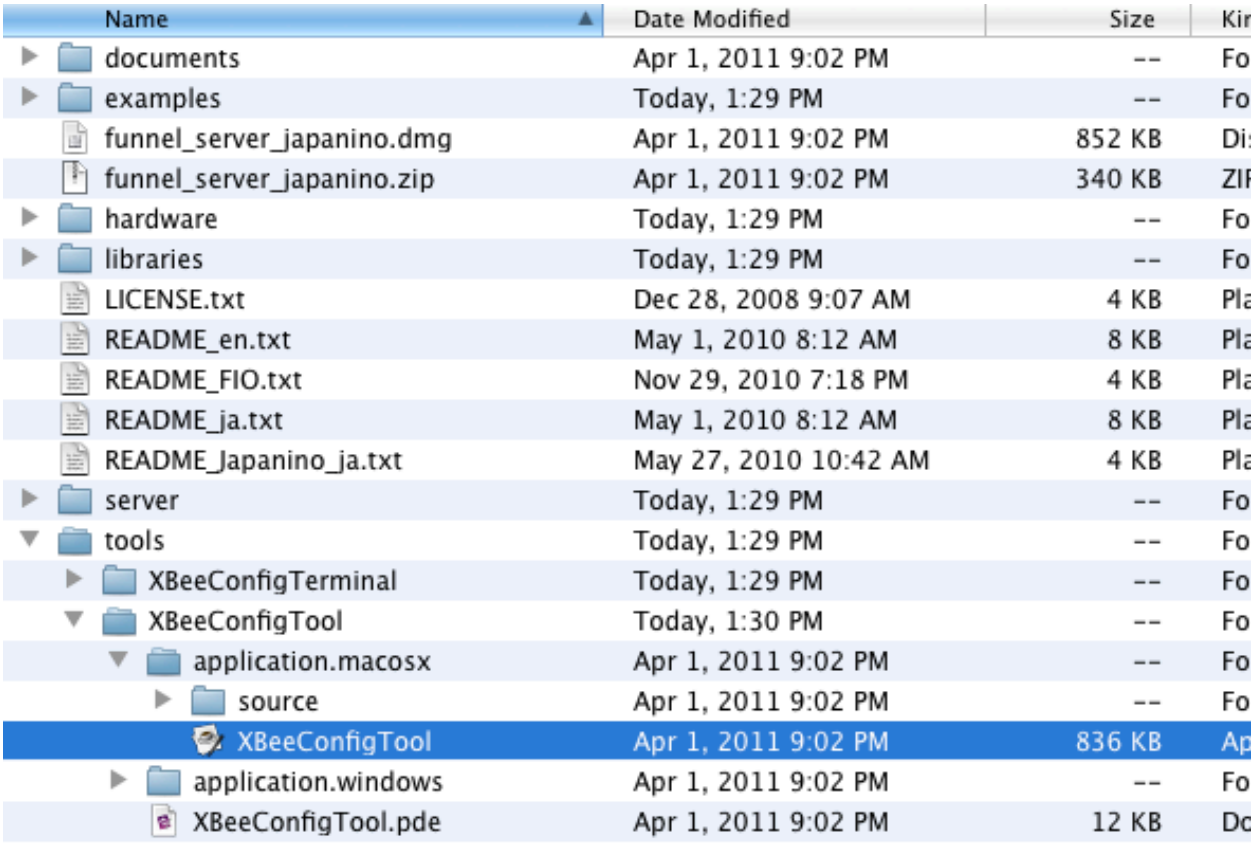
Funnel Setup Instructions

Step 1. Configuring XBee Radios

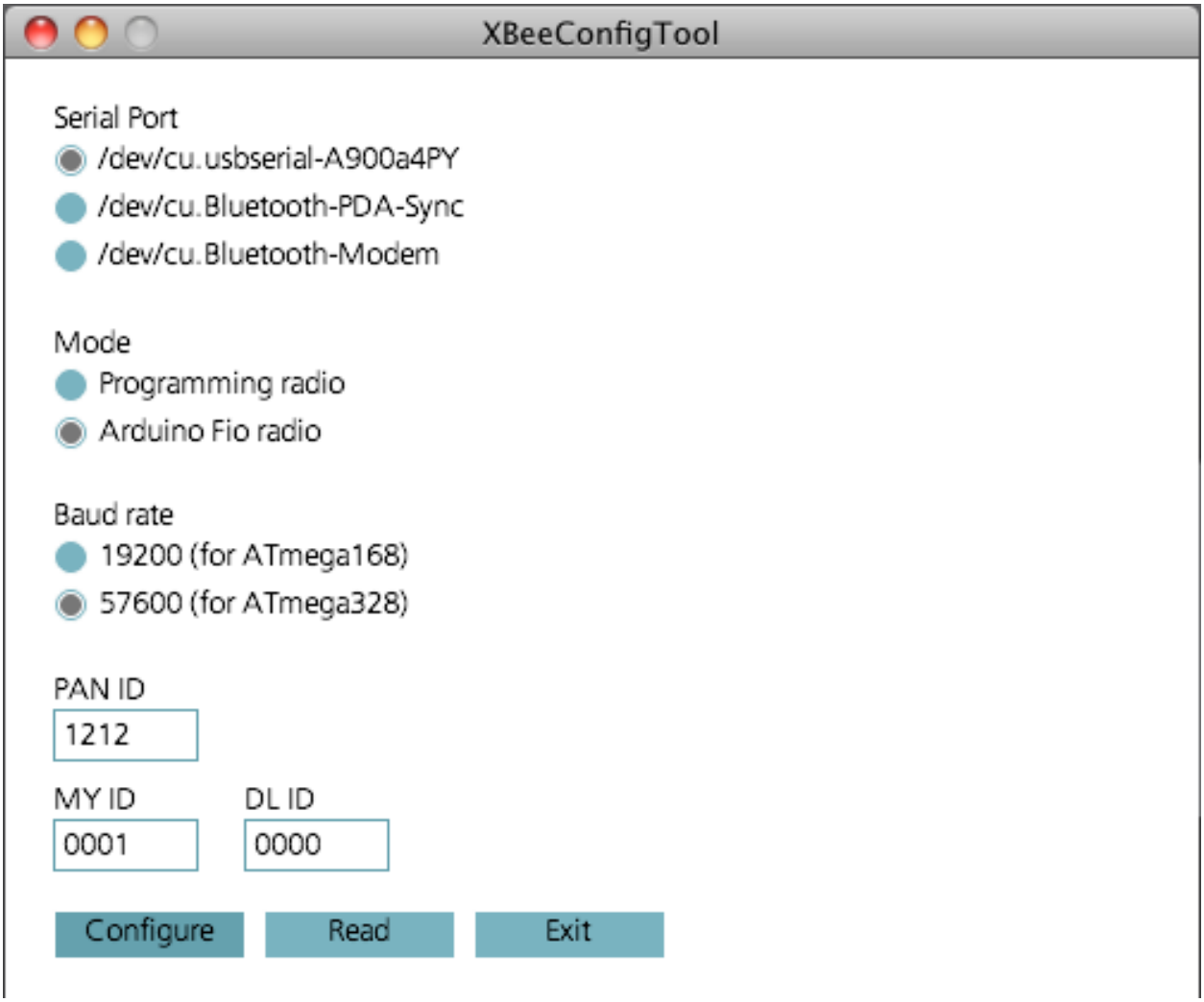
1. Round up 2 XBee radios.

2. Conncect the first XBee module to XBee Explorer board and then collect the XBee explorer to your computer.

3. Open your funnel directory and navigate to tools -> XBeeConfigTool -> application.macosx -> XBeeConfigTool and open the application.



4. First we'll configure the XBee radio that will be connected to the Fio board. Select the serial port, set the Mode to Arduino Fio radio, and set the baud rate to 57600. Each network of XBee radios needs a unique PAN ID.



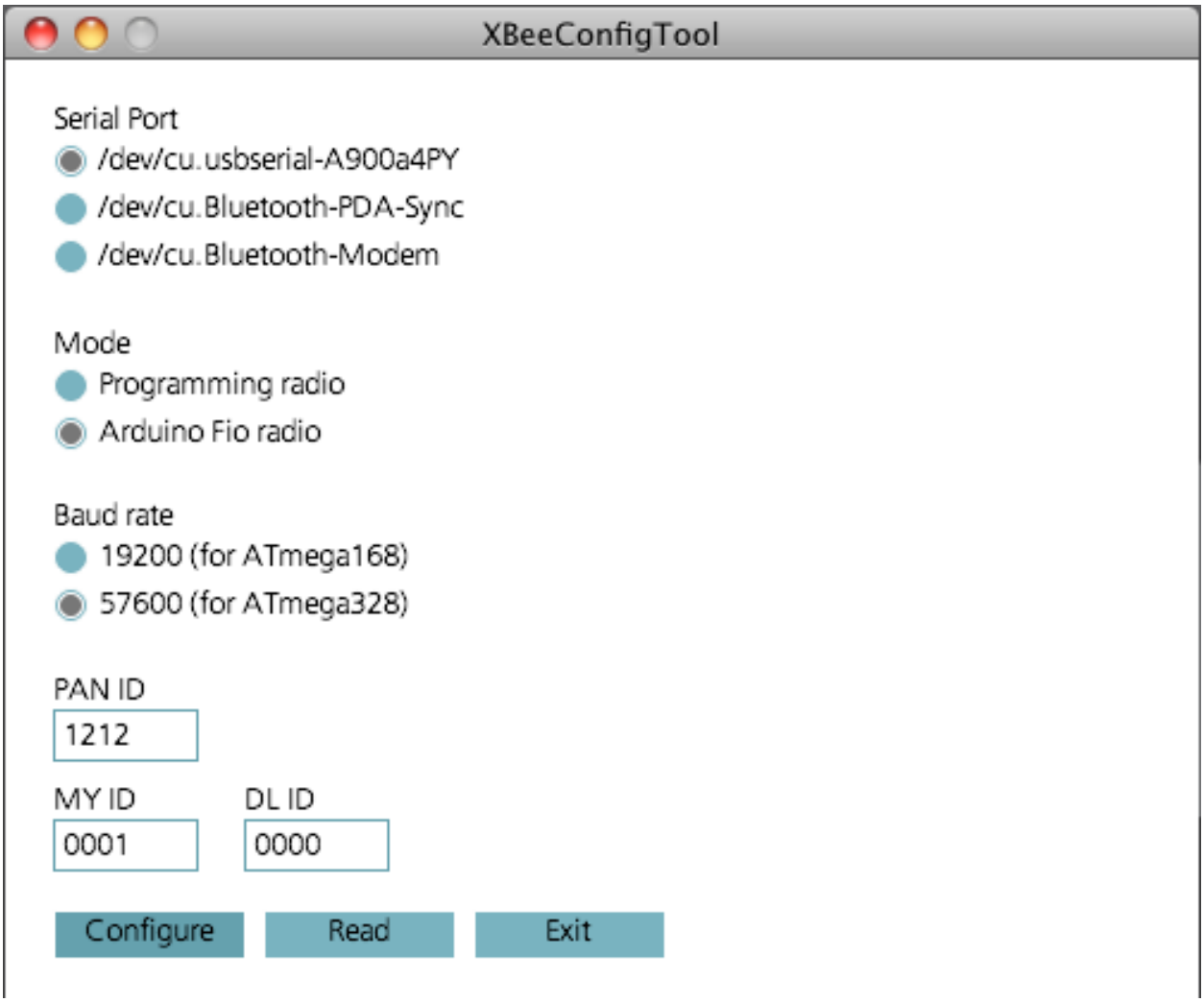
Click Configure. You should see the LEDs flicker on the XBee explorer board and then hopefully see the “Configured successfully” message below the Configure button.

5. Click Exit to close the XBeeConfigTool and then disconnect the XBee explorer board from your computer.

6. Carefully remove the XBee radio from the XBee explorer board and attach it to the Arduino Fio.

   Attached the other XBee radio to the XBee explorer board and launch the XBeeConfigTool as in Steps 2 and 3 above.

7. Configure the XBee radio to be the programming radio. Be sure to set the PAN ID to the same value you set for the other radio. Each pair of radios must have a unique PAN ID.



Click Configure, check for success, then Exit.

Step 2. Uploading StandardFirmataWithI2C to the Arduino Fio

1. If you have not already, copy StandardFirmataWithI2C from DropBox to your Documents/Arduino/ folder.

2. Make sure the XBee explorer is connected to your computer and open the Arduino Application.

3. Open StandardFirmataWithI2C.

4. Select ‘Arduino Fio’ from the Tools -> Boards menu and make sure the correct serial port is also selected (if the top serial port in the list contains the text ‘bluetooth’ then recheck your connections).

5. Compile the code (click the ‘play’ button or Command + R).

6. Make sure the Arduino Fio board is turned on. There is a tiny on/off swith on the top of the board.

7. Upload the sketch.

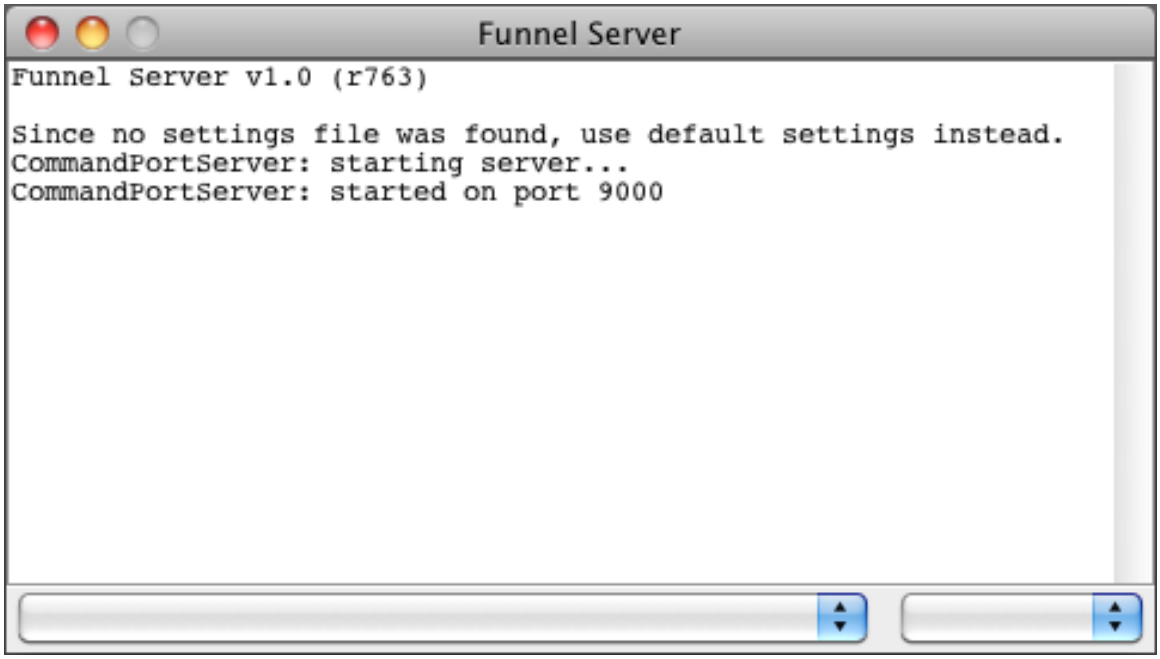
8. If you happen to get an error, make sure the correct board and serial port are selected from the tool menu. Sometimes the wireless upload process can be a bit fussy so if it fails, toggle the Arduino Fio on and off, wait a couple of seconds then try to upload again. If you continue to get an error, redo the XBee configuration steps.

   If the upload was successful, close the Arduino application.

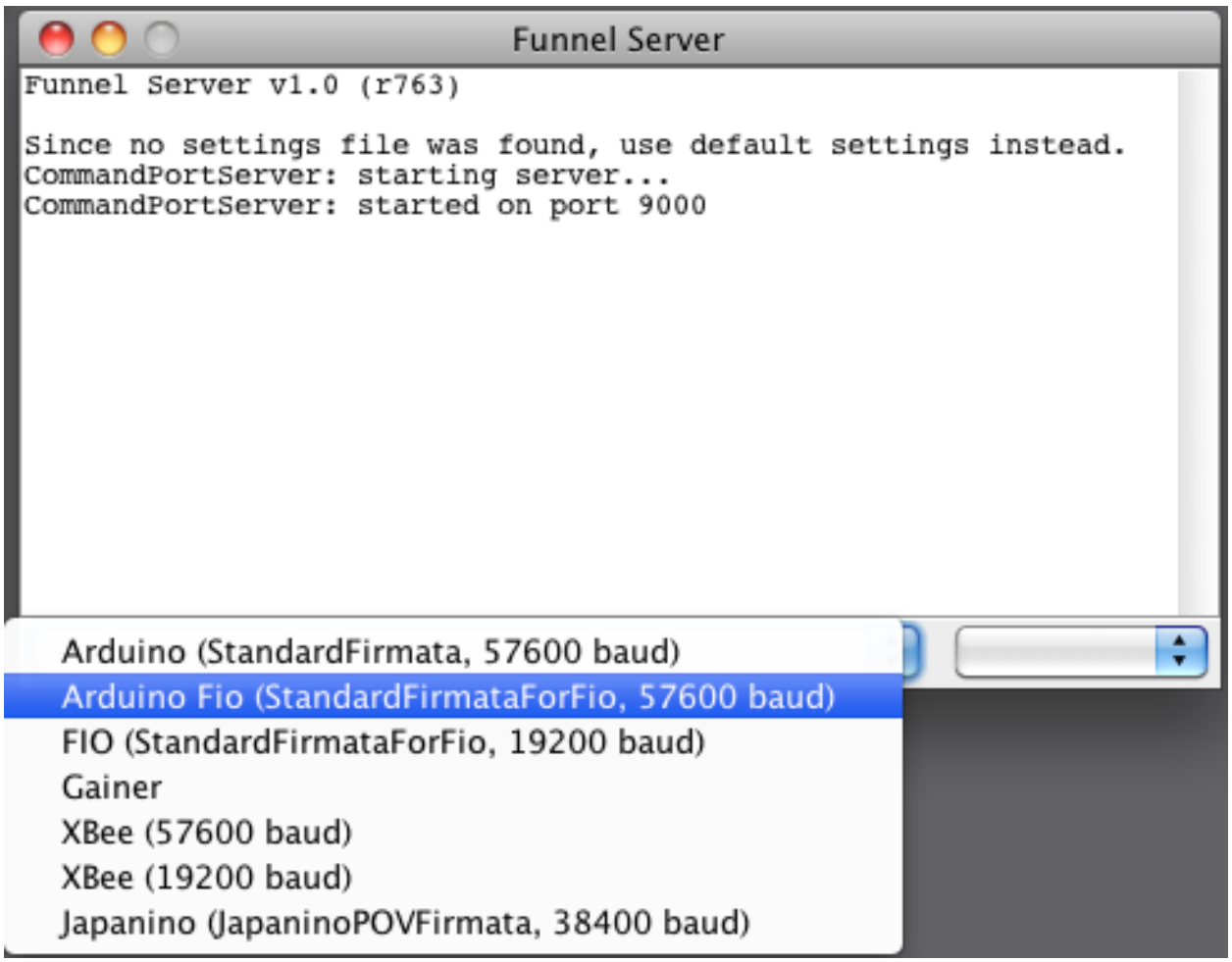
Step 3. Running Funnel Server

1. Connect your Arduino board to your computer.

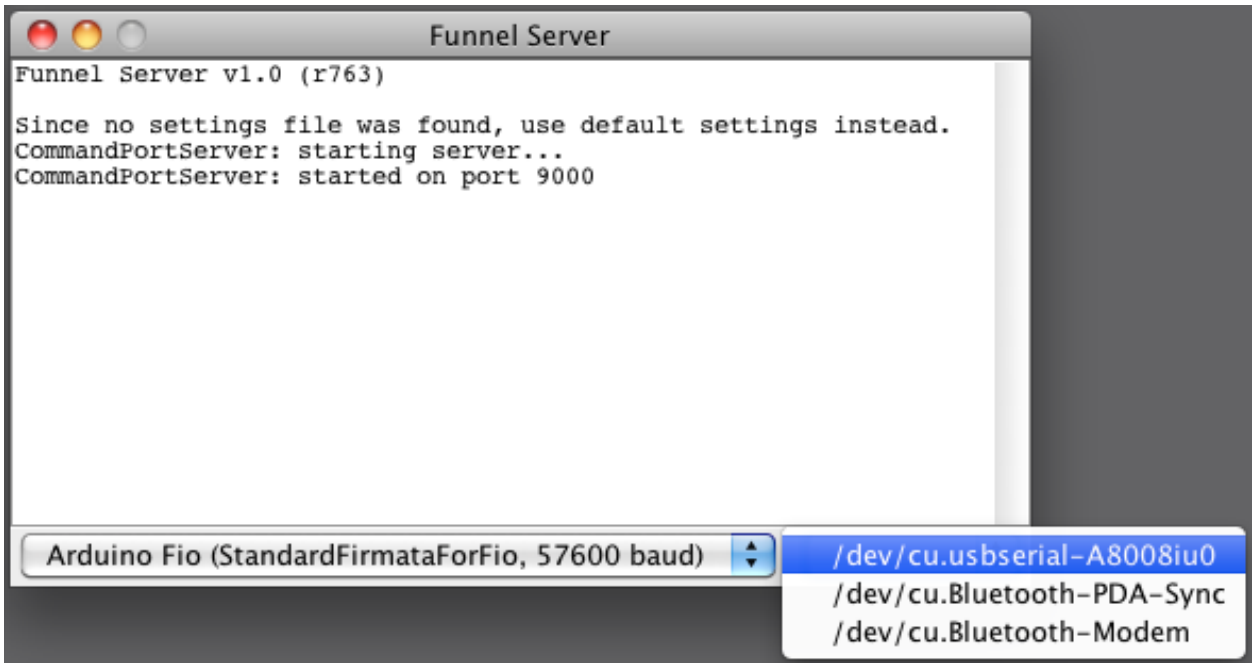
2. Launch the Funnel Server application



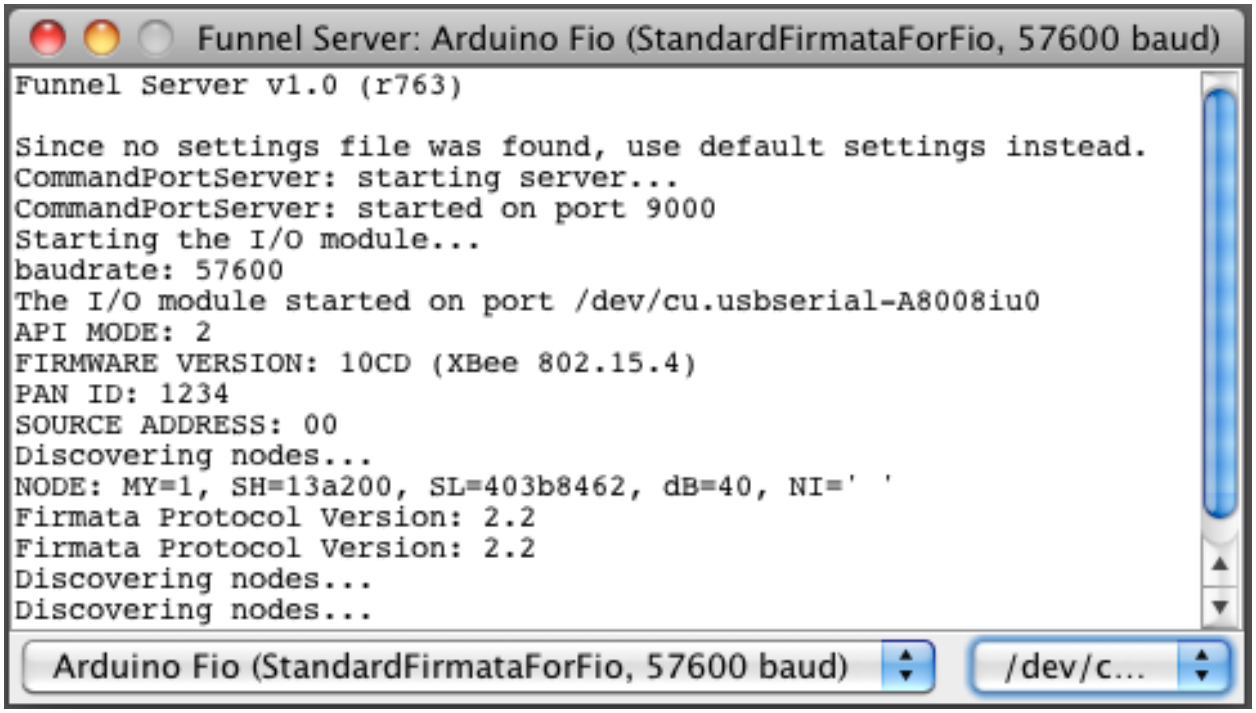
3. Select the Arduino Fio board



4. Select the usb port



Upon selecting the usb port, there may be a couple seconds delay before you see any change in the screen. Once the connection is established, you should see similar output to this:

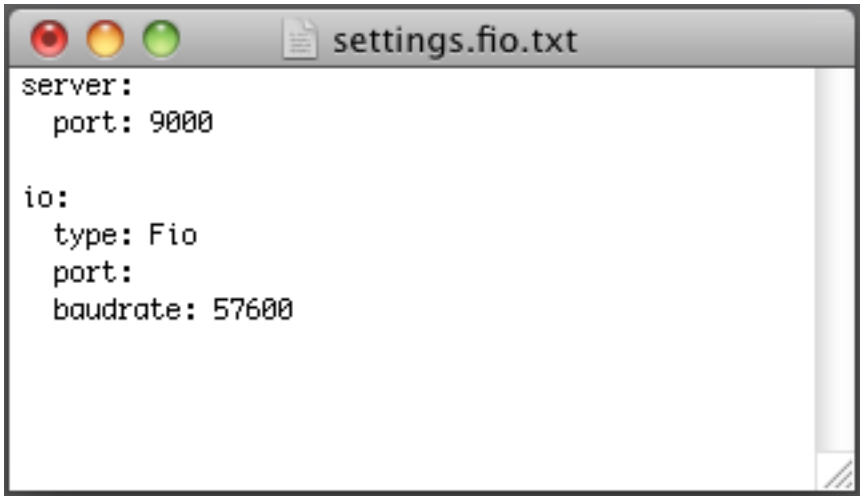


The things you want to look for are:
The I/O module started on port <name of usb port>
...

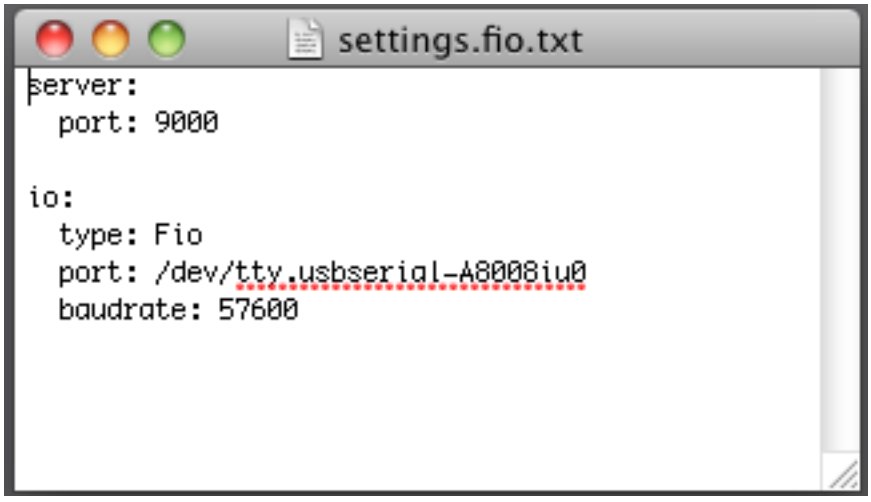
NODE: MY=1, SH=13a200, SL=403b8462, db=40, NI=' '
Note: the exact numbers above may be different, but you should see something in this format.
...
Firmata Protocol Version: 2.2
Discovering nodes...

Optional Step. Setting up Processing for funnel

1. Funnel Server runs within Processing so you don't need to launch the Funnel Server application separately. However you do need to edit the settings.fio.txt file located in /Documents/Processing/libraries/funnel/library/. Open the file, it should look like this:



2. You need to supply the usb address for the port: field in the io section. You can get this in 2 ways. The easiest way is to connect the XBee Explorer and open the Arduino application. Once Arduino opens, select the Tools menu, then Serial Ports. Write down the name of the serial port at the top of the list (it should not say anything about Bluetooth, if it does make sure the XBee Explorer is connected and that you had previously installed the correct FTDI USB drivers). Enter the serial port information into the port: field (the one between type: Fio and baudrate: 57600) of the settings.fio.txt file and save the file.



The other way to get the port info is to open your Terminal applications (you'll find this in Applications/Utilities (you can also search for it in Spotlight).

When the Terminal app is open type the following: ls /dev/tty.*
Then hit Enter.

This will return a list, copy the one that corresponds to your XBee Explorer (the one that does not include Bluetooth) and then paste it into the settings.fio.txt file.

As long as you always use the same XBee Explorer board with Processing you should not have to edit the settings.fio.txt file once you have the port field set. However if you use a different board, you will have to update the txt file with the port info corresponding to the new board.

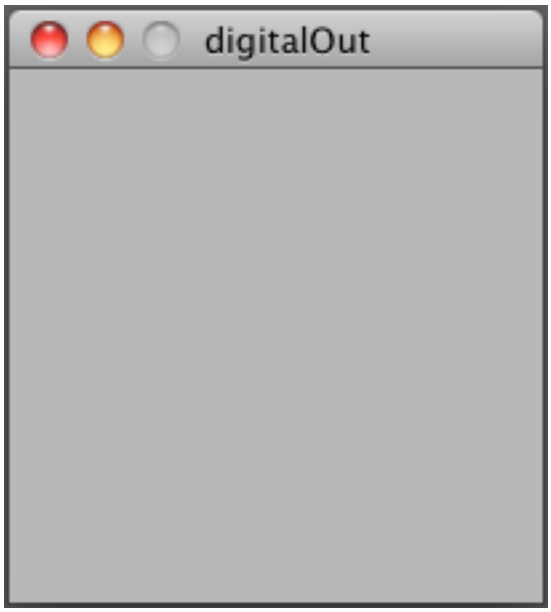
3. Connect the XBee Explorer board to your computer if it is not already connected.

4. Launch Processing

5. Open the example in libraries -> funnel -> examples -> Fio -> digitalOut

6. Press the 'play' button in Processing to run the sketch

   If you get an error, make sure you entered the correct port information in the settings.fio.txt file.

   If the sketch runs successfully you'll see the following output. Clicking in the window will make a red LED light up on the Fio board (the LED next to the reset button). Wait until you see the text "Discovering nodes..." in the

output window before clicking in the digitalOut application window (see below).