NATION

User Conference

OCTOBER 24-26

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API Noob to Ninja

Agenda for Today

- What is an API and the Jamf API
- Learn how to use the Jamf API
- See examples on using the Jamf API
- Take over the world!

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But, first story time

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JNUC 2016

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“Take a script you already have and just figure out how to do it with the API.”

Joel Rennich - Trusource Labs

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```
#!/bin/sh

#get current user info from AD
getUser=`ls -l /dev/console | awk '{ print $3 }'`
getclass=`dscl '/Active Directory/ACADEMIC/All Domains' -read /Users/$getUser dsAttrTypeNative:distinguishedName |  \
    awk '{ FS=","; print $2 }' |  \
    awk '{ FS="="; print $2 }' |  \
    tail -1`

#------JAMF API WAY-------

#API login info
apiuser=APIUSERNAME
apipass=APIPASSWORD
jamfProURL="https://yourjamfproserver:8443"

#update via serial number
apiURL="JSSResource/computers/serialnumber"
MacSerial=$(ioreg -l | grep IOPlatformSerialNumber | awk '{print $NF}' | tr -d "\"")

#XML header stuff
xmlHeader="<?xml version=\"1.0\" encoding=\"UTF-8\" standalone=\"no\"?>"

#API data load
apiData="<computer><location><username>$getUser</username><real_name>$getRealName</real_name><department>$getclass</department></location></computer>"
curl -sSkiu ${apiuser}:${apipass} "${jamfProURL}/${apiURL}/${MacSerial}" \
    -H "Content-Type: text/xml" \
    -d "${xmlHeader}${apiData}" \
    -X PUT  > /dev/null
```

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What the heck is an API?

API = Application Program Interface

Which actually means….what?

It's an **I**nterface that allows you to easily **P**rogram and build programs or scripts to interact with the **A**pplication

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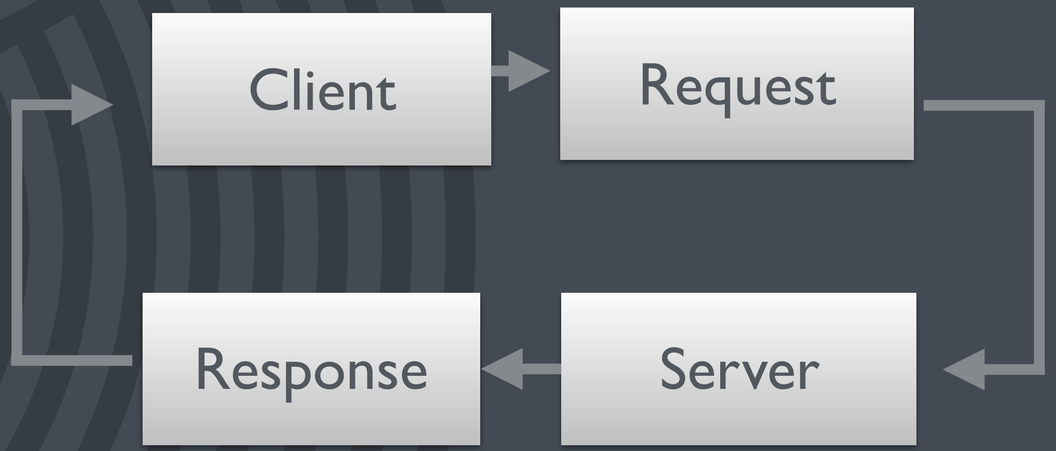
The Jamf API

The Jamf API is a RESTful API

- REpresentational State Transfer
- Request = URL, HTTP Method, Headers, and Form Data
- Response = Status Code, Header, and Body



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API Functions

CRUD

- Create - POST
- Read - GET
- Update - PUT
- Delete - DELETE

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2 Formats

XML vs JSON

- Both similar to each other
- Both are different from each other
- Jamf API can **ONLY** accept XML but can return either

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```
<?xml version="1.0" encoding="UTF-8"?>
<computer>
    <general>
        <id>2005</id>
        <name>FA0001</name>
        <mac_address>D4:61:9D:39:83:44</mac_address>
        <alt_mac_address>9A:00:0F:B4:27:10</alt_mac_address>
        <ip_address>10.10.220.237</ip_address>
        <last_reported_ip>10.10.220.237</last_reported_ip>
        <serial_number>C1MTX3Q9J1WK</serial_number>
        <udid>A575CB1D-BE8D-52E8-A750-9ED1AEBF9179</udid>
        <jamf_version>9.99.0-t1494340586</jamf_version>
        <platform>Mac</platform>
        ...
    </general>
</computer>
```

```
{
   "computer":{
      "general":{
         "id":2005,
         "name":"FA0001",
         "mac_address":"D4:61:9D:39:83:44",
         "alt_mac_address":"9A:00:0F:B4:27:10",
         "ip_address":"10.10.220.237",
         "last_reported_ip":"10.10.220.237",
         "serial_number":"C1MTX3Q9J1WK",
         "udid":"A575CB1D-BE8D-52E8-A750-9ED1AEBF9179",
         "jamf_version":"9.99.0-t1494340586",
         "platform":"Mac",
        ...
      }
   }
}
```

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https://codebeautify.org/jsonviewer

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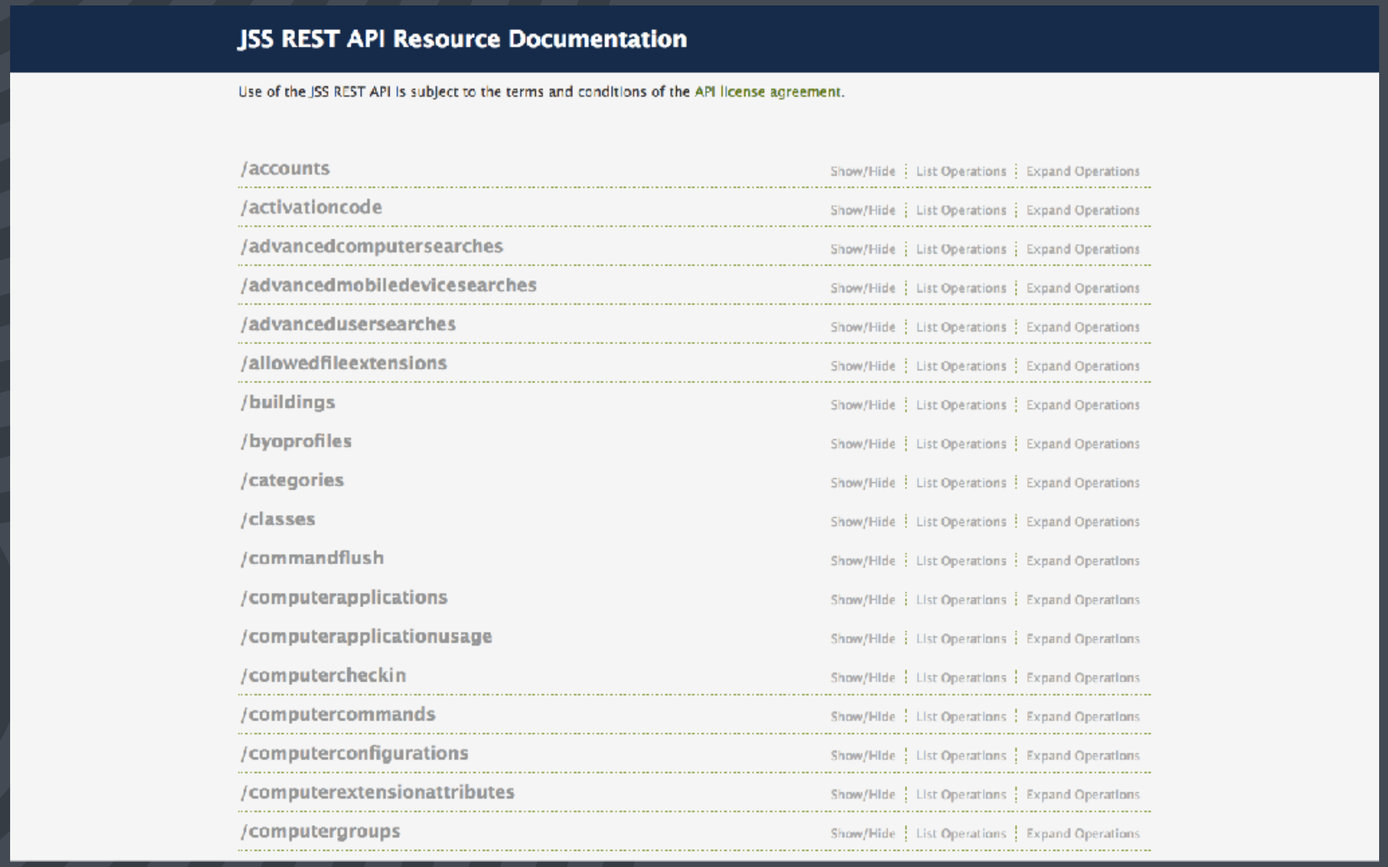
How to use the Jamf API

https://YOURJAMFPROSERVER:8443/API



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Tools to use for the API

- API Documentation
- Postman
- Curl
- Language of choice
  (BASH, Python, Perl, PHP, Swift, Ruby…)

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JSS REST API Resource Documentation

Use of the JSS REST API is subject to the terms and conditions of the API license agreement.

/accounts	Show/Hide | List Operations | Expand Operations
/activationcode	Show/Hide | List Operations | Expand Operations
/advancedcomputersearches	Show/Hide | List Operations | Expand Operations
/advancedmobiledevicesearches	Show/Hide | List Operations | Expand Operations
/advancedusersearches	Show/Hide | List Operations | Expand Operations
/allowedfileextensions	Show/Hide | List Operations | Expand Operations
/buildings	Show/Hide | List Operations | Expand Operations
/byoprofiles	Show/Hide | List Operations | Expand Operations
/categories	Show/Hide | List Operations | Expand Operations
/classes	Show/Hide | List Operations | Expand Operations
/commandflush	Show/Hide | List Operations | Expand Operations
/computerapplications	Show/Hide | List Operations | Expand Operations
/computerapplicationusage	Show/Hide | List Operations | Expand Operations
/computercheckin	Show/Hide | List Operations | Expand Operations
/computercommands	Show/Hide | List Operations | Expand Operations
/computerconfigurations	Show/Hide | List Operations | Expand Operations
/computerextensionattributes	Show/Hide | List Operations | Expand Operations
/computergroups	Show/Hide | List Operations | Expand Operations

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Postman

https://www.getpostman.com

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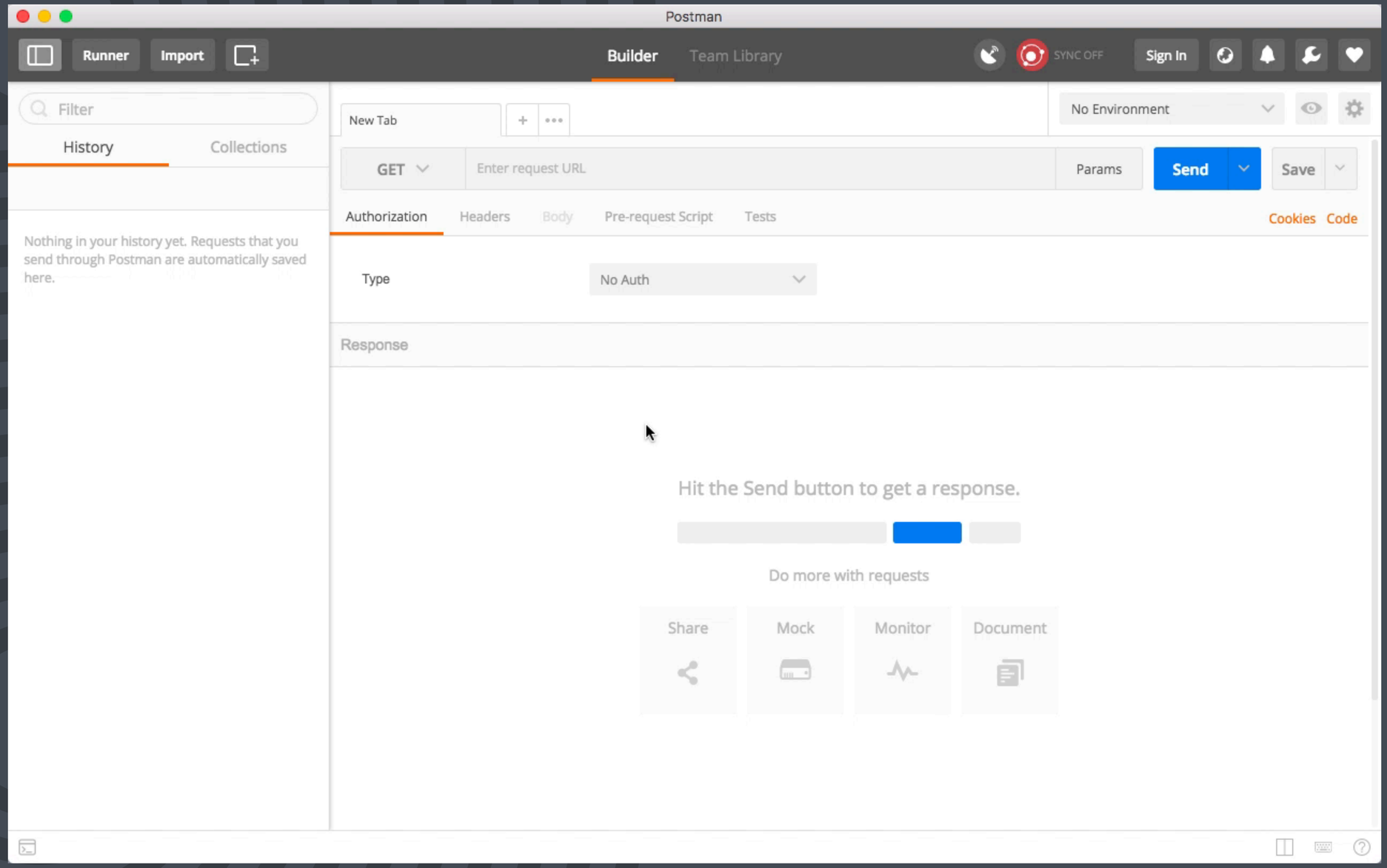

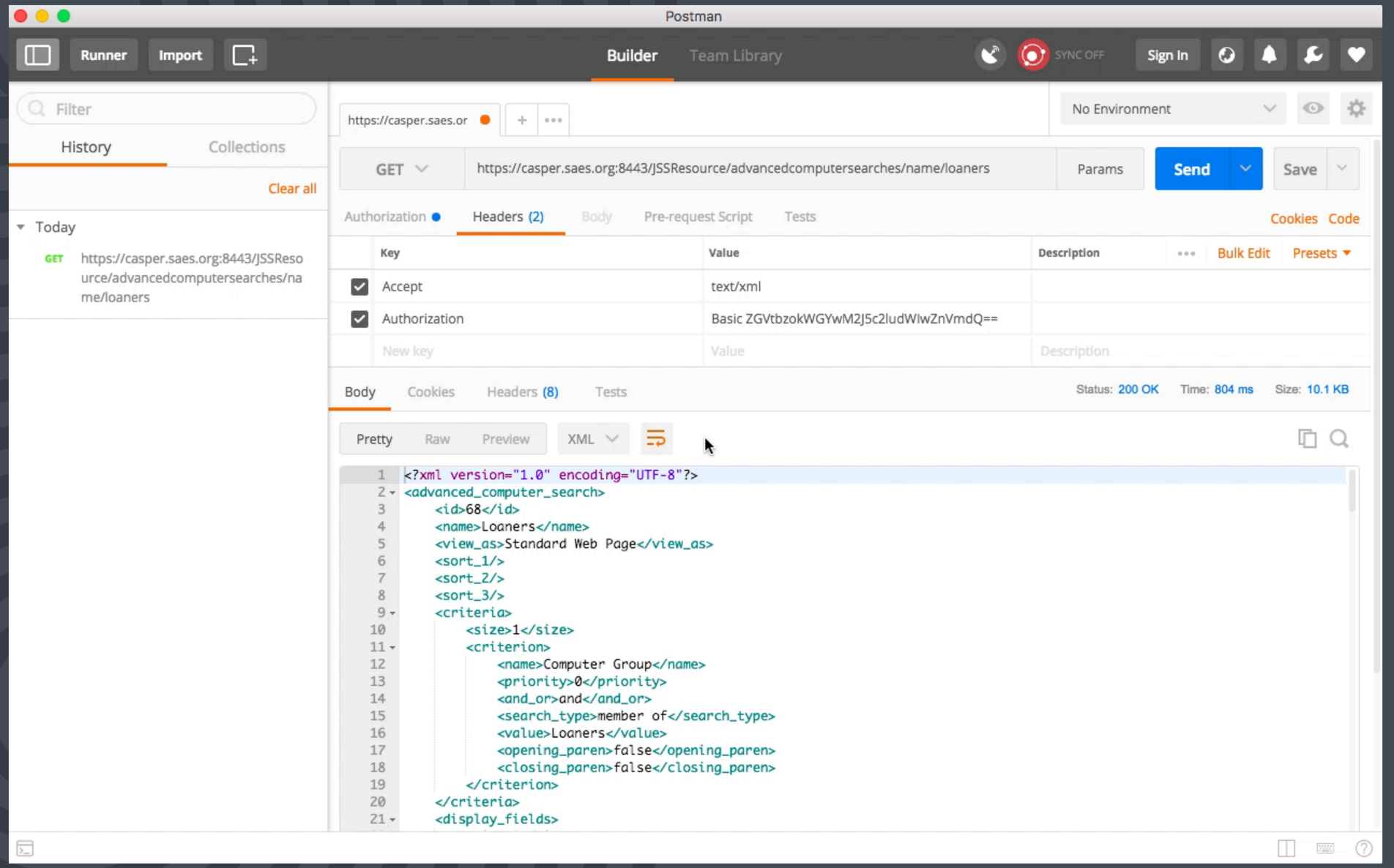

Curl

Curl is actually a powerful tool NOT just useful for API task

- API scripting
- Download files off of a web server
    - curl -o LOCALFILEPATH SERVERFILEPATH
- Check the Status of a web server
    - curl -sLI WEBSITE
- Get an external IP address quickly
    - curl ipinfo.io

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curl for Jamf API use

```
curl
-X GET
https://YOURJAMFPROSERVER:8443/JSSResource/computers
-u YOURUSERNAME
```

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Examples in BASH with XML

```
#----JAMF API STUFF---

#API login info
apiuser='API_USER_NAME'
apipass='API_PASSWORD'
jamfProURL="https://YourJAMFProServer:8443"

#update via serial number
apiURL="JSSResource/computers/serialnumber"
MacSerial=$(ioreg -l | grep IOPlatformSerialNumber | awk '{print $NF}' | tr -d "\"")

#XML header stuff
xmlHeader="<?xml version=\"1.0\" encoding=\"UTF-8\" standalone=\"no\"?>"

#API data load
apiData="
<computer>
    <location>
        <username>$getUser</username>
        <real_name>$getRealName</real_name>
        <department>$getclass</department>
    </location>
</computer>"
curl -sSu ${apiuser}:${apipass} "${jamfProURL}/${apiURL}/${MacSerial}" \
    -H "Content-Type: text/xml" \
    -d "${xmlHeader}${apiData}" \
    -X PUT > /dev/null
```

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```
#!/bin/sh

IFS=$','

#API login info
apiuser='API_USER_NAME'
apipass='API_PASSWORD'
jamfProURL="https://YourJAMFProServer:8443"

APIresult=$(curl -s -X GET "$jamfProURL/JSSResource/departments" \
    -u "$apiuser:$apipass" \
    -H "accept: text/xml" \
    | xmllint --format - | \
    awk -F '>|<' '/<name>/{print $3","}')

echo $APIresult
```

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Examples in Python with JSON

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```
#!/usr/bin/python

import urllib2
import base64
import json

#set the layer we're looking into
computers = response_data['computer_reports']

#loops and stuff
for record in computers:
        student_laptop = record['Computer_Name']
        student_username = record['Username']
        Email = record['Email_Address']
        FullName = record['Full_Name']
        FirstName = FullName.strip(" ")
        FirstName = FirstName.split(' ')[0]
        mycommand = "echo 'Hello "+FirstName+",\n\nBlahBlahBlah Email Body' | mail -s 'My Email Subject' " + Email
        os.system(mycommand)
        print mycommand

reponse = urllib2.urlopen(request, context=context)

#request the json data
response = urllib2.urlopen(request)
response_data = json.loads(response.read())
```

```
{
    "computer_reports": [
        {
            "Computer_Name": "SDA0070",
            "Username": "e20freedman",
            "Full_Name": " Ethan Freedman",
            "Email_Address": “e20freedman@school.edu",
            "Department": "Class of 20",
            "Last_Check_in": "2017-06-08 08:14:40"
        },
        {
            "Computer_Name": "SDA0092",
            "Username": "s21flanders",
            "Full_Name": " Stephen 21. Flanders",
            "Email_Address": “s21flanders@school.edu”,
            "Department": "Class of 21",
            "Last_Check_in": "2017-06-06 21:07:45"
        },
    ]
}
```

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Example of using the API with PHP

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Laptop	User	Date Out	Date Returned	
1320loaner		mm / dd / yyyy	2017-09-20	Submit
AA2009loaner		mm / dd / yyyy	11/11/2011	Submit
AA2013loaner		mm / dd / yyyy	2017-09-20	Submit
AA2061loaner		mm / dd / yyyy	2017/02/07	Submit
AA2076LOANER		mm / dd / yyyy	2017-09-20	Submit
AA2088loaner		mm / dd / yyyy	2017/08/25	Submit
AA2102loaner		mm / dd / yyyy	3/4/2005	Submit
AA2113loaner		mm / dd / yyyy	2017-09-20	Submit
AA2114loaner		mm / dd / yyyy	2017-09-20	Submit
AA2119loaner		mm / dd / yyyy	2017-09-20	Submit
BA2011loaner		mm / dd / yyyy	2017-09-20	Submit
BA2110loaner		mm / dd / yyyy	2017-09-20	Submit
BA2151loaner		mm / dd / yyyy	2017/06/05	Submit
BA2215loaner		mm / dd / yyyy	2017-09-20	Submit
BA2296loaner		mm / dd / yyyy	2017/09/11	Submit
BA2350loaner		mm / dd / yyyy	2017/09/13	Submit
SAA2039loaner		mm / dd / yyyy	2017-06-08	Submit
SAA2094loaner		mm / dd / yyyy	2017-09-20	Submit
SBA2023loaner		mm / dd / yyyy	2017-09-20	Submit
SBA2134loaner		mm / dd / yyyy	2017-09-20	Submit
SBA2231loaner		mm / dd / yyyy	2017/09/13	Submit
SBA2232loaner		mm / dd / yyyy	2017-09-20	Submit

```
    <tr style="font-size: 15pt; text-decoration: underline;">
        <td>Laptop</td>
        <td>User</td>
        <td>Date Out</td>
        <td>Date Returned</td>
        <td></td>
    </tr>

<?php
#Advanced Saved Computer Search ID needed here
#Fields need to be shown in the Search - Name, DateReturned, DateOut, Availability, Username, Department, Serial Number, JSS ID
    $Read_result=ReadJSS("computerreports/id/68");

    $TodayDate = date('Y/m/d');

    $jss_array = json_decode($Read_result, true);
    $device_array = $jss_array['computer_reports'];
    foreach($device_array as $device){
        echo "<form action=\"\" method=\"Post\" name=\"laptopsform\" id=\"laptopsform\" onSubmit=\"return DoubleCheck('".$device['Computer_Name']."');\">";
        echo "<tr style=\"font-size: 12pt;\">";
        echo "<input type=\"hidden\" name=\"laptop\" value=\"".$device['Serial_Number']."\">";
        echo "<td><a href=\"https://casper.saes.org:8443/computers.html?id=".$device['JSS_Computer_ID']."\" target=\"_blank\">".$device['Computer_Name']."</a></td>";
        if($device['Availability'] == "No"){
            echo "<td><a href=\"mailto:".$device['Username']."@saes.org\" target=\"_blank\">".$device['Username']."</a></td>";
            echo "<td>".$device['DateOut']."</td>";
            echo "<td><input type=\"date\" name=\"DateReturned\" value=\"".$TodayDate."\"></td>";
            echo "<input type=\"hidden\"  name=\"avail\" value=\"checkin\">";

            echo "<td><input type=\"submit\" value=\"Submit\" id=\"submit\" name=\"submit\"></td>";
            echo "</form>";
        } else if ($device['Availability'] == "Yes"){
            echo "<td><input type=\"text\" name=\"User\"></td>";

            echo "<td><input type=\"date\" name=\"DateOut\" value=\"".$TodayDate."\"></td>";
            echo "<td>".$device['DateReturned']."</td>";

            echo "<input type=\"hidden\"  name=\"avail\" value=\"checkout\">";
            echo "<td><input type=\"submit\" value=\"Submit\" id=\"submit\" name=\"submit\"></td>";
            echo "</form>";
        }

    }

?>
</div>
</BODY>
</HTML>
```

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Other Small Projects

-Update iPad owner info via a CSV

-Update every Mobile App's Self Service status

-Export all Extension Attributes and Scripts in the JSS

-Move a computer to a Static Group via Self Service policy

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Problems with the API

- **Security**
  - Permissions
  - Plain Text Passwords
- **Not Always Clear**
- **Doesn’t always work**

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Resources to learn the Jamf API

- **Jamf Nation**
  http://jamfnation.jamfsoftware.com
- **The Unofficial Reference for the JAMF Pro API**
  https://unofficial-jss-api-docs.atlassian.net
- **The JSS REST API for Everyone**
  http://www.macbrained.org/the-jss-rest-api-for-everyone/
- **MacAdmins Slack Channel**

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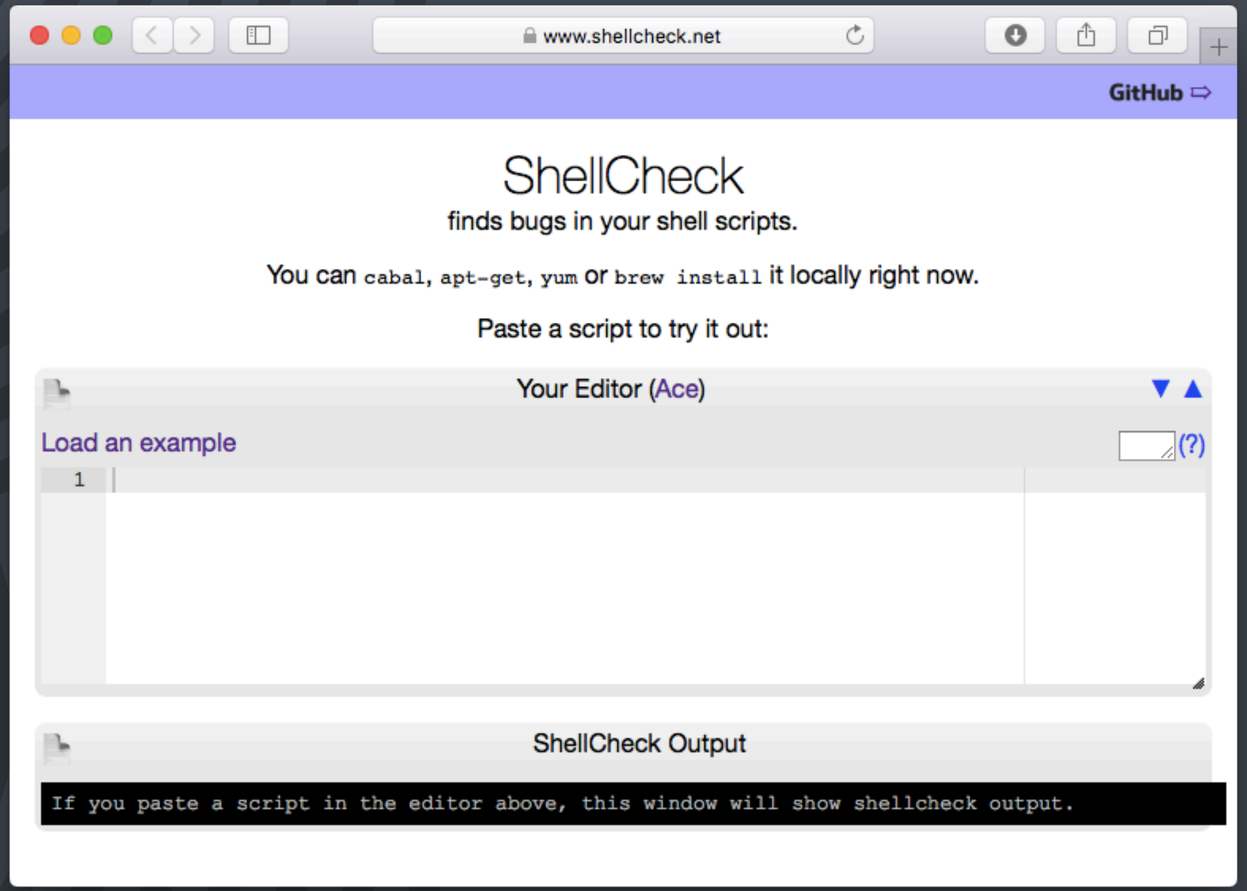
One last resource…

www.shellcheck.net



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https://github.com/boberito

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Everyone can learn.

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Thank you!