

Clyde + Seeed Studio RN171 WiFi Shield

Tuesday, September 2, 2014

This article is the second in an ongoing series about connecting Clyde to other devices. We will cover several WiFi, Bluetooth and ZigBee shields.

Overview

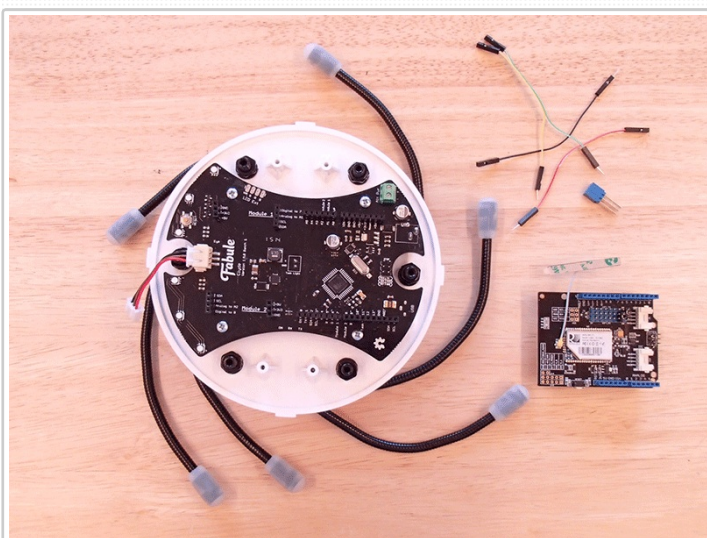
Seeed Studio RN171 WiFi Shield

\$59.90 USD, <http://www.seeedstudio.com/depot/Wifi-Shield-p-1220.html>

Seeed Studio RN171 WiFi Shield is a simple way to add WiFi to Clyde. Wirelessly connect Clyde to the internet by following these simple instructions.



Hardware



What you'll need

Clyde

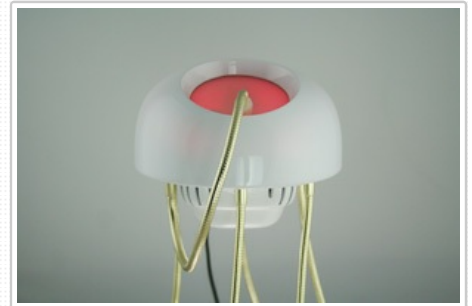
Seeed Studio RN171 WiFi Shield,

<http://www.seeedstudio.com/depot/Wifi-Shield-p-1220.html>

4 male-to-female jumper wires, like this:

<http://www.adafruit.com/products/1954>

(optional) 2x3 stackable header, like this:



Clyde is currently sold out, but the next improved litter is on the way!

PRE-ORDER CLYDE V2 FROM \$135

[Learn more about Clyde](#)

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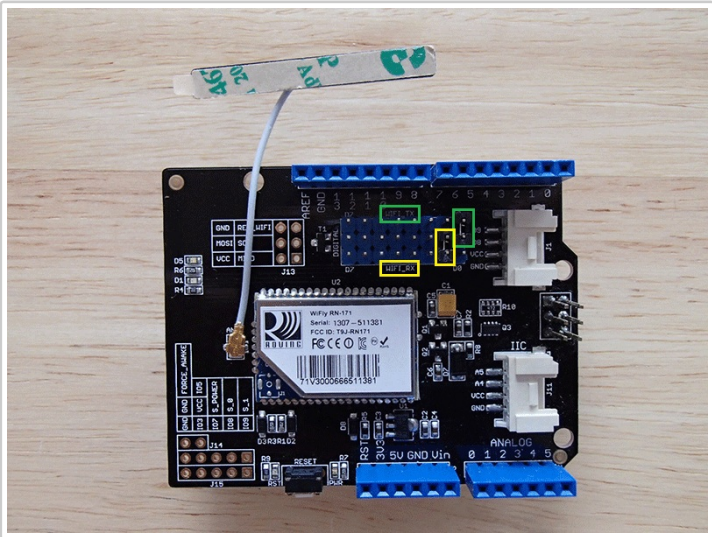
[Clyde + Seeed Studio Bluetooth Shie...](#)



Prepare Sseed Studio RN171 WiFi Shield

Sseed Studio's WiFi Shield uses a RN-171 WiFi module to add connectivity to 802.11b/g wireless networks using just 2 pins. These pins are set using the jumpers on the board. You'll want to connect via Clyde's hardware serial port on digital pins 0 and 1. Clyde's RX is on digital pin 0, so set the shield's WIFI_TX jumper to digital pin 0. Clyde's TX is on digital pin 1, so set the shield's WIFI_RX jumper to digital pin 1.

Set WIFI_TX to D0 (highlighted in green) and WIFI_RX to D1 (highlighted in yellow) with the shield jumpers.



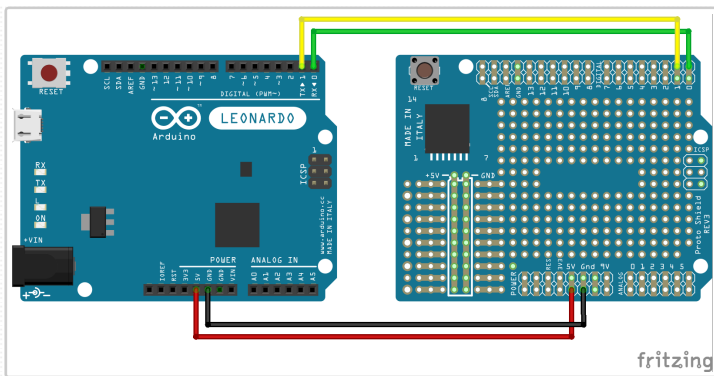
Connect Clyde to Sseed Studio RN171 WiFi Shield

Unfortunately, the shield does not fit in Clyde's head if placed on the board's pin headers. So you'll have to use a few jumper cables in order to connect the shield and close Clyde's head. Optionally, you can use Clyde's ICSP pins to secure the shield inside Clyde. The shield doesn't use those pins to communicate with Clyde, but they're useful just for mechanical stability.

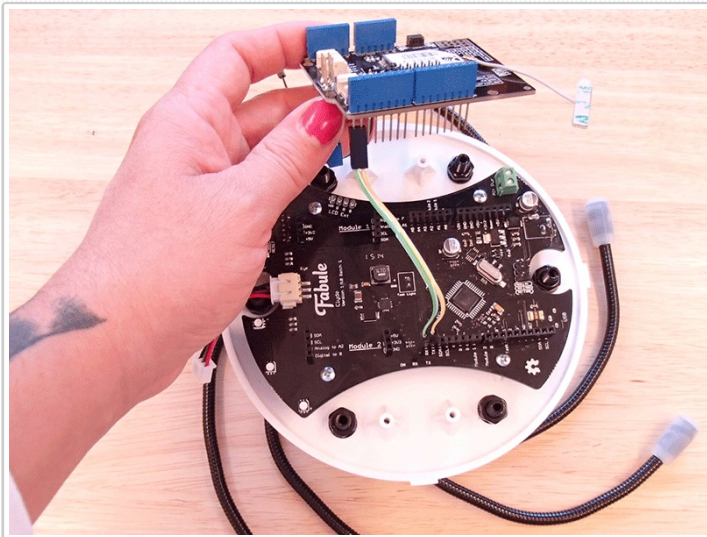
Pin Mapping			
Clyde		Sseed Studio RN171 WiFi Shield	
5v+		5v+	
GND		GND	
D0	Clyde RX	D0	WIFI_TX
D1	Clyde TX	D1	WIFI_RX

We have included a diagram we created with [Fritzing](#), a free simple electronics documentation software, to help demonstrate the connections. Clyde is not a Fritzing part, so we use a Leonardo in its place. The Sseed Studio shield is also not a Fritzing part, so we use an Arduino Prototyping Shield. We have selected the Leonardo part and the Arduino Prototyping Shield part because they have the same layout as Clyde and Sseed Studio RN171 WiFi Shield respectively, and can therefore demonstrate the necessary connections between the two.

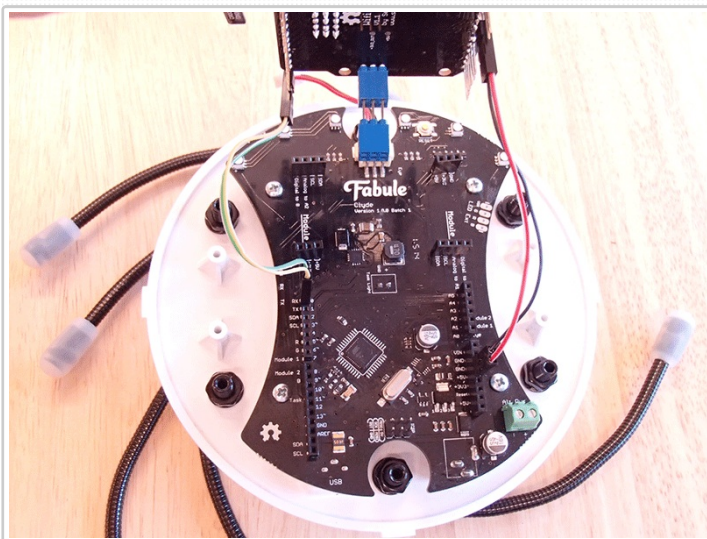
Clyde/Leonardo + Sseed Studio RN171 WiFi Shield/Arduino Prototyping Shield Breadboard Diagram



Connect jumpers to digital pins 0 and 1.

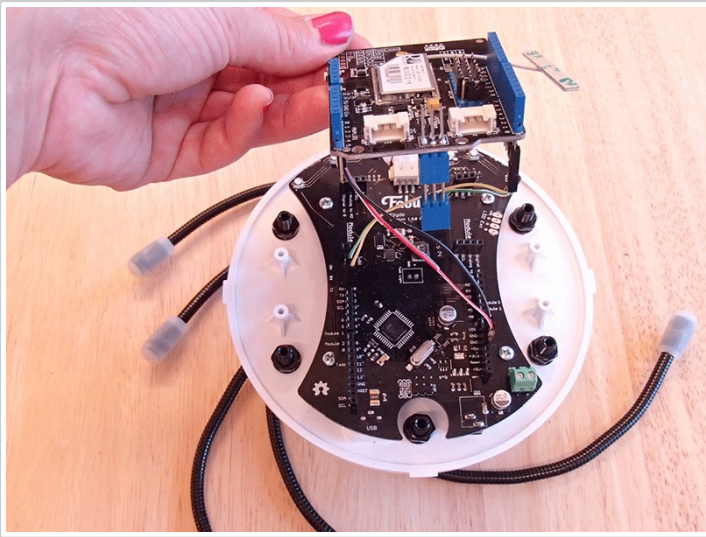


Connect jumpers to +5v and GND. *(optional)* Connect the 2x3 header.

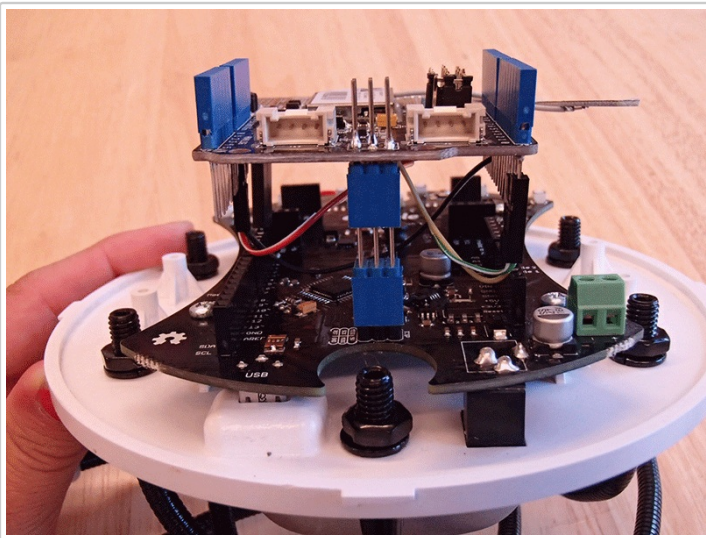


(optional) Clyde has a non-standard ICSP pinout placement, so by plugging the shield into Clyde using an extra 2x3 stackable pin header you will be able to close Clyde's head. This will also prevent the shield from accidentally plugging into Clyde's pinouts, which could cause a short. The Seeed Studio RN171 WiFi shield does not use the ICSP pins, so this does not impact its functioning.

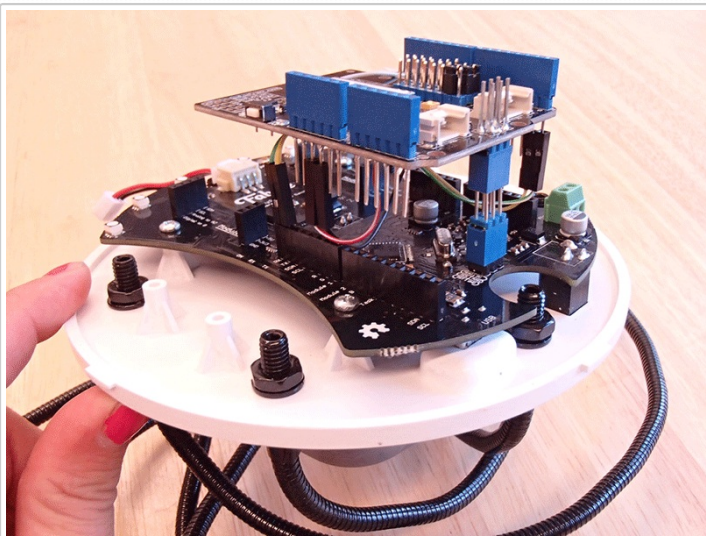
(optional) Turn the shield 180 degrees so the jumper wires are crossed.

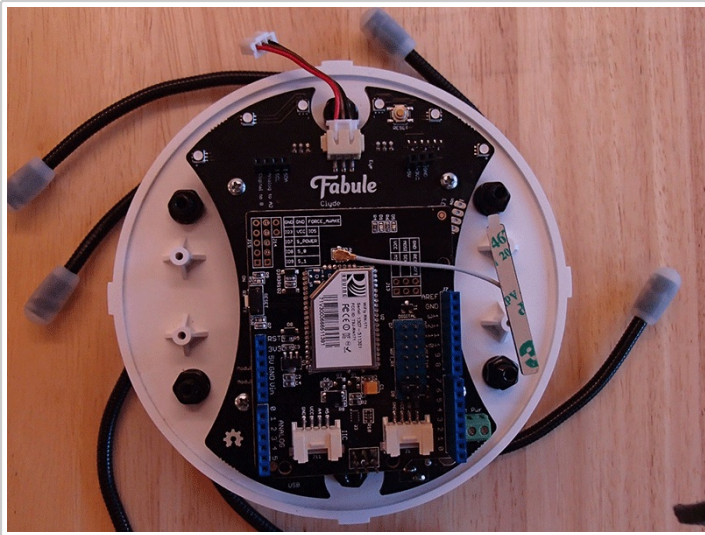


(optional) Plug the 2x3 header pin into Clyde's ICSP pins.



Hardware setup is complete. Now you are ready to move on to the software.





Software

Now for the code. Sseed Studio's accompanying library does not work with Clyde. It uses UART for serial communication. On most Arduinos, you can access this in code by calling "Serial". On the Leonardo, you need to use "Serial1" instead. We are in luck because GitHub's kasperkamperman has a Leonardo compatible fork of the WiFly library called WiFly_communicator. Download the [WiFly_communicator library from GitHub](#). (A special thanks to Joe Polastre, <https://github.com/polastre>, for adding WEP64 support to the library.)

Unzip WiFly_communicator-main.zip. The folder name will be WiFly_communicator-main, rename the folder to WiFly_communicator. Now move the WiFly_communicator folder into your Arduino sketchbook's libraries folder. If you need more help installing Arduino libraries, you can find instructions here: <http://arduino.cc/en/Guide/Libraries>

Ping!

The WiFly_communicator library provides the example sketch 'wifly_test'. This example is a simple program that lets you connect an Arduino, or Arduino compatible board like Clyde, to your WiFi network and ping fabule.com. First you'll set your network credentials in the sketch, and then you'll run a couple commands in the serial monitor.

Code Configuration

To open the sketch, in Arduino IDE go to:

File > Examples > WiFly_communicator > Examples > wifly_test

Library examples are read-only, so save yourself a copy:

File > Save As > clyde_wifly_test

Change the WiFi network credentials.

Set the following variables for your own WiFi network:

```
#define SSID      "Your-SSID"
#define KEY       "passphrase"
//WIFLY_AUTH_OPEN/WIFLY_AUTH_WPA1/WIFLY_AUTH_WPA1_2/WIFLY_AUTH_W
PA2_PSK
#define AUTH      WIFLY_AUTH_WPA1_2
```

Now you are ready to upload to Clyde.

Serial Monitor Commands

In order to test the WiFi connection you will need to run some commands in

the Serial Monitor. Once the sketch has uploaded to Clyde, open the Serial Monitor, set the baud rate to 9600 and the enter key to 'Carriage return'. If Clyde is able to connect, it will output a long message to the Serial Monitor that ends with `Enter command mode. Send "exit"(with \r) to exit command mode`

This means that the WiFly is ready to take orders.

First, get the wlan information.

Type the following in the Serial Monitor and press enter:

```
get wlan
```

Then join your network.

Type the following in the Serial Monitor and press enter:

```
join
```

Ping fabule.com!

Type the following in the Serial Monitor and press enter:

```
ping fabule.com
```

If the ping is successful, the Serial Monitor should output the following in response:

```
<2.38.3> ping fabule.com
Ping try (len=32) 216.194.170.38
<2.38.3> PING reply from 216.194.170.38
```

This concludes the test. To find out more information on the use of Seeed Studio's RN171 WiFi Shield please refer to their wiki:
http://www.seeedstudio.com/wiki/Wifi_Shield_V1.1

Links

Purchase: <http://www.seeedstudio.com/depot/Wifi-Shield-p-1220.html>

Wiki: http://www.seeedstudio.com/wiki/Wifi_Shield_V1.1

WiFly_communicator on Github:

https://github.com/kasperkamperman/WiFly_communicator

Download WiFly_communicator: [WiFly_communicator library from GitHub](#)



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