4-2 Pushing Data to the Cloud

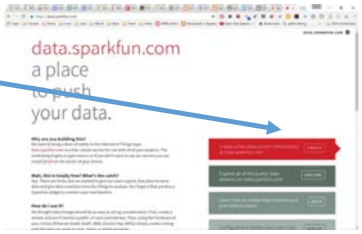
Using Phant with the Bone

Steps to and from the Cloud

- Step up phant for your data stream
- Gather data on Bone
- Send to phant via http request
- Automate collection
- Fetch from phant via http request

Set up Phant

- Phant is a service of SparkFun
- Go to: https://data.sparkfun.com/
- Click on CREATE



data.sparkfun.com
a place
to push
your data.

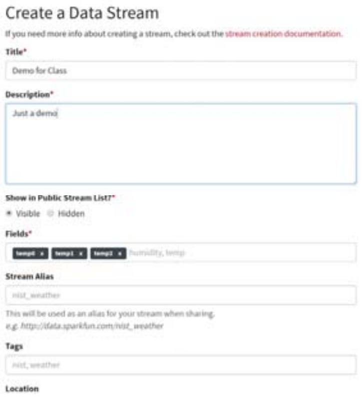
Why are you building this?

Wait, this is totally free! What's the catch?

How do I use it?

Fill in fields

- Most important is "Fields"
- Click Save



Create a Data Stream

If you need more info about creating a stream, check out the stream creation documentation.

Title*

Demo for Class

Description*

Just a demo

Show in Public Stream List?*

● Visible ○ Hidden

Fields*

temp0 x temp1 x temp2 x humidity, temp

Stream Alias

nist_weather

This will be used as an alias for your stream when sharing.
e.g. http://data.sparkfun.com/nist_weather

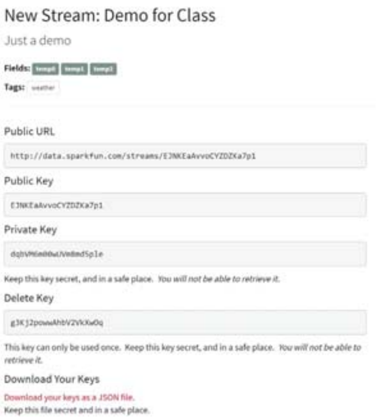
Tags

nist, weather

Location

Save keys

- Click "Download your keys as a JSON file."



New Stream: Demo for Class

Just a demo

Fields: temp0 temp1 temp2

Tags: weather

Public URL

http://data.sparkfun.com/streams/EJNKEaAvvoCYZDZKa7p1

Public Key

EJNKEaAvvoCYZDZKa7p1

Private Key

dqbVM6m00wUVm8md5ple

Keep this key secret, and in a safe place. *You will not be able to retrieve it.*

Delete Key

g3Kj2powwAhbV2VkXwOq

This key can only be used once. Keep this key secret, and in a safe place. *You will not be able to retrieve it.*

Download Your Keys

Download your keys as a JSON file.
Keep this file secret and in a safe place.

Key File

```
{
"title":"Demo for Class",
"outputUrl":"http://data.sparkfun.com/output/EJNKEaAvvoCYZDZKa7p1",
"inputUrl":"http://data.sparkfun.com/input/EJNKEaAvvoCYZDZKa7p1",
"manageUrl":"http://data.sparkfun.com/streams/EJNKEaAvvoCYZDZKa7p1"
,
"publicKey":"EJNKEaAvvoCYZDZKa7p1",
"privateKey":"dqbVM6m00wUVm8md5ple",
"deleteKey":"g3Kj2powwAhbV2VkXwOq"
}
```

Get Data From Sensor

```
#!/usr/bin/env node
// Reads the tmp101 temperature sensor.

var i2c = require('i2c-bus');
var bus = 2;
var tmp101 = [0x48, 0x49, 0x4a];
var time = 1000;    // Time between readings

var sensor = i2c.openSync(bus);

var temp = [];

for(var i=0; i<tmp101.length; i++) {
    temp[i] = sensor.readByteSync(tmp101[i], 0x0);
    console.log("temp: %dC, %dF (0x%s)", temp[i], temp[i]*9/5+32, tmp101[i].toString(16));
}
```

install

- bone$ **`npm install -g request`**

Push Data to Web

Path to keys file

```
var filename = "/root/exercises/iot/phant/keys_tmp101.json";

var bus = 2;
var tmp101 = [0x48, 0x49, 0x4a];

var sensor = i2c.openSync(bus);

var keys = JSON.parse(fs.readFileSync(filename));

console.log("Title: " + keys.title);

var urlBase = keys.inputUrl + "/?private_key=" + keys.privateKey
                     + "&temp0=%s&temp1=%s&temp2=%s";
```

```
"title":"Demo for Class",
"inputUrl":"http://data.sparkfun.com/...",
"privateKey":"dqbVM6m00wUVm8md5ple",
```

Fields

Push to Web

```
"&temp0=%s&temp1=%s&temp2=%s";
```

```
// Substitute in the temperatures
var url = util.format(urlBase, temp[0], temp[1], temp[2]);
console.log("url: ", url);

// Send to phant
request(url, function (err, res, body) {
    if (!err && res.statusCode == 200) {
        console.log(body);
    } else {
        console.log("error=" + err + " response=" +
JSON.stringify(res));
    }
});
```

Automate Posting

- How do you make this log every minute?
- **`setInterval()`**
- Or, `/etc/crontab`

/etc/crontab

```
# /etc/crontab: system-wide crontab
# Unlike any other crontab you don't have to run the `crontab'
# command to install the new version when you edit this file
# and files in /etc/cron.d. These files also have username fields,
# that none of the other crontabs do.

SHELL=/bin/sh
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin

# m h dom mon dow user  command
17 *    * * *   root    cd / && run-parts --report /etc/cron.hourly
25 6    * * *   root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.daily )
47 6    * * 7   root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.weekly )
52 6    1 * *   root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.monthly )
#
```

Add to /etc/crontab

```
# Record ping times
NODE_PATH=/usr/local/lib/node_modules
# m h dom mon dow user    command
* * * * root /root/exercises/iot/phant/tmp101.js \
2>&1 | logger
```

- Look in `/var/log/messages`

Pull Data From Web

- Look up outputUrl

```
"outputUrl":"http://data.sparkfun.com/output/q5n
r7brl3DUmrvLD9Qow",
```

- Browse to it.
- Check out `exercises/iot/phant/plotTMP101.html`