SPARKCORE WORKSHOP

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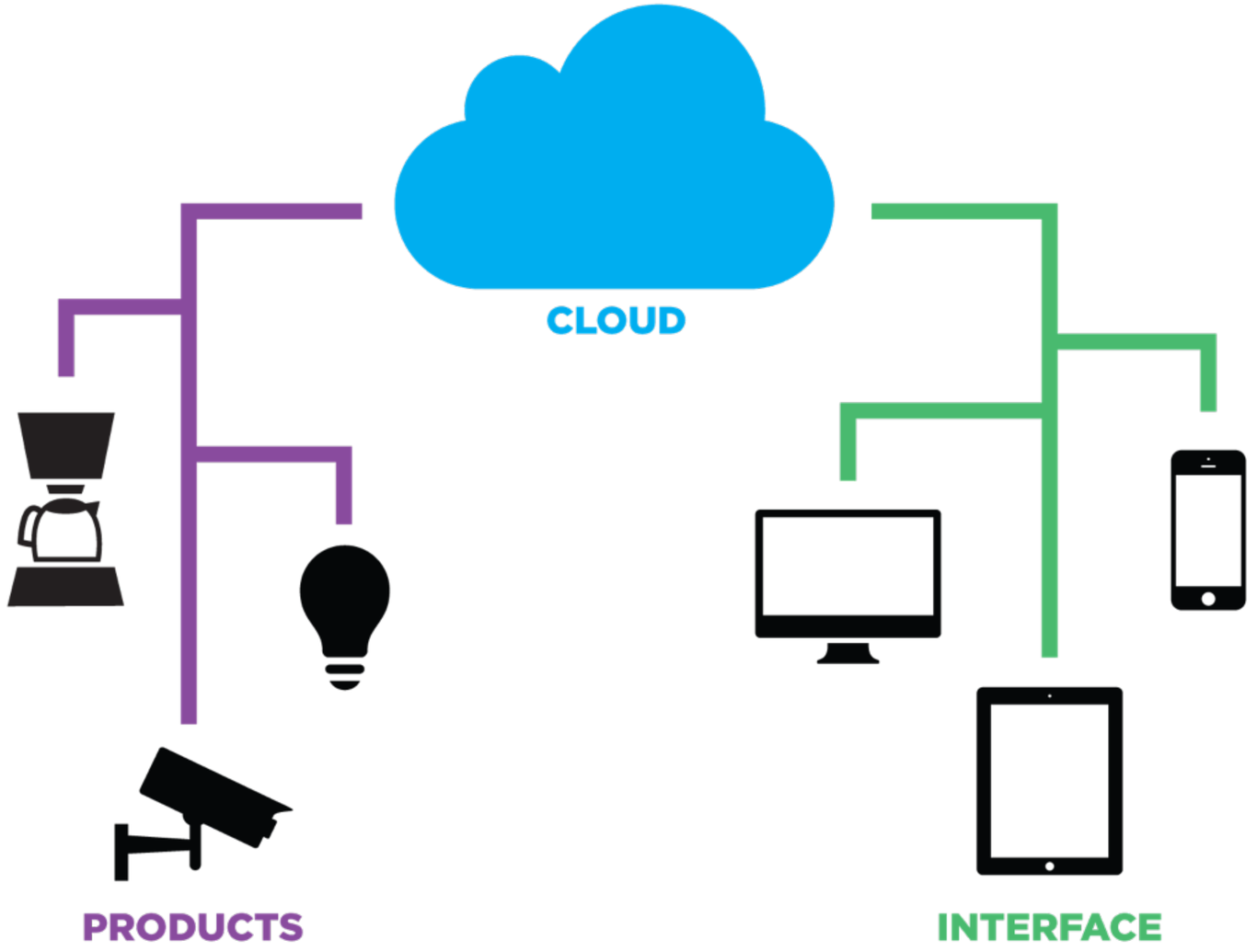
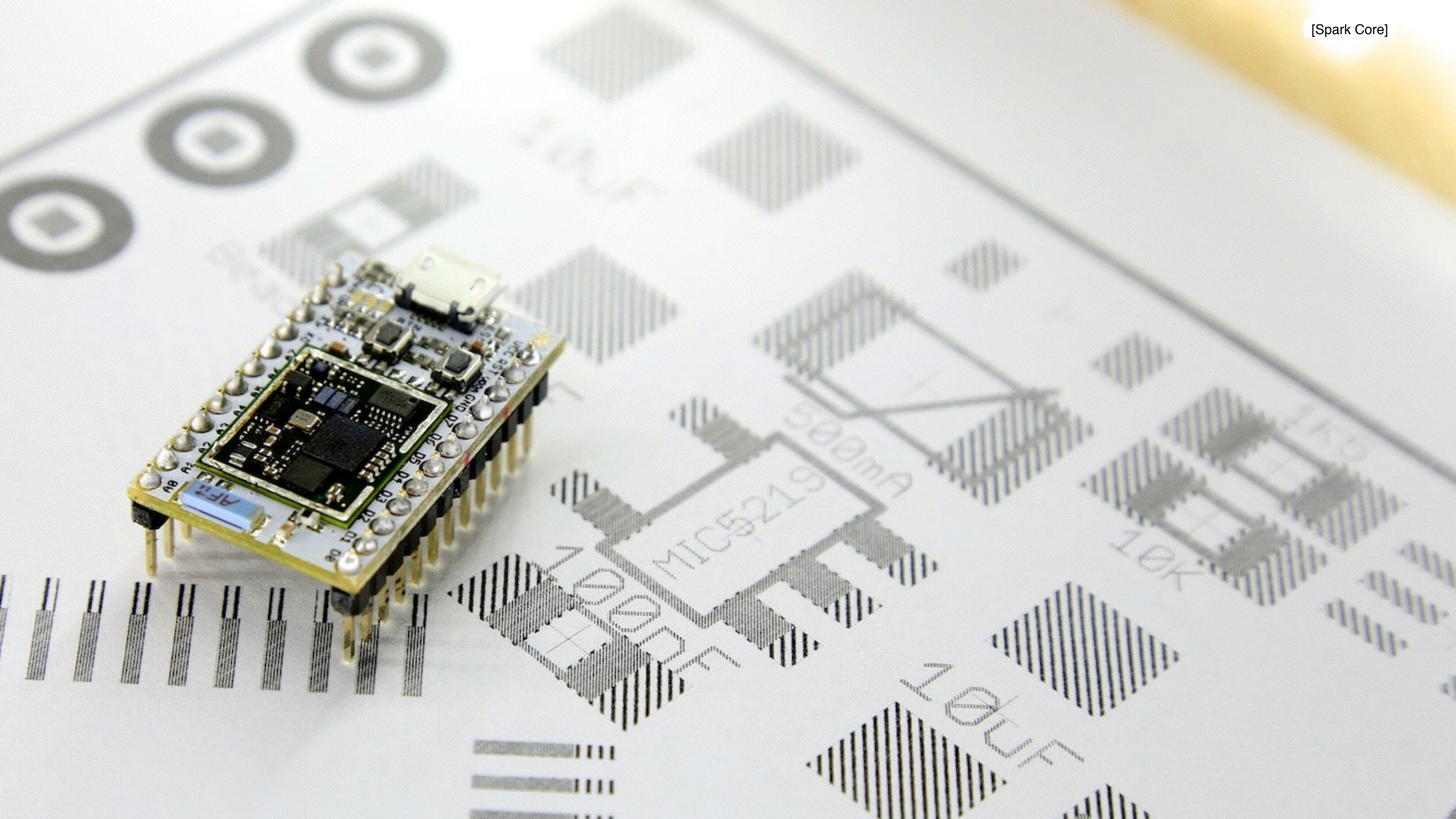
WHAT IS SPARKCORE?


CLOUD
PRODUCTS
INTERFACE


[Spark Core]

WWW.SPARK.IO

GITHUB.COM/SPARK

HOW TO GET IT?

SPARK.IO

DEMO

PREREQUISITES

PREREQUISITES

- Terminal or CMD
- Homebrew (OSX)
- (Git installed via Homebrew XCode command line tools)
- Node.js
- Bower/Grunt
- spark-cli
- spark account
- CoolTerm (OSX optional)

Homebrew

The missing package manager for OS X

English

Homebrew installs the stuff you need that Apple didn't.

```
$ brew install wget
```

Homebrew installs packages to their own directory and then symlinks their files into `/usr/local`.

```
$ cd /usr/local
$ find Cellar
Cellar/wget/1.15
Cellar/wget/1.15/bin/wget
Cellar/wget/1.15/share/man/man1/wget.1

$ ls -l bin
bin/wget -> ../Cellar/wget/1.15/bin/wget
```

Homebrew won't install files outside its prefix, and you can place a Homebrew installation wherever you like.

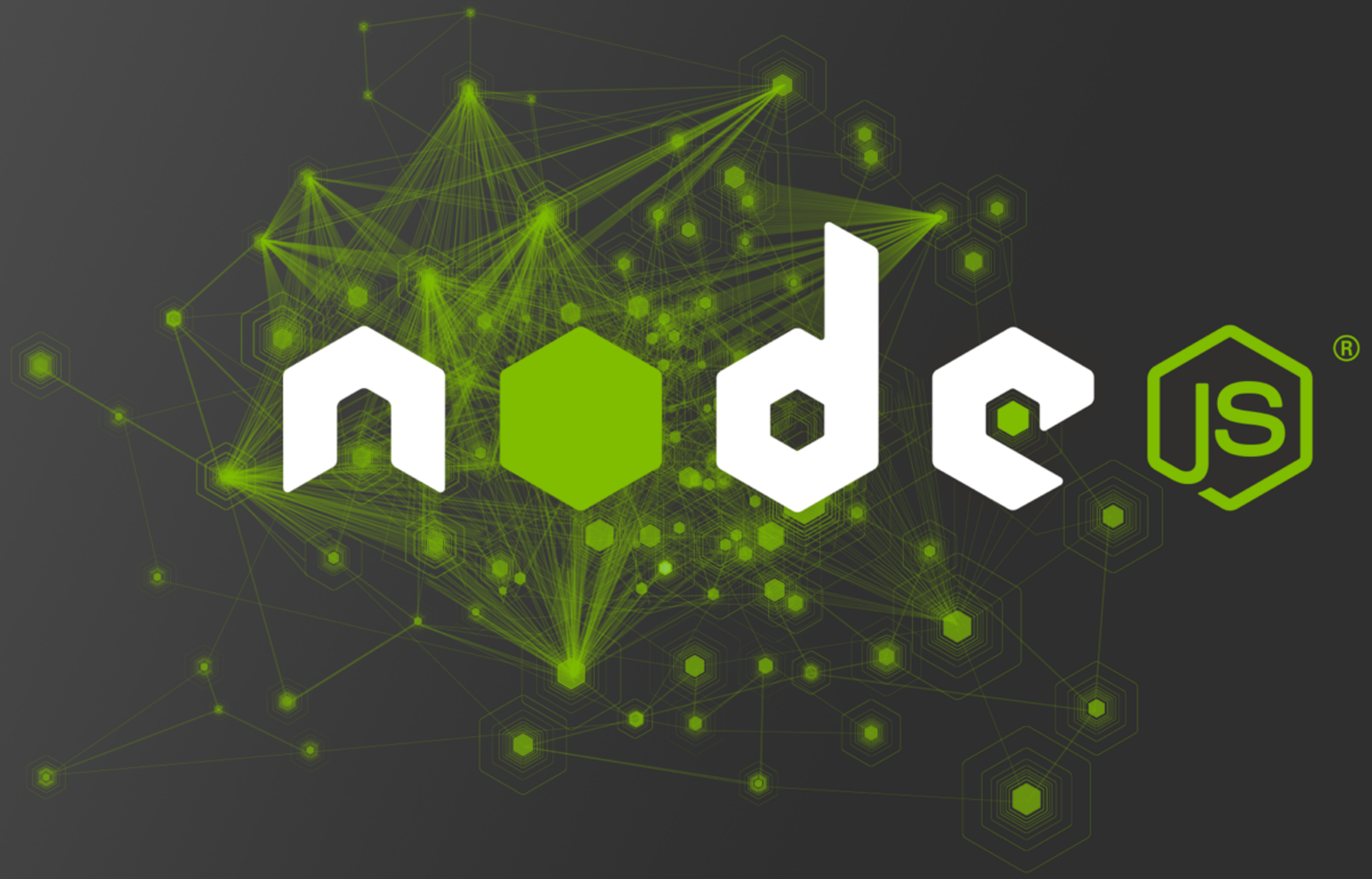
Trivially create your own Homebrew packages.

```
$ brew create http://foo.com/bar-1.0.tgz
Created /usr/local/Library/Formula/bar.rb
```

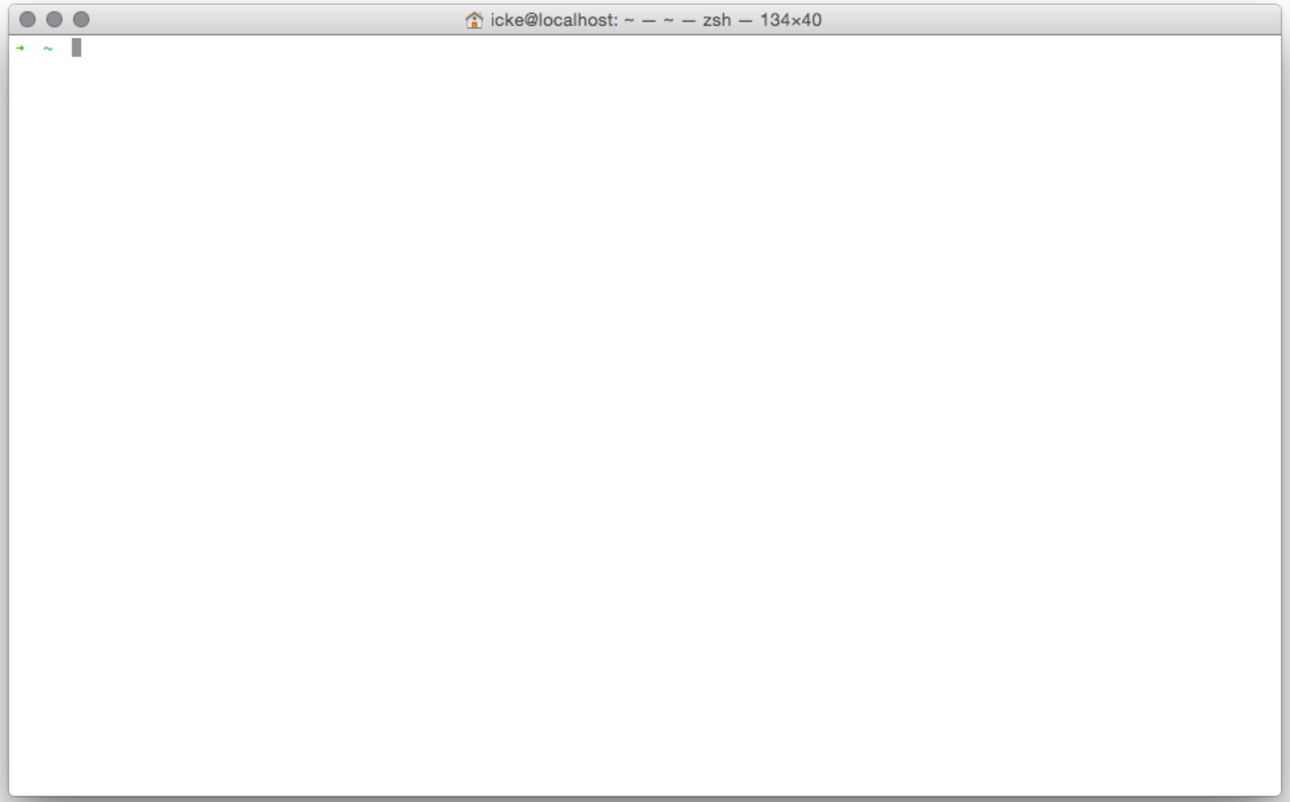
It's all git and ruby underneath, so hack away with the knowledge that you can easily revert your modifications and

```
$ brew edit wget # opens in $EDITOR!
```

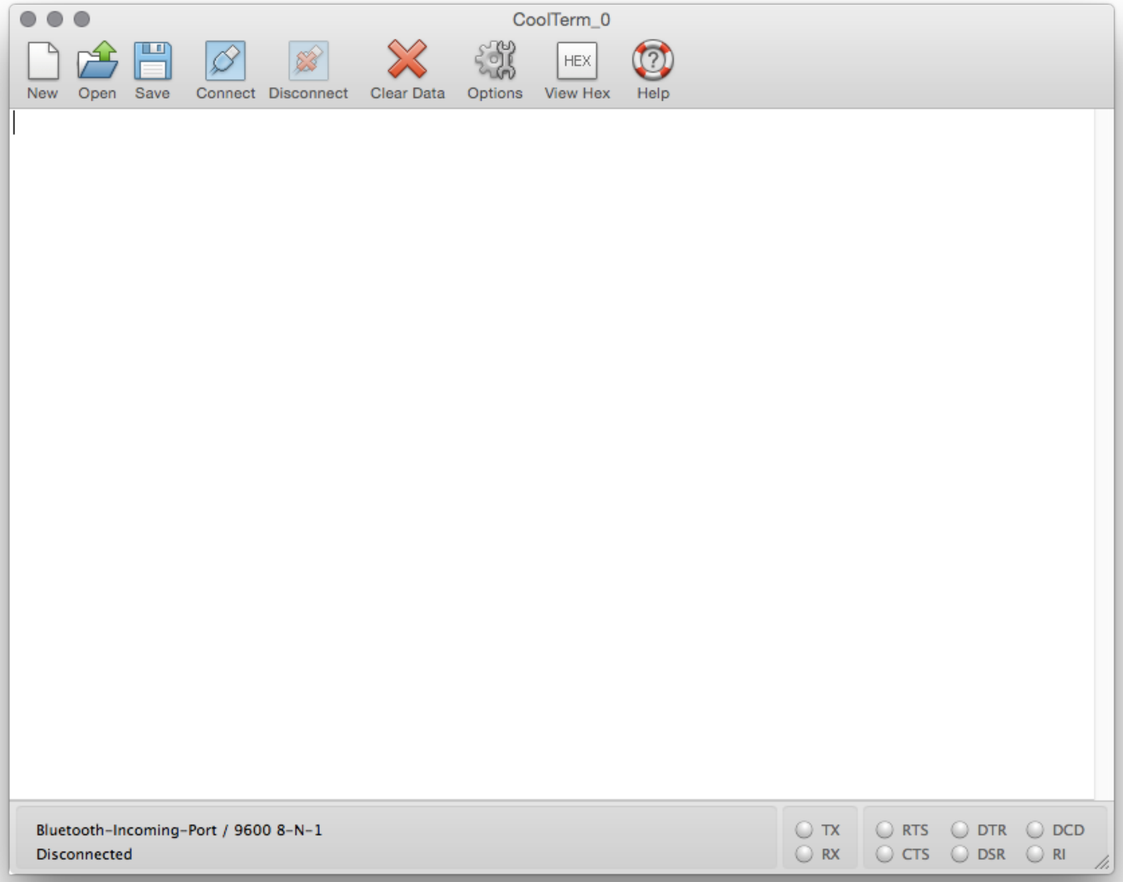

git


node
JS
®

https://www.spark.io/signup


icke@localhost: ~ — ~ — zsh — 134×40
➜ ~

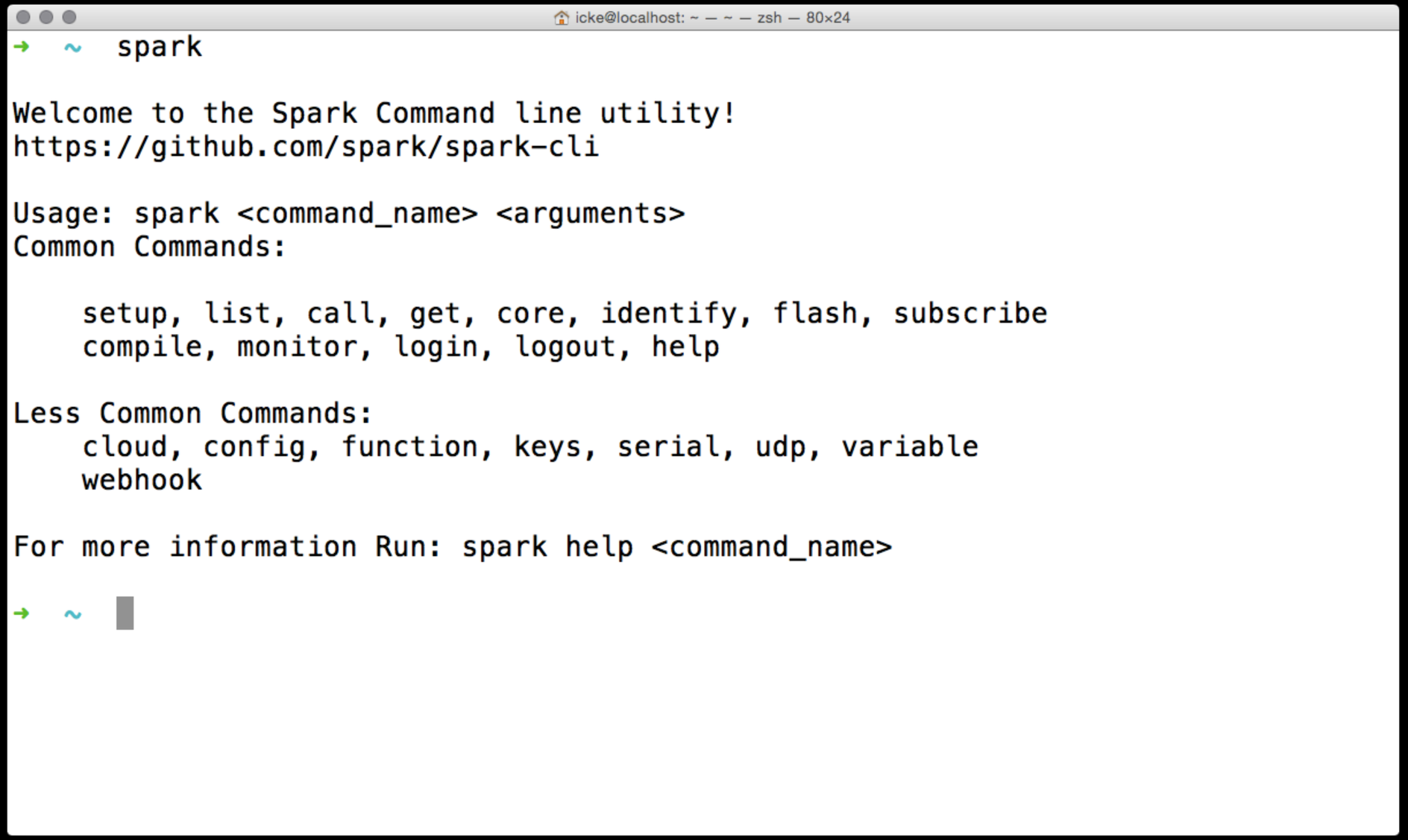
```
cd ~/Desktop

curl -L https://raw.githubusercontent.com/FH-Potsdam/2014-2015-WiSe-spark-core-workshop/master/install.sh | sh
```


CoolTerm_0
New
Open
Save
Connect
Disconnect
Clear Data
Options
HEX
View Hex
Help
Bluetooth-Incoming-Port / 9600 8-N-1
Disconnected
TX
RX
RTS
CTS
DTR
DSR
DCD
RI

```
brew install caskroom/cask/brew-cask

brew cask install coolterm

# will be linked to ~/Applications/CoolTerm.app
```

SPARK-CLI

[command line interface]


icke@localhost: ~ — ~ — zsh — 80×24
→ ~ spark
Welcome to the Spark Command line utility!
https://github.com/spark/spark-cli
Usage: spark <command_name> <arguments>
Common Commands:
setup, list, call, get, core, identify, flash, subscribe
compile, monitor, login, logout, help
Less Common Commands:
cloud, config, function, keys, serial, udp, variable
webhook
For more information Run: spark help <command_name>
→ ~

SETUP, CLAIM & BLINK

SETUP & CLAIM

FRESH SPARK?

SETUP VIA USB

LED flashing blue on connection
(listening mode)

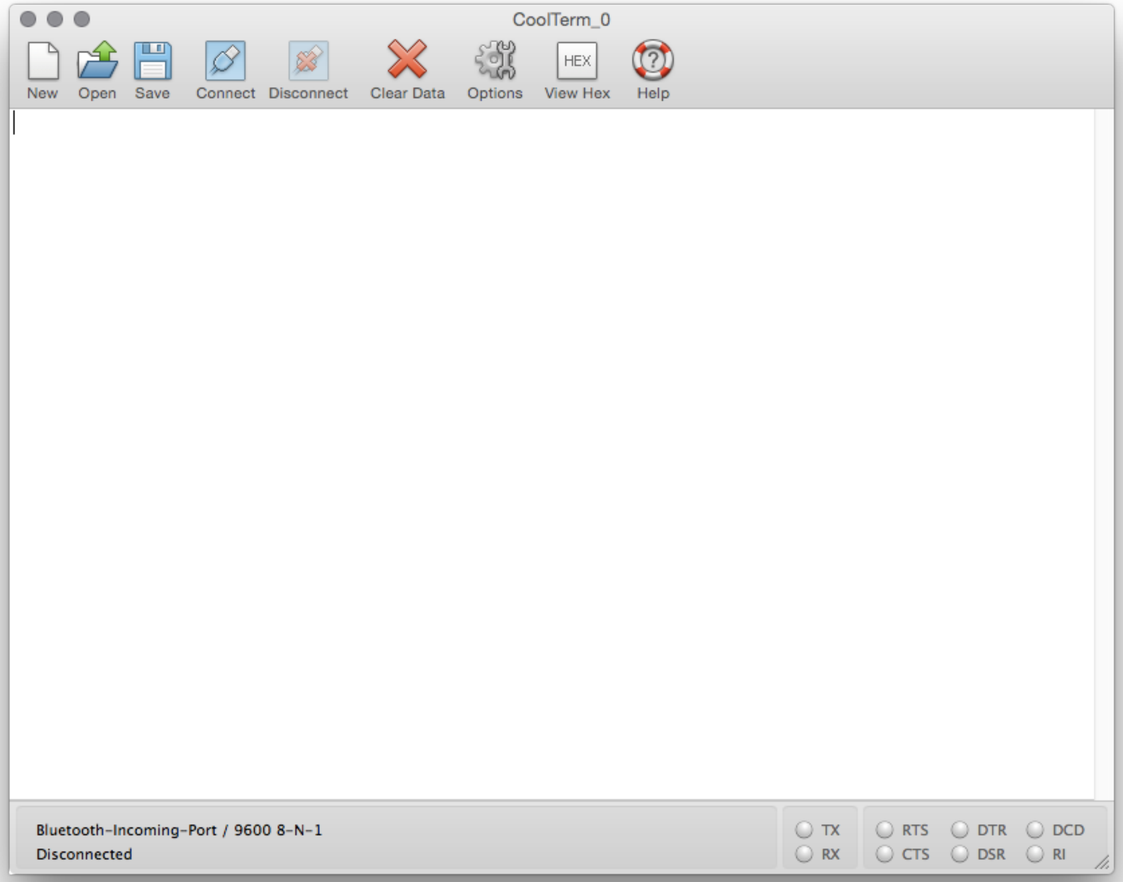
```
spark login

spark setup
```

USED SPARK?

LISTENING MODE

(Hold the "Mode" button for 3 seconds, then the LED should be flashing blue. To remove all WIFI settings hold the "Mode" button 10 seconds

```
spark setup wifi
```


CoolTerm_0
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Help
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Disconnected
TX
RX
RTS
CTS
DTR
DSR
DCD
RI

COOLTERM

Settings & Usage

- Baudrate: 9600
- Data Bits: 8
- Parity: none
- Stop Bits: 1
- w: Set up your Wi-Fi SSID and password
- i: ("i" as in identify) Read out the Spark Core ID

MODES

- **Blinking blue**: Listening for Wi-Fi credentials
- **Solid blue**: Getting Wi-Fi info from app
- **Blinking green**: Connecting to the Wi-Fi network
- **Blinking cyan**: Connecting to the Spark Cloud
- **Blinking magenta**: Updating to the newest firmware
- **Breathing cyan**: Connected!

See an animation

BLINK

[Out of the Box]

```
spark function call YOUR_CORES_NAME_OR_ID digitalWrite "D7/HIGH"
```

TINKER

docs.spark.io/tinker

[Spark Core]


BELL
4:21 PM
22%
spark
A7
D7
A6
D6
A5
D5
TINKER
A4
HIGH
D4
A3
D3
A2
843
D2
A1
LOW
D1
A0
450
D0
trashy_turtle

BLINK

[used core]

```
spark flash [CORE ID OR NAME] tinker
```

FLASH TINKER

- Try a factory reset. Hold down both buttons, then release the RST button, while holding down the MODE button. The LED should begin flashing yellow. Continue holding down the MODE button until you see the Core change from flashing yellow to flashing white. Then release the button. The Core should begin after the factory reset is complete. link

To reflash Tinker from within the app:

- iOS Users: Tap the list button at the top left. Then tap the arrow next to your desired Core and tap the "Re-flash Tinker" button in the pop out menu.

- Android Users: With your desired Core selected, tap the options button in the upper right and tap the "Reflash Tinker" option in the drop down menu.re should begin flashing blue after the factory reset is complete.

```
spark function call YOUR_CORES_NAME_OR_ID digitalWrite "D7/HIGH"
```

CODE EXAMPLES

[firmware & web]

SRC/*.*

SPARK-HELPER/*.*

https://github.com/jflasher/spark-helper

interface.fh-potsdam.de/spark-core/helper

SPARK-AJAX/*.*

http://fmz.pictor.uberspace.de/2014-2015-WiSe-spark-core-workshop/spark-ajax/

WEB-INTERFACE/*.*

https://github.com/suda/spark-web-interface/

suda.github.io/spark-web-interface/

fh-potsdam.github.io/spark-web-interface/

SPARK-CLIENT-SIDE/*.*

[Spark Core]

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TRIX & HINTS

SPLIT DEVELOPMENT

hardware prototyping (with Arduino)
cloud connection (with Spark Core)

DON’T WRITE BLOCKING CODE

```
delay(5000); // bad idea
```

```
// good idea

int update = 5000;

void setup(){}

void loop() {

    if(millis() > update){

        update+= millis();

        // do something

   }

}
```

```
spark help [COMMAND]
```

```
spark list
```

```
spark monitor [VARIABLE NAME]
```

```
spark function call [CORE NAME] [FUNCTION NAME] ["DATA"]
```

```
spark subscribe mine
```

```
spark flash [YOUR_CORES_NAME] [SOURCECODE_FOLDER]
```

```
spark compile [SOURCECODE_FOLDER or FILE]
```

DFU MODE

(DEVICE FIRMWARE UPGRADE)

If you are wish to program a Core with a custom firmware via USB, you'll need to use this mode. This mode triggers the on-board bootloader that accepts firmware binary files via the dfu-utility.Procedure:

- Hold down BOTH buttons
- Release only the RST button, while holding down the MODE button.
- Wait for the LED to start flashing yellow
- Release the MODE button
- The Core now is in the DFU mode.

```
brew install dfu-util
```

```
spark flash --usb firmware_XXX.bin [CORE ID or CORE NAME]
```

UPS & DOWNS & TODOS

UP:OUT OF THE BOX

DOWN:KNOWLEDGE NEEDED

DOWN:SPARK.SUBSCRIBE()

TODO:SPARK-SERVER

https://github.com/spark/spark-server

TODO:SPARKJS (CLIENT SIDE)

https://github.com/spark/sparkjs

TODO:SPARKJS (SERVER SIDE)

https://github.com/spark/sparkjs

Q&A

HANDS ON