<http://www.bluetooth.com>
<http://www.bluetooth.org>
<http://opensource.nus.edu.sg/projects/bluetooth/>
<http://bluez.sourceforge.net/>
<http://benhui.net>

1 Comment



HTC Sells Back Its 25% of Beats Electronics

HTC now owns no part of Beats



Obamacare Fines: Not Prohibitive for Some

How many Americans will choose fines over premiums?



48 Comments

Marijuana Legalization Group May Air Super Bowl Ad

NORML currently leads online contest by Intuit



176 Comments

Indian Mutual Fund Sales Rise Quickly

Indian Mutual Funds Rise



Advertisement

Online Backup

FREE for 30 days & get 2 bonus months when you subscribe.

Carbonite Business online backup

CARBONITE TM
THE BETTER BACKUP PLAN

TRY IT FREE!

- Flat, annual pricing
- Automatic and continual file protection
- Secure, offsite file storage
- Anytime, anywhere data access

Wall Street Ends 5 Day Skid; Stocks are Up

Positive signs in Washington over looming shutdown aid growth



1 Comment

Yelp: Really, We're Serious About Fake Reviews

Would "love" to work with more law enforcement officials



1 Comment

That Comic-Con Heisenberg Mask Is Now on eBay

It'll run you over \$30,000



1 Comment

Jason is a wireless and open source developer enthusiast who enjoys creating synergy and sharing knowledge in the software development world. To learn more about him visit his personal site at <http://www.jasonlam604.com/>

[Share on Facebook](#)

RELATED ITEMS BLUETOOTH

Jason Lam

**About Jason Lam**

Jason is a wireless and open source developer enthusiast who enjoys creating synergy and sharing knowledge in the software development world. To learn more about him visit his personal site at <http://www.jasonlam604.com/>

[View all posts by Jason Lam →](#)
Top Rated White Papers and Resources

THERE ARE **3** COMMENTS. [ADD YOURS.](#)

chadngm

February 13, 2011 at 5:15 pm



hi,
try the following url :

<http://www.pudn.com/downloads161/sourcecode/mobile/j2me/detail727017.html>

(for the EchoClient, there is a bug in html code. But you can copie it from source code of the page)

Enjoy 😊

[Reply](#)


Guest

January 17, 2011 at 4:51 am



Even i couldn't download the source code..
Pls send me the link soon;.....

[Reply](#)


manoj

October 4, 2010 at 2:26 pm



hi,

I can't download the source code with given link.please send me the working link to download the soure code immediately.

Thank you.

[Reply](#)
WHAT DO **YOU** THINK? **RESPOND.**

Your email address will not be published. Required fields are marked *

Name *

Email *

Website

Electrics to Make Up 7% of Vehicle Market by 2020

Battery costs are falling

**Ex-Yelp Employees Discuss Review Filter, Blackmail**

Study ignites huge conversation on reddit

**Alfa Romeo 4C Launch Delayed to 2014**

4C will be priced at \$54,000

**Home Insurance: The Hartford Extends AARP Program**


Partnership with AARP will now last through 2023



Comment

You may use these HTML tags and attributes: <abbr title=""> <acronym title=""> <blockquote cite=""> <code> <del datetime=""> <i> <q cite=""> <strike>

[NEXT ARTICLE »](#)


**SUBMIT YOUR WEBSITE TO OVER 450
SEARCH ENGINES & DIRECTORIES**



[WebProNews Videos](#) | [Advertise](#) | [About Us](#) | [New sletter](#) | [Archive](#) | [New s Feeds](#) | [Terms & Conditions](#) | [Contact Us](#)

WebProNews is an iEntry Network® publication - © 1998-2013 All Rights Reserved.


WebProNews

WebProNews is your comprehensive resource for news, information, and tips related to online business.


DevWebPro

DevWebPro is dedicated to bringing you the best developer information on the net.


GetIP

A free application that helps users find out the details of their Internet connection, as well as that of any other IP address or domain.


PRtracking

A free automated PageRank checking service.


Twellow

Twellow is a directory of public Twitter accounts, with hundreds of categories and search features to help you find people who matter to you.


Company

[Corporate](#)
[Advertising](#)
[Sitemap](#)
[Newsletters](#)
[Privacy Policy](#)
[About Us](#)
[Contact Us](#)

iEntry Network

[Web Developers](#)
[IT Managers](#)
[Small Business Owners](#)
[eBusiness Management](#)
[Software](#)
[Gamers](#)

Advertising

[Why Advertise?](#)
[Who's Advertising?](#)
[Testimonials](#)
[Newsletter Samples](#)
[Ad Specs](#)
[Contact](#)

Get to know us

iEntry Network, a business-to-business Web media services company, provides your pathway to over 6 million IT professionals, small business owners and ecommerce entrepreneurs, marketing professionals, industry bloggers, and Web-savvy media consumers.


 © 2013 iEntry Network All Rights Reserved 