AT Command Workshop

HOW EVIL SCIENTISTS USE CELLULAR

Hologram

Show -n- ~~Tell~~ BUILD!

WE WILL BE USING

- Hologram IoT Platform
- Adafruit Trinket M0
- Circuit Python
- SimCOM SIM800 2G Breakout
- Any IDE / Text Editor
- Any Serial Monitor

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AGENDA

- Who is Hologram?
- Hand-out Kits
- Activate SIM
- Assemble Kit
- Use 16 AT Commands to send “Hello World” through TCP

Who is Hologram?

HOLOGRAM

- The largest cellular network for “things”
  - 150+ countries / 600+ carrier partners
  - All assessable through 1 SIM
- Developer First
  - Developer Plan
  - Developer Community
  - Open-Source
  - kB billing
  - Full API
- We make spec hardware
  - We are not a hardware company

Hand Out de ~~Poison~~!

Kits


MAKE GIFS AT GIFSOUP.COM

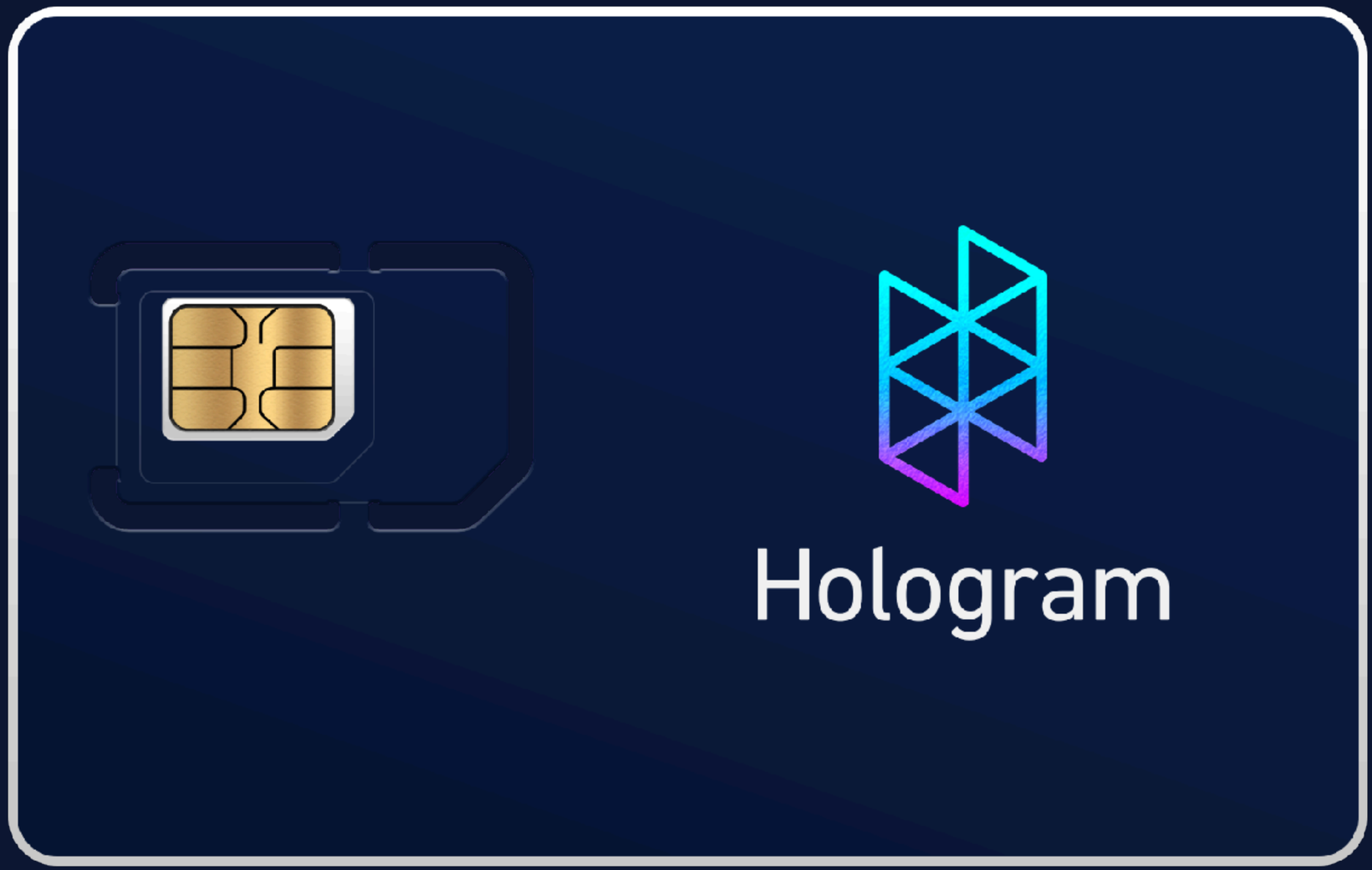
Activate de Super ~~Weapon~~!

Connectivity

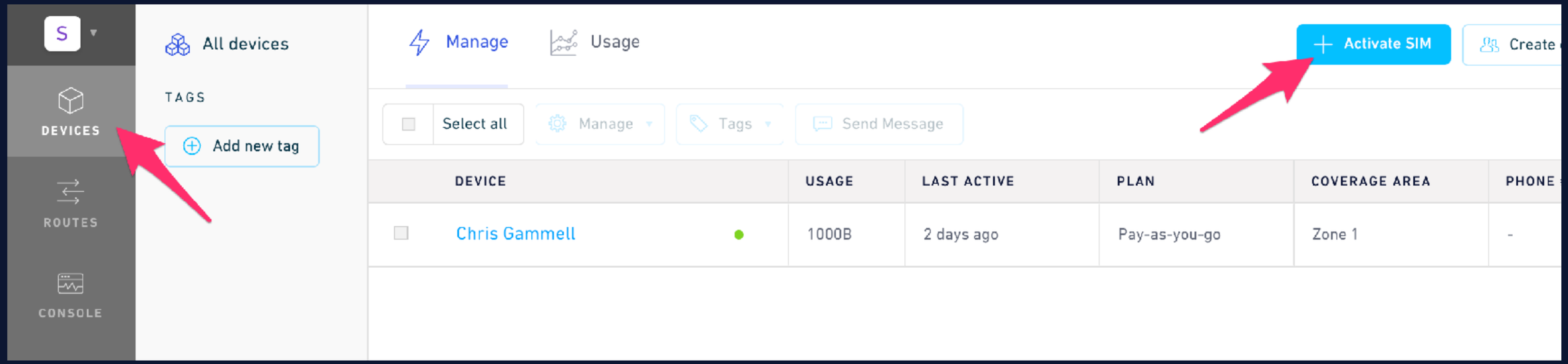
CREATE A HOLOGRAM ACCOUNT

dashboard.hologram.io/account/register

HOLD YOUR SIM IN THE AIR



ACTIVATE SIM



EVIL SCIENTIST CODE

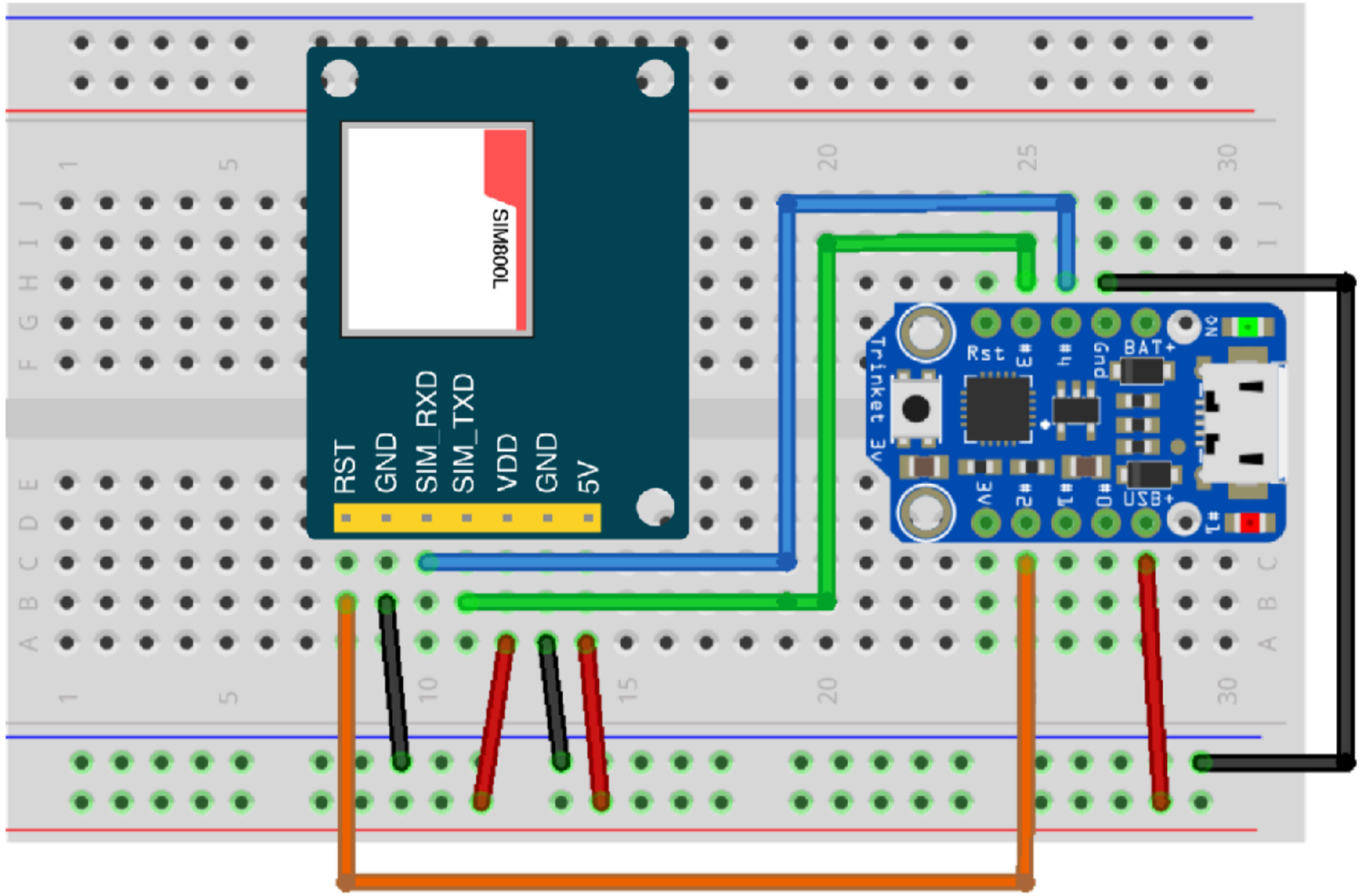
PROMO CODE: **IOTDEVFEST18**

Assemble de ~~Evil Legion~~ Kit!

Insert the SIM in to Modem Breakout

MAKE SURE TO DO IT RIGHT
CHECK IT TWICE

WIRE -> POWER -> VERIFY LIGHT IS GREEN



RGB Status

Good

- Blinks Blue
- Stays Green

Error

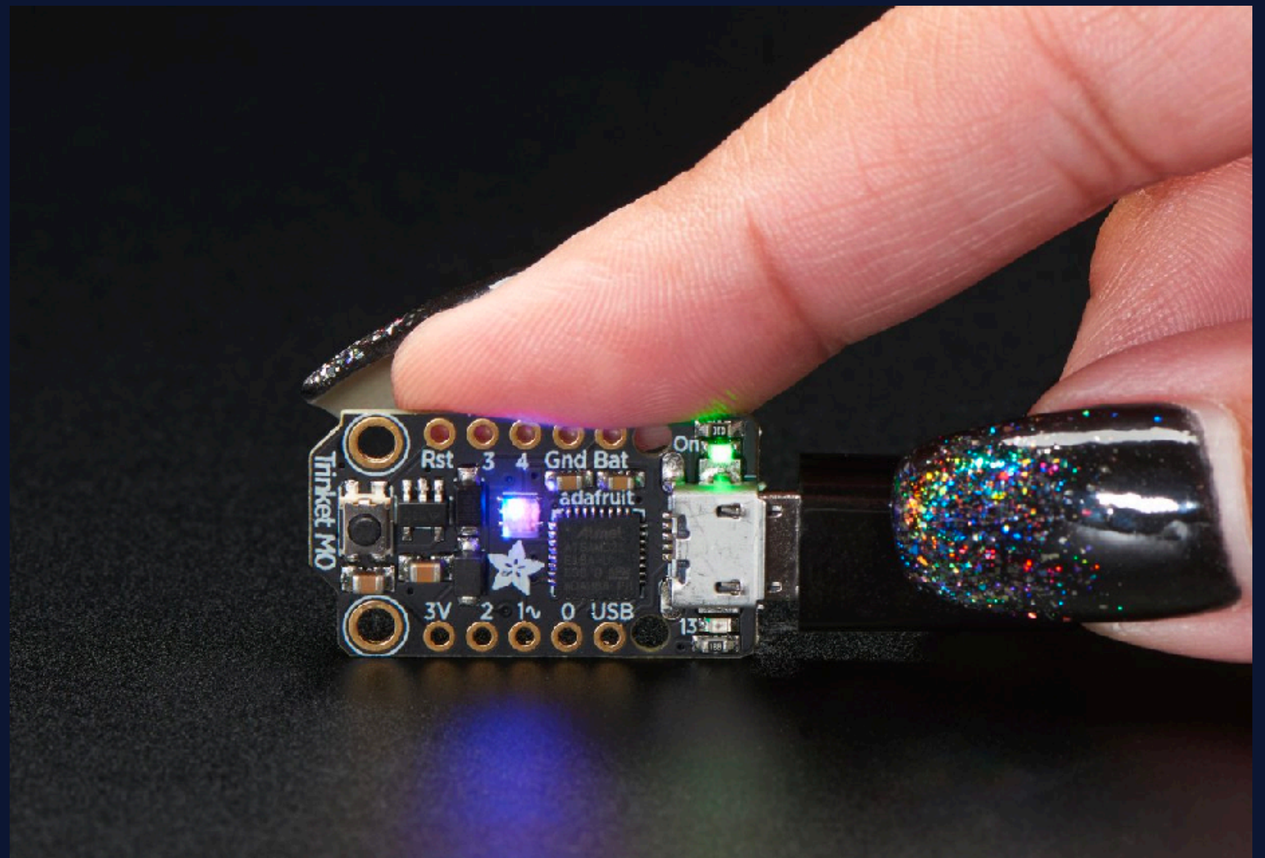
- Blinks Blue
- Stays Red

Setup Serial Monitor

- Make sure the device is plugged in
- Open Arduino IDE or another Serial Monitor
- Determine which port the Trinket is connected to
  - Should be something like **cu.usbmodem1451**
- Set baud to **19200**

Lets chat about the Trinket M0

DID YOU NOTICE THE NEW USB DRIVE?
WINDOWS? INSTALL THE DRIVER



Write de Evil Code!

This one is true

Trinket Preloaded Files

- Updated lib
- Main.py that runs verify code
- Workshop folder with 3 sub folders, each with main.py
  - Factory
  - Verify
  - Challenge
  - Final
- Illustrate moving a file

open **challenge/main.py**

LETS WALKTHROUGH THE CHALLENGE

Example Command

Command

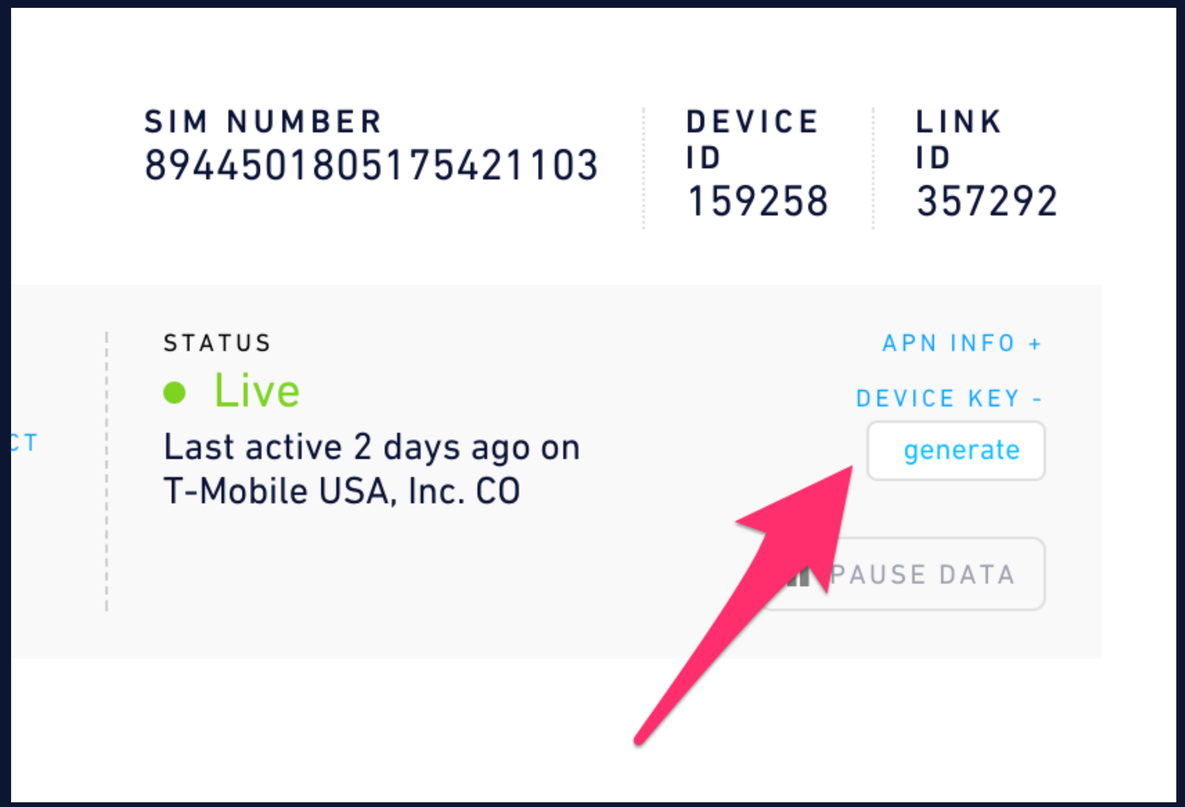
Expected Success Msg (optional*)

```
if not sendCommand("AT+CIPSHUT\r\n", 65, "SHUT OK", "ERROR"):
    return False
```

Timeout

Expected Error Msg (optional*)

Add Hologram KEY




```
5   from pixel import setPixel
6   from hologram import formatMsg, ip, port
7
8   DEVICEKEY = "eLI#4[bL"
9
10  RESET_PIN = DigitalInOut(D2)
11  RESET_PIN.direction = Direction.OUTPUT
12
```

Complete Function: **connect()**

Step	Command	Time	Success	Error
C1	AT+CIPSHUT\r\n	65	SHUT OK	ERROR
C2	AT+CGATT?\r\n	10	OK	ERROR
C3	AT+CIPMUX=1\r\n	2	OK	ERROR
C4	AT+CSTT=\"hologram\"\r\n	2	OK	ERROR
C5	AT+CIICR\r\n	85	OK	ERROR
C6	AT+CIFSR\r\n	2	.	ERROR
C7	AT+CIPSERVER=1,4010\r\n	2	SERVER OK	ERROR

Complete Function: **sendMessage()**

Step	Command	Time	Success	Error
C8	AT+CIPSTART=1,\"TCP\",\"" + ip() + "\",\"" + port() + "\"\r\n	75	OK	FAIL
C9	AT+CIPSEND=1," + str(msgLength) + "\r\n	5	>	ERROR
C10	fullMessage	60	OK	FAIL

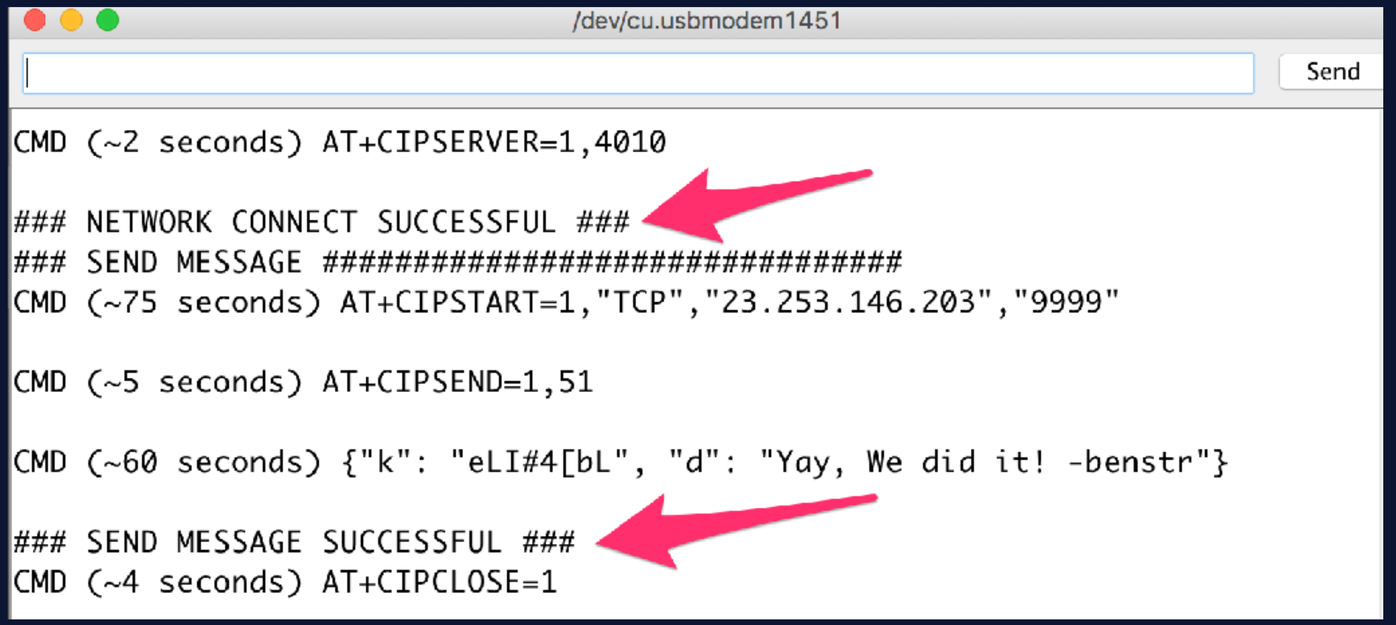
Complete Function: **sendResponse()**

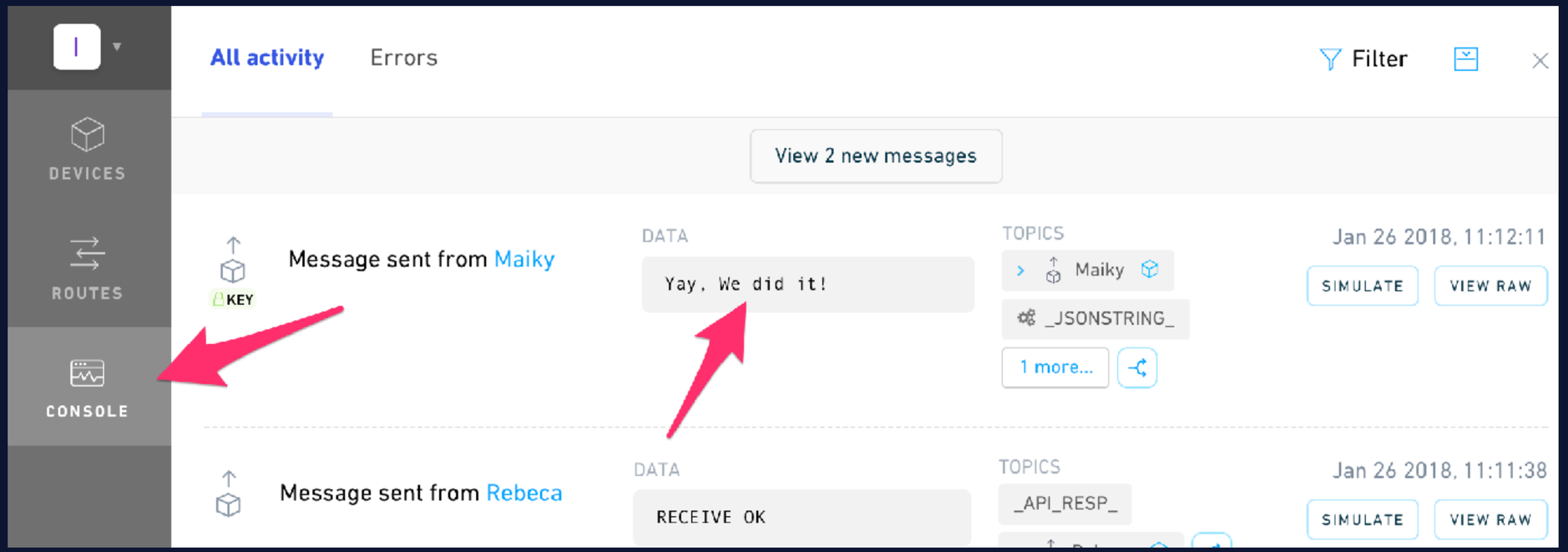
Step	Command	Time	Success	Error
C11	AT+CIPSEND=0," + str(len(responseMsg)) + "\r\n	5	>	ERROR
C12	responseMsg	60	SEND OK	ERROR

Complete Loop: **while STARTUP**

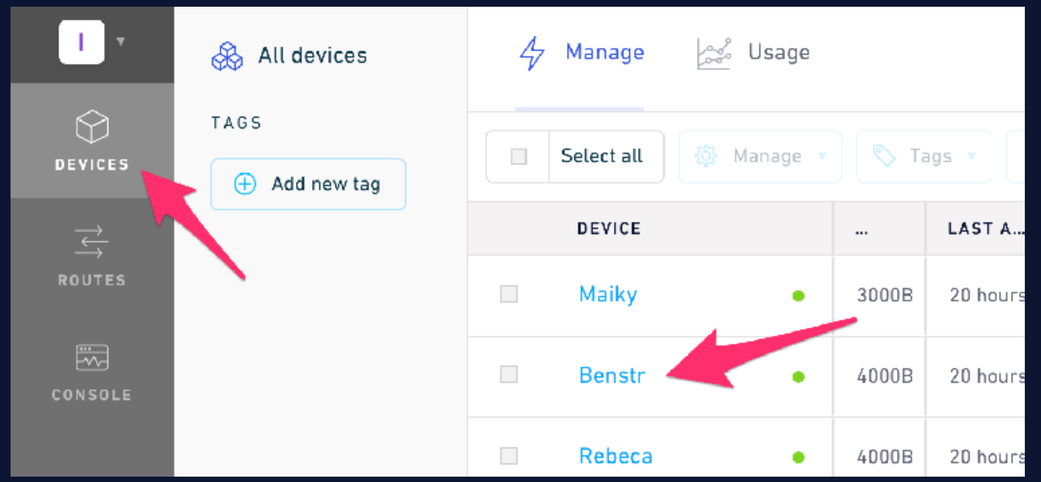
Step	Command	Time	Success	Error
C13	AT\r\n	3	OK	ERROR
C14	AT+IPR=19200\r\n	5	OK	ERROR
C15	AT+CPIN?\r\n	5	OK	ERROR
C16	AT+CMGF=1\r\n	10	OK	ERROR

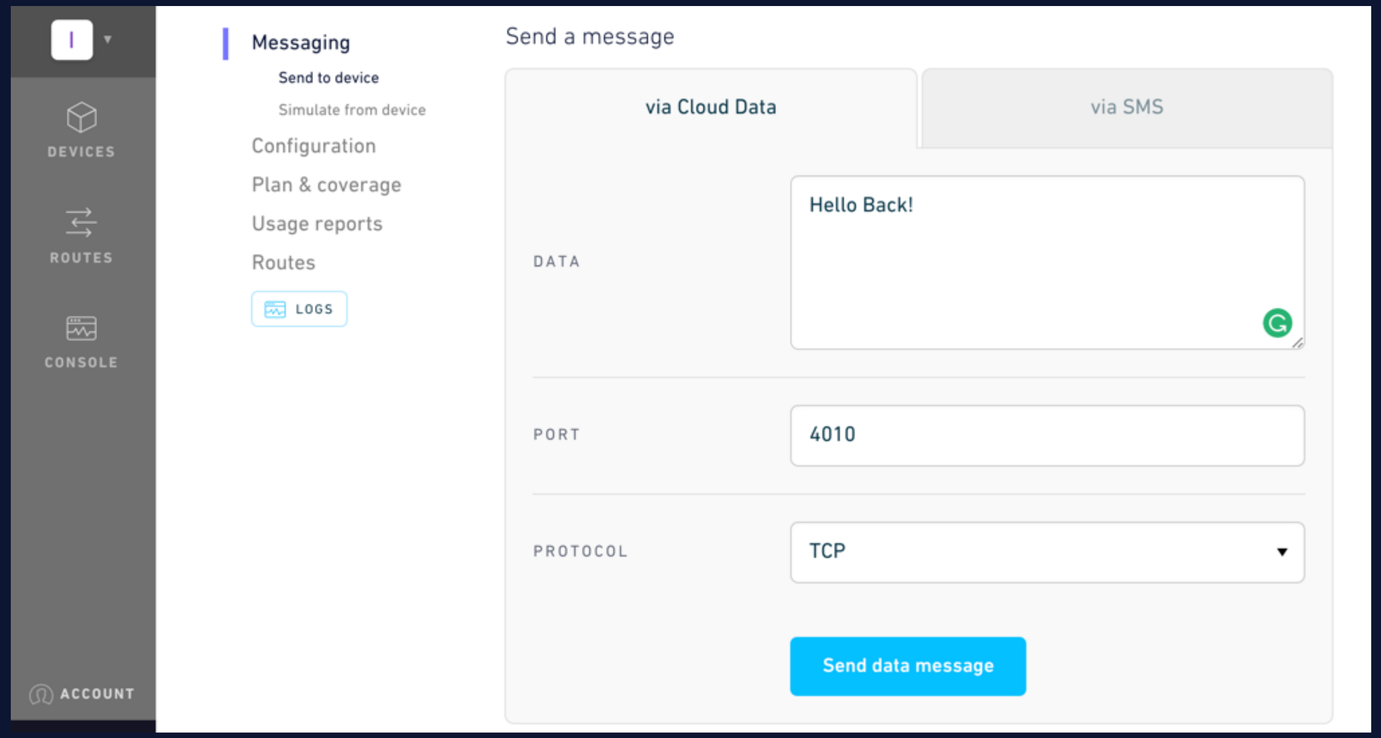
Success?


/dev/cu.usbmodem1451
Send
CMD (~2 seconds) AT+CIPSERVER=1,4010
NETWORK CONNECT SUCCESSFUL
SEND MESSAGE
CMD (~75 seconds) AT+CIPSTART=1,"TCP","23.253.146.203","9999"
CMD (~5 seconds) AT+CIPSEND=1,51
CMD (~60 seconds) {"k": "eLI#4[bL", "d": "Yay, We did it! -benstr"}
SEND MESSAGE SUCCESSFUL
CMD (~4 seconds) AT+CIPCLOSE=1


DEVICES
ROUTES
CONSOLE
All activity
Errors
Filter
View 2 new messages
KEY
Message sent from Maiky
DATA
Yay, We did it!
TOPICS
Maiky
JSONSTRING
1 more...
Jan 26 2018, 11:12:11
SIMULATE
VIEW RAW
Message sent from Rebeca
DATA
RECEIVE OK
TOPICS
_API_RESP_
Jan 26 2018, 11:11:38
SIMULATE
VIEW RAW

Send a Message From the Cloud





Optional Challenge:

1) CREATE AN SMS ROUTE FROM THE HOLOGRAM DASHBOARD

2) CREATE A LOOP ON THE TRINKET THAT SENDS MESSAGES FROM THE SERIAL MONITOR

🎉 All Done! 🎉

You are now an official
Cellular Evil Scientist

@HOLOGRAM @_BENSTR