

GPS Speck Gateway

About

The GPS Speck Gateway is an application which downloads data samples from a GPS Speck to the user's computer.

Prerequisites

Hardware

The GPS Speck Gateway should run on any moderately recent computer running Mac OS, Windows, or Linux with a USB port.

Software

The GPS Speck Gateway has been tested on Mac OS 10.8, Mac OS 10.9, Windows XP, Windows 7, and Ubuntu Linux. It should work on both 32-bit and 64-bit operating systems.

The GPS Speck Gateway is a Java application, so you will need to have Java SE 6 or later installed. For running the GPS Speck Gateway, it doesn't matter whether you install the JRE or the JDK, but the JRE will be a smaller download. If you only ever need to *run* Java applications, then the JRE is fine. But if you expect to ever build the GPS Speck Gateway from source code, or develop Java applications (i.e. write Java code), then you'll want the JDK. Either way, you can download Java from: <http://www.oracle.com/technetwork/java/javase/downloads/index.html>

Although the GPS Speck Gateway requires Java to be installed, it does not require the Java Plugin to be installed or enabled in your browser.

Downloading

We offer two pre-built versions of the GPS Speck Gateway:

- Downloadable, standalone applications for Mac OS and Windows:
 - Mac:** <http://specksensor.org/software/mac/GpsSpeckGateway.dmg>
 - Windows:** <http://specksensor.org/software/windows/GpsSpeckGateway.zip>
- A downloadable zip file for Linux users or users having special installation configuration needs (see the *Advanced Use Cases* section below)
 - Zip:** <http://specksensor.org/software/gps-speck-gateway.zip>

Installing

Do the following to install the GPS Speck Gateway application:

- Mac OS:** you will have downloaded a disk image file (.dmg). Double-click it to mount and open the disk image. Once it is open, simply drag the GPS Speck Gateway application to your computer's Applications folder. Once it has copied, you may eject the disk image.
- Windows:** you will have downloaded Zip file (.zip) containing the installer file (.msi). Extract the zip and then double-click `GpsSpeckGateway.msi` to run the installer. Follow the installation wizard steps to install the GPS Speck Gateway application.
- Linux:** you will have downloaded a Zip file (.zip). Extract the zip file to your preferred location.

Running

First, make sure you have Java SE 6 or later installed. See the *Prerequisites* section above for details. If Java is already installed, do the following to run the GPS Speck Gateway application:

- Mac OS:** double-click the GPS Speck Gateway application in your Applications folder.
- Windows:** select the GPS Speck Gateway application in the Start menu, or double-click the icon on your desktop.
- Linux:** double-click the `speck-applications.jar`

Usage

Once the GPS Speck Gateway is running, it immediately begins searching for a GPS Speck to connect to. If you haven't already, go ahead and plug your GPS Speck into your computer. The GPS Speck Gateway should connect to the GPS Speck and immediately begin downloading data samples. Simply let it continue to download data samples until it finishes.

Data

Downloaded data samples are stored in a CSV file named `data_samples.csv`. The CSV will be in a subdirectory under the user's home directory. The exact path for the data directory depends on the device ID, but a typical path would be:

```
~/CREATELab/Speck/Speck008343135321504100f17/
```

In that directory you'll also find a database directory. Ignore it.

Advanced Use Cases

Some users may have more complex installation needs which can currently only be satisfied with the zip file version of the software. Other users may prefer to build the application from source. The following sections cover those use cases. Users whose needs are met with the standalone applications discussed above may safely ignore the rest of this document.

Using the Zip File Version

The Zip file version of the software is available for download at: <http://specksensor.org/software/gps-speck-gateway.zip>

After downloading and unzipping, the simplest way to run the software is to simply double-click the `speck-applications.jar` Jar file. Doing so will run the GPS Speck Gateway, and it will behave exactly the same as the pre-built, standalone applications discussed above.

Other ways of running the software are discussed below in the *Running* section. See the *Tips and Tricks* section below for advanced configuration options.

Building from Source

At a minimum, you must have the following installed in order to build the source code:

- Java JDK 1.6+ (<http://www.oracle.com/technetwork/java/javase/downloads/index.html>)
- Ant (<http://ant.apache.org/>)

The source code is stored in a GitHub code repository at: <https://github.com/CMU-CREATE-Lab/speck-gateway>

To build, open a command prompt and change to the root directory of the source code. Then change to the `java` subdirectory and then run Ant. It should look similar to the following:

```
$ cd gps-speck-gateway
$ cd java
$ ant
Buildfile: /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/build.xml
[echo] Speck Gateway Version Number: 2.0.0

clean-speck-core:
[delete] Deleting directory /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/core/build
[delete] Deleting directory /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/core/dist

clean-speck-applications:
[delete] Deleting directory /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/build
[delete] Deleting directory /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/dist

clean-speck-gateway-web-distro:
[delete] Deleting directory /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/web-distro/dist

clean:

build-speck-core:
[mkdir] Created dir: /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/core/build
[javac] Compiling 31 source files to /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/core/build
[javac] Note: /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/core/src/org/specksensor/DataSampleUploadHelper.java uses or overrides a deprecated API.
[javac] Note: Recompile with -Xlint:deprecation for details.

dist-speck-core:
[mkdir] Created dir: /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/core/dist
[copy] Copying 26 files to /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/core/dist
[jar] Building jar: /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/core/dist/speck-core.jar

build-speck-applications:
[mkdir] Created dir: /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/build
[javac] Compiling 6 source files to /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/build
[copy] Copying 5 files to /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/build
[copy] Copying 2 files to /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/build

dist-speck-applications:
[mkdir] Created dir: /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/dist
[copy] Copying 27 files to /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/dist
[jar] Building jar: /Users/chris/Documents/Work/Projects/SpeckGateway/gps-speck-gateway/java/code/applications/dist/speck-applications.jar

dist:

all:

BUILD SUCCESSFUL
Total time: 3 seconds
```

The binaries are now built and you're ready to run the application. See the *Running* section below for details. See the *Tips and Tricks* section below for advanced configuration options.

Note that doing the above will simply create all the Java binaries (Jar files) required for running the code. It won't create the standalone application versions of the software such as we provide for Mac OS and Windows. Details for creating the standalone applications are beyond the scope of this document.

Running

There are actually three applications created when you build the binaries or work with the jars from the Zip file version:

- The gateway GUI application (discussed above) which auto-connects to the first GPS Speck it finds, and continually downloads data samples from the device and caches them locally.
- A command-line version of the gateway application.
- A simple, command-line client for testing connectivity and basic interaction with a GPS Speck. The command line client is good for testing connectivity and basic interaction but does not save data samples.

Running the GPS Speck Gateway (GUI)

The easiest way to run the gateway is to simply double-click the `speck-applications.jar` created by the build. You'll find it in `gps-speck-gateway/java/code/applications/dist`. If, however, you prefer to launch it from the command line, do the following...

To run the GPS Speck Gateway, `cd` to the `java` directory and run the `speck-gateway-gui.sh` script (Mac/Linux) or `speck-gateway-gui.sh` batch script (Windows).

Once the GPS Speck Gateway is running, you shouldn't need to do anything. It will auto-connect to the first GPS Speck it finds and begin downloading data samples.

Running the GPS Speck Gateway (Command Line)

To run the command line version of the GPS Speck Gateway, `cd` to the `java` directory and run the `speck-gateway.sh` script (Mac/Linux) or the `speck-gateway.bat` batch script (Windows).

Once the program is running, use the menu options to connect, etc.

Running the Command Line Client

To run the command line client, `cd` to the `java` directory and run the `command-line-speck.sh` script (Mac/Linux) or the `command-line-speck.bat` batch script (Windows).

The command line client has a menu which lists the various commands you can run to interact with the device.

Tips and Tricks

This section discusses some useful tips for running the GPS Speck Gateway from the command line (either from the jars provided in the Zip file version, or from binaries created by building from source).

Command Line Options

The gateway application supports the following command line options:

- `--logging-level=<level>` Sets the logging level for the log file. Has no effect on the console logging. Valid values are `trace`, `debug`, and `info`.
- `--command-line` The command line version will be used instead of the GUI version.

Change the Logging Level

You can set the logging level when you run the gateway by specifying the `--logging-level` command line option as discussed above. You can also change the logging level at runtime by using the `l` menu option when using the command line version of the gateway.

View Statistics

Statistics for the number of files downloaded, deleted, etc. are printed periodically by the gateway. You can also request the statistics at any time by choosing the `s` command.

Change Data Directory

By default, the GPS Speck Gateway stores its files under a `CREATELab` subdirectory of the user's home directory. This is problematic for some users (e.g. schools with shared computers, security restrictions, etc.). To change where files are stored, you can launch the GPS Speck Gateway and supply it with the `CreateLabHomeDirectory` system property. To do so, open a command prompt window and navigate to the `gps-speck-gateway/java` directory. Then run the following command, replacing `PATH_TO_DESIRED_DIRECTORY` with the path to the directory in which you want files to be saved:

```
java -DCreateLabHomeDirectory=PATH_TO_DESIRED_DIRECTORY \
-Djna.library.path=./code/applications/dist \
-Djava.library.path=./code/applications/dist \
-jar ./code/applications/dist/speck-applications.jar;
```