



Going API with FileMaker: Scripting FileMaker Made Me a Better MSP

precursor.ca/slides



Precursor Systems



EST'd 1994

precursor.ca/slides



“Alex Narvey is the original Mac MSP”

- Allen Hancock

precursor.ca/slides



Get Smart movie

precursor.ca/slides

Copyright © 2019, Alex Narvey



Simpsons Screen Cap

Simpsons Episode 341: Midnight RX

precursor.ca/slides



25

precursor.ca/slides

Copyright © 2019, Alex Narvey



precursor.ca/slides



precursor.ca/slides



precursor.ca/slides



Our company

**Claris International Inc. is the leader in
workplace innovation.**



Claris International Inc. is a subsidiary of Apple Inc.

precursor.ca/slides



FileMaker Script Steps

- 1. Perform AppleScript**
- 2. Insert From URL**

precursor.ca/slides



Perform AppleScript (macOS)

Sends AppleScript commands to another application.

Options

- **Calculated AppleScript** specifies a calculation to use as the [AppleScript](#) text.
- **Native AppleScript** is the text of an AppleScript (up to 30000 characters). Indenting of repeat loops and conditional statements is not supported.

See also

[Scripting with Apple events \(macOS\)](#)

[Automating tasks with scripts](#)

Compatibility

Product	Supported
FileMaker Pro Advanced	Yes
FileMaker Go	No
FileMaker WebDirect	No
FileMaker Server	No
FileMaker Cloud for AWS	No
FileMaker Data API	No
Custom Web Publishing	No
Runtime solution	Yes

Originated in

FileMaker Pro 6.0 or earlier

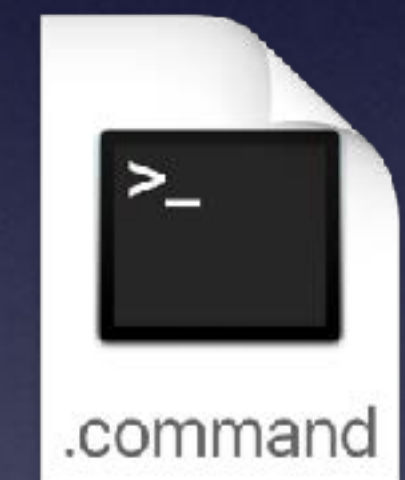
precursor.ca/slides



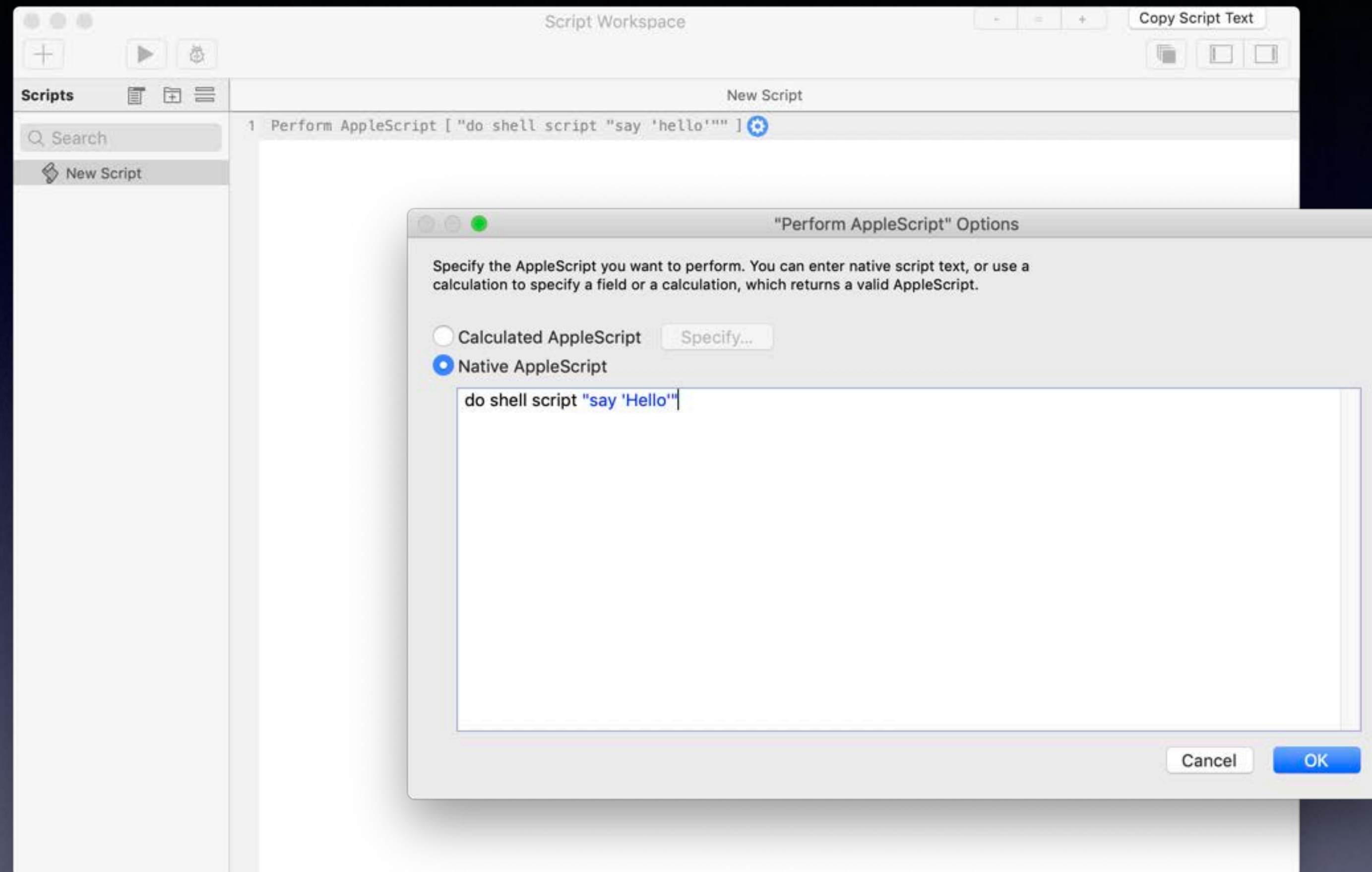
Perform AppleScript



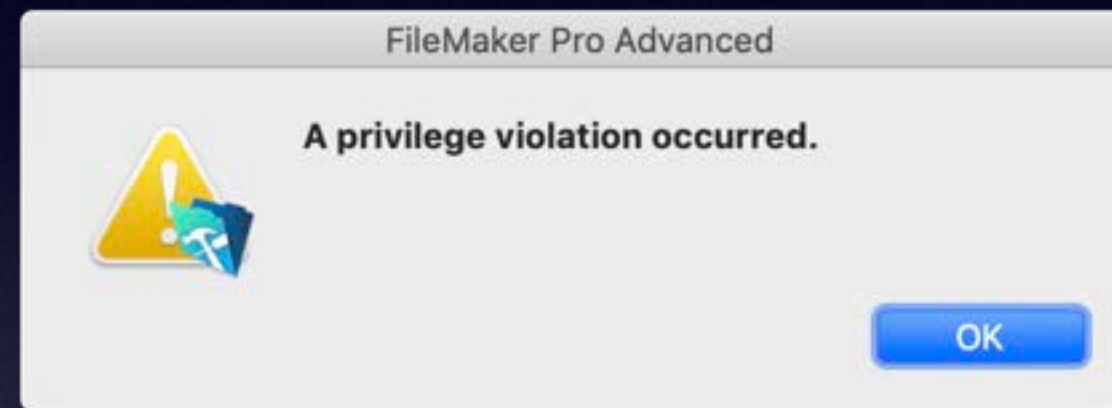
AppleScript can “do shellscript”



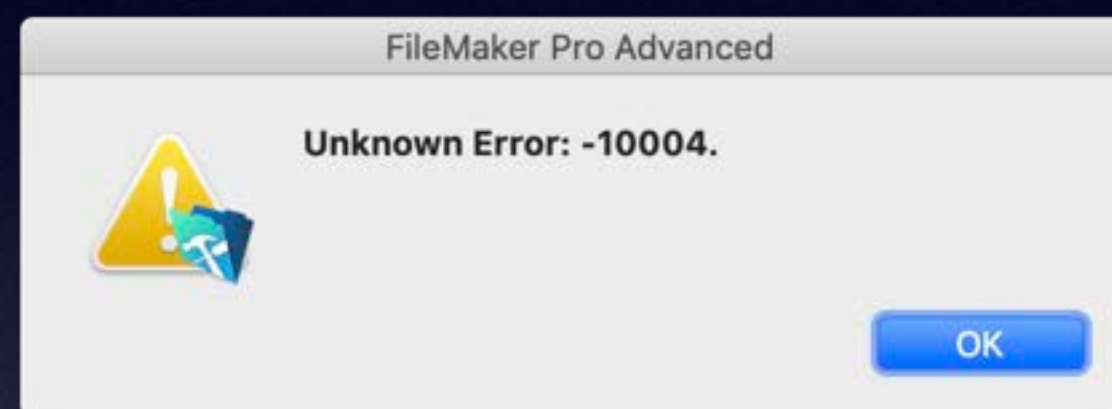
precursor.ca/slides



precursor.ca/slides



precursor.ca/slides



enable the fmextscriptaccess extended privilege

precursor.ca/slides



Choose privileges and save them as a "Privilege Set," which can be used by one or more accounts. If you edit a set, all accounts that use it will be affected.

Privilege Set Name	Description
[Full Access]	access to everything

Data Access and Design

Records: Create, edit, and delete in all tables

Layouts: All modifiable

Value Lists: All modifiable

Scripts: All modifiable

Extended Privileges

- Require re-authentication after the specified minutes in sleep/background. (fmreauthenticate10)
- Access via XML Web Publishing - FMS only (fmxml)
- Access via PHP Web Publishing - FMS only (fmphp)
- Allow Apple events and ActiveX to perform FileMaker operations (fmextscriptaccess)
- Allow URLs to perform FileMaker scripts (fmurlscript)
- Access via FileMaker Data API (fmrest)

To add, edit or delete Extended Privileges, use the tools in the Extended Privileges tab.

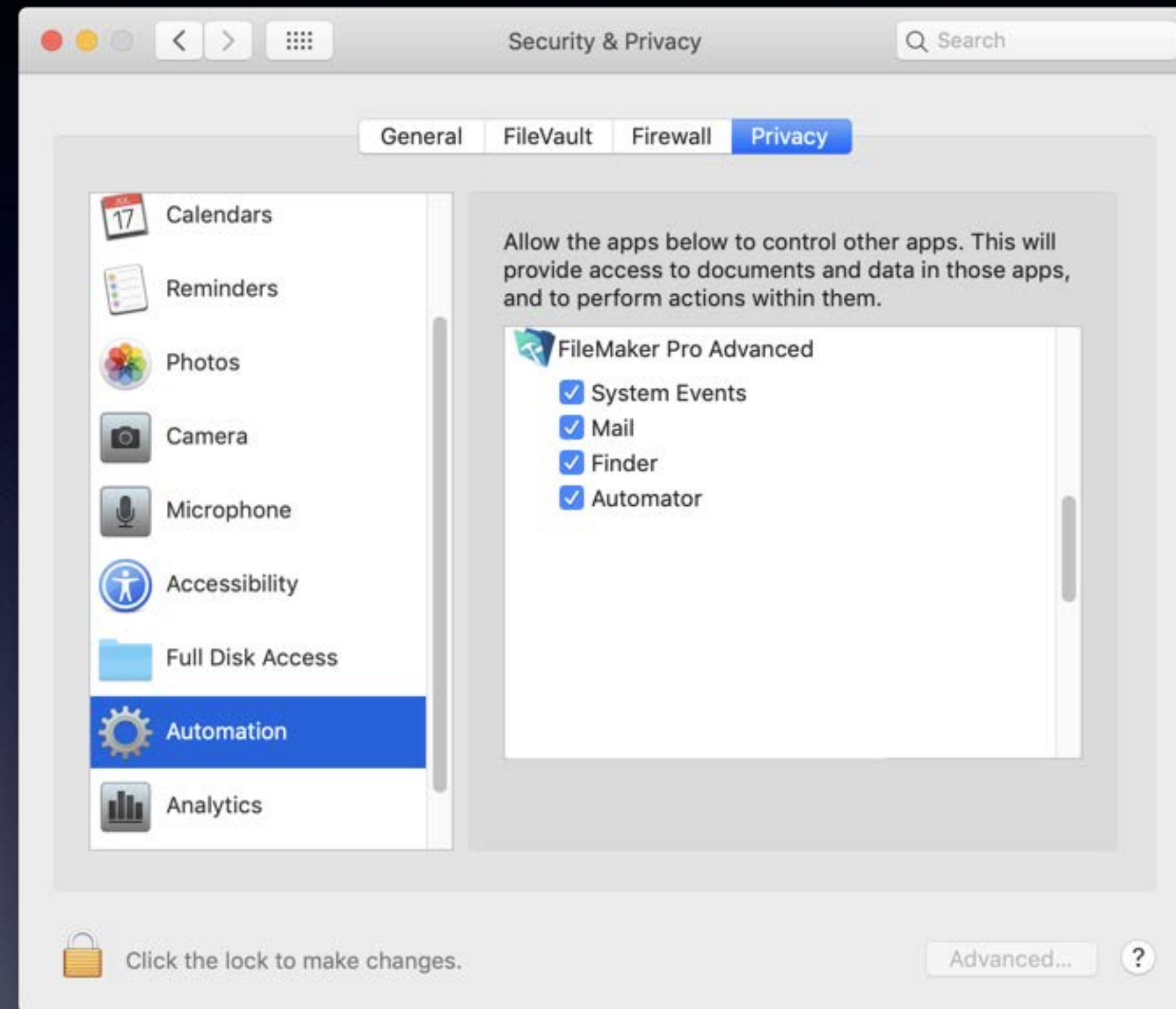
Other Privileges

- Allow printing
- Allow exporting
- Manage extended privileges
- Manage accounts that don't have Full Access
- Allow user to override data validation warnings
- Disconnect user from server when idle
- Allow user to modify their own password
 - Must be changed every: 30 days
 - Minimum password length: 5 characters

Available menu commands: All

Cancel OK

precursor.ca/slides



precursor.ca/slides



[Reference](#) > [Script steps reference](#) > [Fields script steps](#) > Insert From URL



Insert From URL

Enters the content from a URL into a field or variable.

Compatibility

Product	Supported
FileMaker Pro Advanced	Yes
FileMaker Go	Yes
FileMaker WebDirect	Yes
FileMaker Server	Yes
FileMaker Cloud for AWS	Yes
FileMaker Data API	Yes
Custom Web Publishing	Yes
Runtime solution	Partial

Originated in

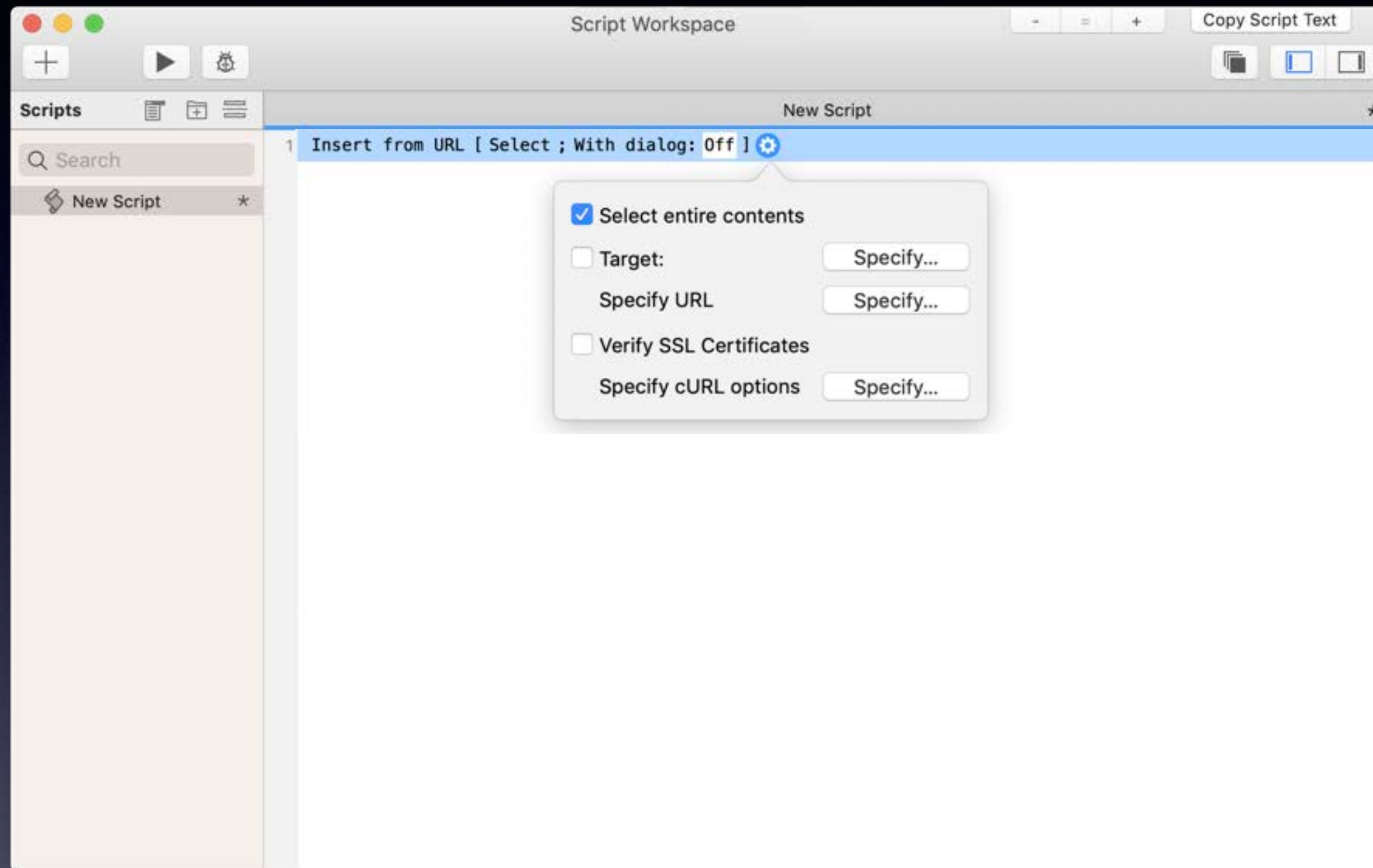
FileMaker Pro 12.0

Description

Insert From URL supports http, https, ftp, ftps, file, smb, smtp, smtps, ldap, and ldaps protocols; other protocols are unsupported and return an error. FileMaker Pro Advanced downloads the resource that is specified by the URL to a variable or a field.

You must specify a target variable, specify a target field on the current layout, click in a field, or use the [Go to Field script step](#) before performing this script step. If **Target** is not specified, the data is placed in the active field. Otherwise, this script step returns an error code that can be captured with the [Get\(LastError\) function](#).

precursor.ca/slides



precursor.ca/slides



Insert From URL

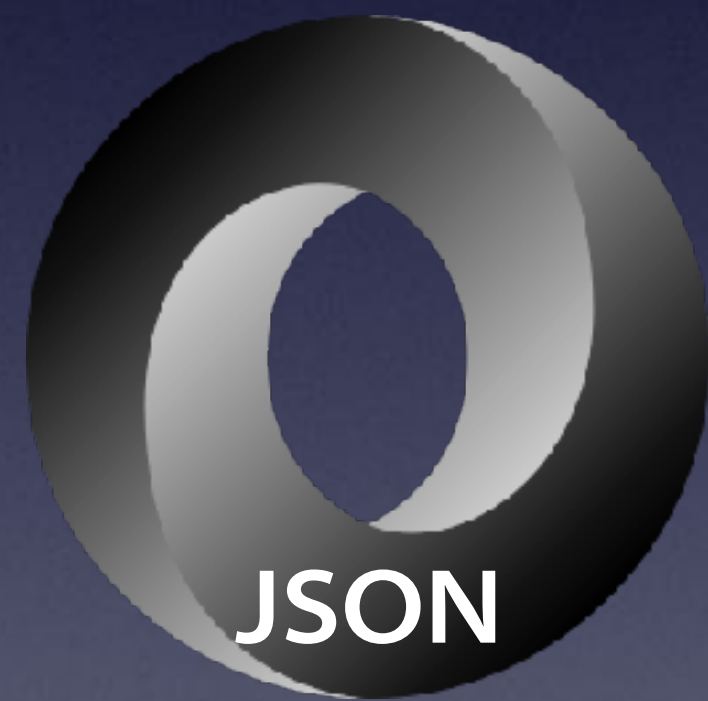
cURL can interact with REST APIs

precursor.ca/slides



Representational State Transfer

{ REST }



JavaScript Object Notation

precursor.ca/slides



CRUD = Create, Retrieve, Update, Delete

HTTP POST **C**reate new resources

HTTP GET **R**etrieve info

HTTP PUT **U**ppdate existing resources

HTTP DELETE **D**delete resources

precursor.ca/slides



{ REST }

```
curl https://example.monitoringclient.com/v2.5/expirations/?  
api_key=g0ZeR1PVYm7dIdwD--PGYDVzuBIOS_sp8aeHzD \  
-d expiration[license_key]=www.example.com \  
-d expiration[expires_at]=2019-06-14 \  
-d expiration[expiration_manufacturer_id]=em_6c511bd3ac \  
-d expiration[expiration_product_id]=ep_fe4d20ebcc \  
-d expiration[group_id]=g_ff9679b20e \  
-d expiration[renewable]=true
```

precursor.ca/slides



JSON

```
{  
  "uid": "e_614b9d8c41",  
  "license_key": "A12BC345DEF6",  
  "expires_at": "1558656000",  
  "expiration_manufacturer": "em_6c511bd3ac",  
  "expiration_product": "ep_fe4d20ebcc",  
  "computer": null,  
  "group": "g_ff9679b20e",  
  "renewable": true,  
  "notes": null,  
  "created_at": 1441209663  
}
```

precursor.ca/slides



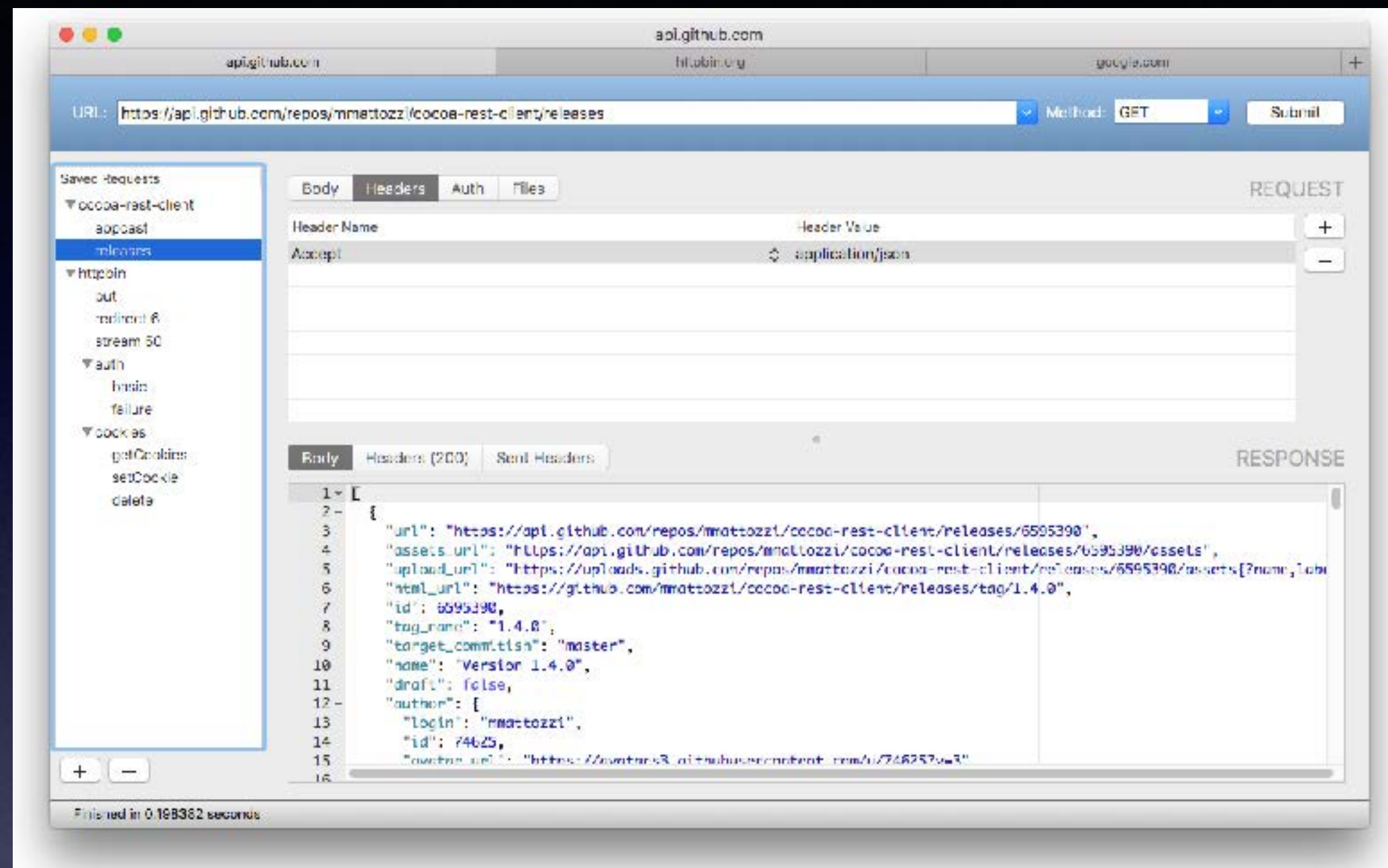
“Getting started with the new cURL options is quite daunting and a steep learning curve.”

<https://support.filemaker.com/s/article/new-curl-options-in-insert-from-url>

precursor.ca/slides

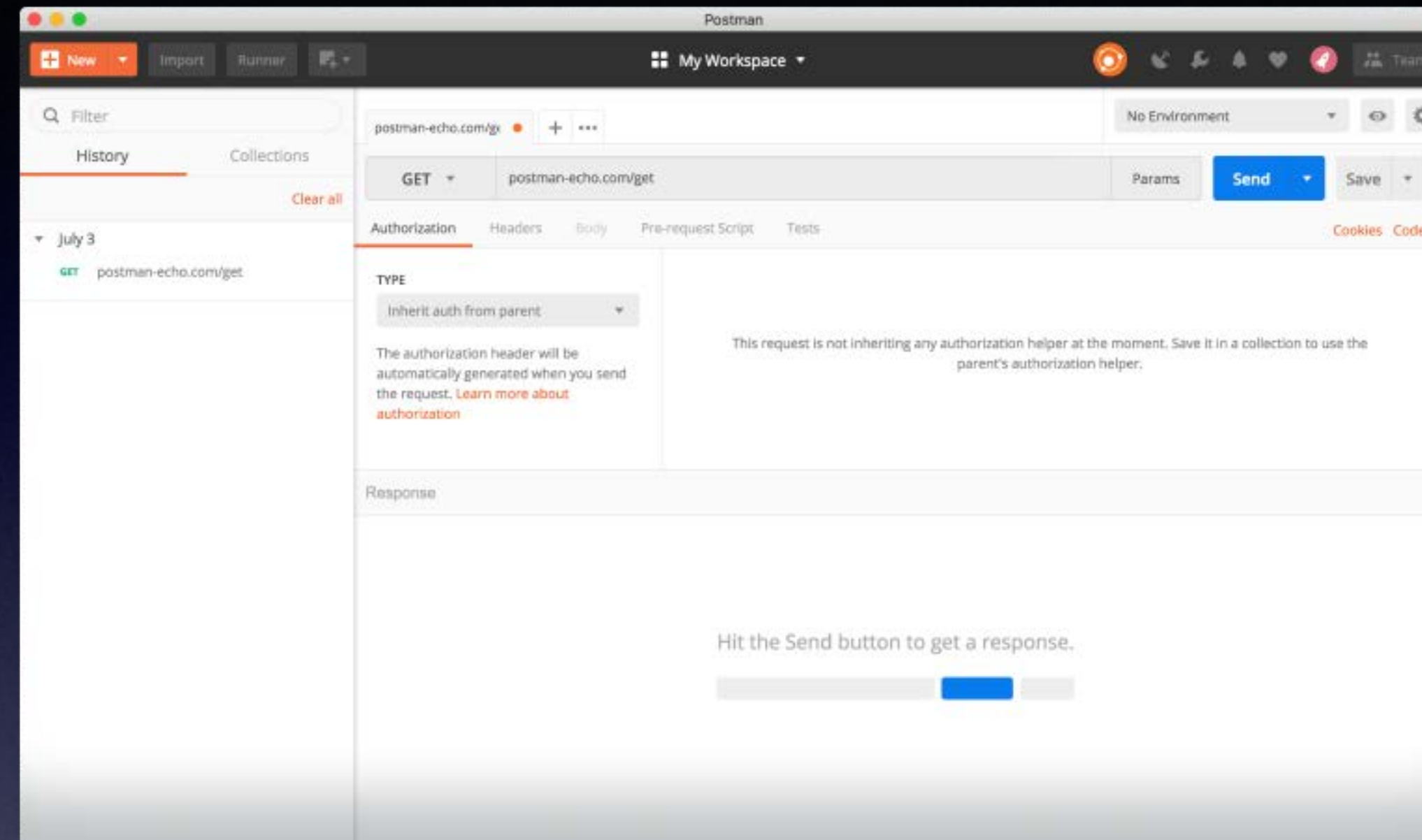


- H / --header <name: value>** Use this option multiple times to set multiple header entries.
- F / --form <name=content>** // form data (quoted?)
- F / --form <name=@[\$]fmvariable>** // form data value from variable
- b / --cookie-jar <[\$]fmvariable>** Direct file access replaced with FM variables.
- d / --data <data>** Data (quoted)
- d / --data @<[\$]fmvariable>** Data from FileMaker variable
(@ character prefixing a FM variable replaces direct file access)



<https://mmattozzi.github.io/cocoa-rest-client/>

precursor.ca/slides



<https://www.getpostman.com/downloads/>

precursor.ca/slides



JSON functions

JSON functions parse, create, modify, and format data in JSON format. See [Working with the JSON functions](#).

This function	Returns
JSONDeleteElement	Deletes a JSON data element specified by an object name, an array index, or a path.
JSONFormatElements	Formats elements in JSON data to make them easier to read.
JSONGetElement	Queries JSON data for an element specified by an object name, an array index, or a path.
JSONListKeys	Lists the object names (keys) or array indexes in JSON data for an element specified by an object name, an array index, or a path.
JSONListValues	Lists the values in JSON data for an element specified by an object name, an array index, or a path.
JSONSetElement	Adds or modifies an element in JSON data specified by an object name, an array index, or a path.



<https://www.soliantconsulting.com/blog/parsing-json-filemaker-16/>

<https://dbservices.com/articles/filemaker-json-functions/>

<https://github.com/SoliantMike/PHP-HTTPDebug>

precursor.ca/slides



CAVEATS

Rube Goldberg Cartoon

precursor.ca/slides



FileSharing Assistant

User	Address	Idle Time	Type	Session ID
ODMASTER\afarban	192.168.0.23	3 minutes	SMB	484298722584087572
ODMASTER\b.oreilly	192.168.0.30	2 minutes	SMB	12768722584087576
ODMASTER\bcsabz	192.168.0.36	24 minutes	SMB	438798722584087575
w.rose	192.168.0.22	12 minutes	AFP	34600722584087574
d.trump	192.168.0.9	4 minutes	AFP	484298722584087572
PRECURSOR-TEST\hwinstein	192.168.0.44	37 minutes	SMB	484298722584087572
j.cooney	192.168.0.167	31 minutes	AFP	895798722584087578
ODMASTER\j.tambor	192.168.0.87	11 minutes	SMB	37488722584087576
ODMASTER\jhoover	192.168.0.143	19 minutes	SMB	432198722584087574
ODMASTER\jasseter	192.168.0.15	8 minutes	SMB	746798722584087574
ODMASTER\l.h.kaspoway	192.168.0.138	33 minutes	SMB	87388722584087576
louis.ck	192.168.0.113	35 minutes	AFP	783698722584087576
ODMASTER\m.lauar	192.168.0.199	14 minutes	SMB	865798722584087577
ODMASTER\precursor	192.168.0.224	9 minutes	SMB	384798722584087575
ODMASTER\precursor	192.168.0.67	12 minutes	SMB	234658722584087575
r.moore	192.168.0.111	11 minutes	AFP	123458722584087577
r.polanski	192.168.0.125	13 minutes	AFP	846798722584087574

https://precursor.ca/precursor/resources/filesharing_assistant.html

precursor.ca/slides



macOS Server



precursor.ca/slides



<https://support.apple.com/en-us/HT207828>

File Sharing	<p>All File Sharing functionality has moved to macOS High Sierra. AFP will be deprecated in macOS Server 5.4 and you won't be able to share files on an APFS volume. Use SMB to share files on an APFS volume, or use AFP to share files on an attached HFS+ volume.</p> <p>If you upgrade a Mac that is sharing network home directories via AFP to macOS High Sierra, the AFP service will be disabled. You must update your network user share point URL to use SMB instead of AFP.</p> <p>Learn more about changes to APFS in macOS High Sierra.</p>
--------------	--

Published Date: October 31, 2017

precursor.ca/slides



Server

- creative
- Alerts
- Certificates
- Logs
- Stats

Accounts

- Users
- Groups

Services

- Caching
- Calendar
- Contacts
- File Sharing**
- Mail
- Messages
- Profile Manager
- Time Machine
- VPN
- Websites
- Wiki
- Xcode

Advanced

- DHCP
- DNS
- FTP
- NetInstall
- Open Directory
- Xsan

File Sharing ON

Settings **Connected Users (26)**

User Name	Address	Idle Time	Type
...	192.168.2.81	0 minutes	AFP
...	192.168.2.101	0 minutes	AFP
tf...	192.168.2.128	0 minutes	AFP
bmc...	192.168.2.99	0 minutes	AFP
Tom ...	192.168.2.92	0 minutes	AFP
Carey ...	192.168.2.93	0 minutes	AFP
CREATIVE\gc...	192.168.2.78	11 minutes	SMB
CREATIVE\tb...	192.168.2.92	0 minutes	SMB
CREATIVE\br...	192.168.2.99	0 minutes	SMB
CREATIVE\br...	fe80::147b:af23:e68f:9539%bond0	2 minutes	SMB
CREATIVE\br...	fe80::147b:af23:e68f:9539%bond0	21 minutes	SMB
CREATIVE\br...	fe80::147b:af23:e68f:9539%bond0	21 minutes	SMB
CREATIVE\tar...	192.168.2.90	16 minutes	SMB
CREATIVE\br...	192.168.2.99	0 minutes	SMB
CREATIVE\me...	192.168.2.110	46 minutes	SMB
CREATIVE\me...	192.168.2.110	46 minutes	SMB
CREATIVE\s...	192.168.2.107	8 minutes	SMB
CREATIVE\s...	192.168.2.107	8 minutes	SMB
CREATIVE\sar...	192.168.2.107	8 minutes	SMB
CREATIVE\nn...	192.168.2.65	0 minutes	SMB
CREATIVE\nn...	192.168.2.65	0 minutes	SMB
CREATIVE\r...	192.168.2.101	5 minutes	SMB
CREATIVE\ea...	192.168.2.136	11 minutes	SMB
CREATIVE\boa...	fe80::51:1242:2e42:60a4%bond0	40 minutes	SMB
CREATIVE\H...	192.168.2.88	0 minutes	SMB

Disconnect...

precursor.ca/slides



Server

- creative
- Alerts
- Certificates
- Logs
- Stats

Accounts

- Users
- Groups

Services

- Caching
- Calendar
- Contacts
- File Sharing**
- Mail
- Messages
- Profile Manager
- Time Machine
- VPN
- Websites
- Wiki
- Xcode

Advanced

- DHCP
- DNS
- FTP
- NetInstall
- Open Directory
- Xsan

File Sharing

Settings Connected Users (26)

User Name	Address	Time	Type
...	192.168.2.81	...	AFP
...	192.101	...	AFP
tf...	AFP
bmc...	...	0 minutes	AFP
Tom...	...	0 minutes	AFP
Carey...	...	0 minutes	AFP
CREATIVE...	192.168.2.107	11 minutes	SMB
CREATIVE...	192.168.2.107	0 minutes	SMB
CREATIVE...	192.168.2.107	0 minutes	SMB
CREATIVE...	fe80::147b...	2 minutes	SMB
CREATIVE...	fe80::147b...	21 minutes	SMB
CREATIVE...	fe80::147b...	21 minutes	SMB
CREATIVE...	192.168.2.107	16 minutes	SMB
CREATIVE...	...	0 minutes	SMB
CREATIVE...	...	46 minutes	SMB
CREATIVE...	...	16 minutes	SMB
CREATIVE...	192.107	...	SMB
CREATIVE...	192.168.2.107	...	SMB
CREATIVE...	192.168.2.107	...	SMB
CREATIVE...	192.168.2.107	...	SMB
CREATIVE...	192.168.2.65	...	SMB
CREATIVE...	192.168.2.65	...	SMB
CREATIVE...	192.168.2.101	...	SMB
CREATIVE...	192.168.2.136	11 minutes	SMB
CREATIVE...	192.168.2.136	40 minutes	SMB

Disconnect...

precursor.ca/slides



User	Address	Idle Time	Type	Session ID	
ODMASTER\lafranken	192.168.0.23	3 minutes	SMB	4842987225840877572	X
ODMASTER\b.oreilly	192.168.0.30	2 minutes	SMB	127687225840877576	X
ODMASTER\bcosby	192.168.0.36	24 minutes	SMB	4387987225840877575	X
c.rose	192.168.0.22	12 minutes	AFP	346587225840877574	X
d.trump	192.168.0.9	4 minutes	AFP	4842987223894877572	X
PRECURSOR-TEST\hwienstein	192.168.0.44	37 minutes	SMB	48429872258182746	X
j.conyers	192.168.0.167	31 minutes	AFP	8957987225840877578	X
ODMASTER\j.tambor	192.168.0.87	11 minutes	SMB	374887225840877576	X
ODMASTER\j.hoover	192.168.0.143	19 minutes	SMB	4321987225840877574	X
ODMASTER\j.lasseter	192.168.0.15	8 minutes	SMB	7467987225840877574	X
ODMASTER\k.spacey	192.168.0.98	33 minutes	SMB	8738987225840877576	X
louis.ck	192.168.0.113	35 minutes	AFP	7836987225840877576	X
ODMASTER\m.lauer	192.168.0.199	14 minutes	SMB	9857987225840877577	X
ODMASTER\p.precursor	192.168.0.224	9 minutes	SMB	3847987225840877575	X
ODMASTER\p.precursor	192.168.0.67	12 minutes	SMB	23465987225840877575	X
r.moore	192.168.0.111	11 minutes	AFP	12345987225840877577	X
r.polanski	192.168.0.125	13 minutes	AFP	8467987225840877574	X

precursor.ca/slides



<https://127.0.0.1:311>

precursor.ca/slides



**[https://krypted.com/mac-os-x-server/
server-admin-web-modules-curl-you/](https://krypted.com/mac-os-x-server/server-admin-web-modules-curl-you/)**

precursor.ca/slides



```
sudo -S defaults write && \  
/Library/Server/Preferences/com.apple.servermgrd requireUserAgent -bool false
```

precursor.ca/slides



The screenshot shows a web browser window with the address bar displaying '127.0.0.1:311'. The main content area has the heading 'Server Admin Modules:' followed by a list of 33 items, each preceded by a bullet point and underlined as a link. The items are: servermgr_accounts, servermgr_addressbook, servermgr_afp, servermgr_alerts, servermgr_bonjour, servermgr_calendar, servermgr_certs, servermgr_collabd, servermgr_config, servermgr_devicemgr, servermgr_dhcp, servermgr_dirserv, servermgr_dns, servermgr_filebrowser, servermgr_firewall, servermgr_history, servermgr_info, servermgr_jabber, servermgr_mail, servermgr_netboot, servermgr_network, servermgr_nfs, servermgr_radius, servermgr_san, servermgr_sharing, servermgr_signaler, servermgr_smb, servermgr_status, servermgr_swupdate, servermgr_vpn, servermgr_web, and servermgr_wiki.

precursor.ca/slides



127.0.0.1:311/servermgr_smb

This http form can be used to test 'servermgr_smb'

Command:

```
<?xml version="1.0" encoding="UTF-8"?>
<plist version="0.9">
<dict>
  <key>command</key>
  <string>getConnectedUsers</string>
</dict>
</plist>
```

Send Command

Click on your browser back button after the result is displayed

precursor.ca/slides



127.0.0.1:311/commands/servermgr_smb?input=%3C%3Fxml

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<?xml version="1.0" >
<plist version="1.0">
  <dict>
    <key>state</key>
    <string>RUNNING</string>
    <key>usersArray</key>
    <array>
      <dict>
        <key>disconnectID</key>
        <integer>4400015753609216056</integer>
        <key>flags</key>
        <integer>0</integer>
        <key>ipAddress</key>
        <string>192.168.2.78</string>
        <key>lastUseElapsedTime</key>
        <integer>79</integer>
        <key>loginElapsedTime</key>
        <integer>2155623</integer>
        <key>minsToDisconnect</key>
        <integer>0</integer>
        <key>name</key>
        <string>CREATIVE\ggobeil</string>
        <key>serviceType</key>
        <string>smb</string>
        <key>sessionID</key>
        <integer>4400015753609216056</integer>
        <key>sessionType</key>
        <string>tcp</string>
      </dict>
      <dict>
        <key>disconnectID</key>
        <integer>4400015753609216130</integer>
        <key>flags</key>
        <integer>0</integer>
        <key>ipAddress</key>
        <string>192.168.2.92</string>
        <key>lastUseElapsedTime</key>
        <integer>1675</integer>
        <key>loginElapsedTime</key>
        <integer>2137355</integer>
        <key>minsToDisconnect</key>

```



127.0.0.1:311/servermgr_smb

This http form can be used to test 'servermgr_smb'

Command:

```
<?xml version="1.0" encoding="UTF-8"?>
<plist version="0.9">
<dict>
  <key>command</key>
  <string>disconnectUsers</string>
  <key>minutes</key>
  <integer>1</integer>
  <key>sessionIDsArray</key>
  <array>
    <integer>100</integer>
    <integer>101</integer>
  </array>
</dict>
</plist>
```

Click on your browser back button after the result is displayed

precursor.ca/slides



https://www.apple.com/server/docs/Command_Line.pdf

precursor.ca/slides

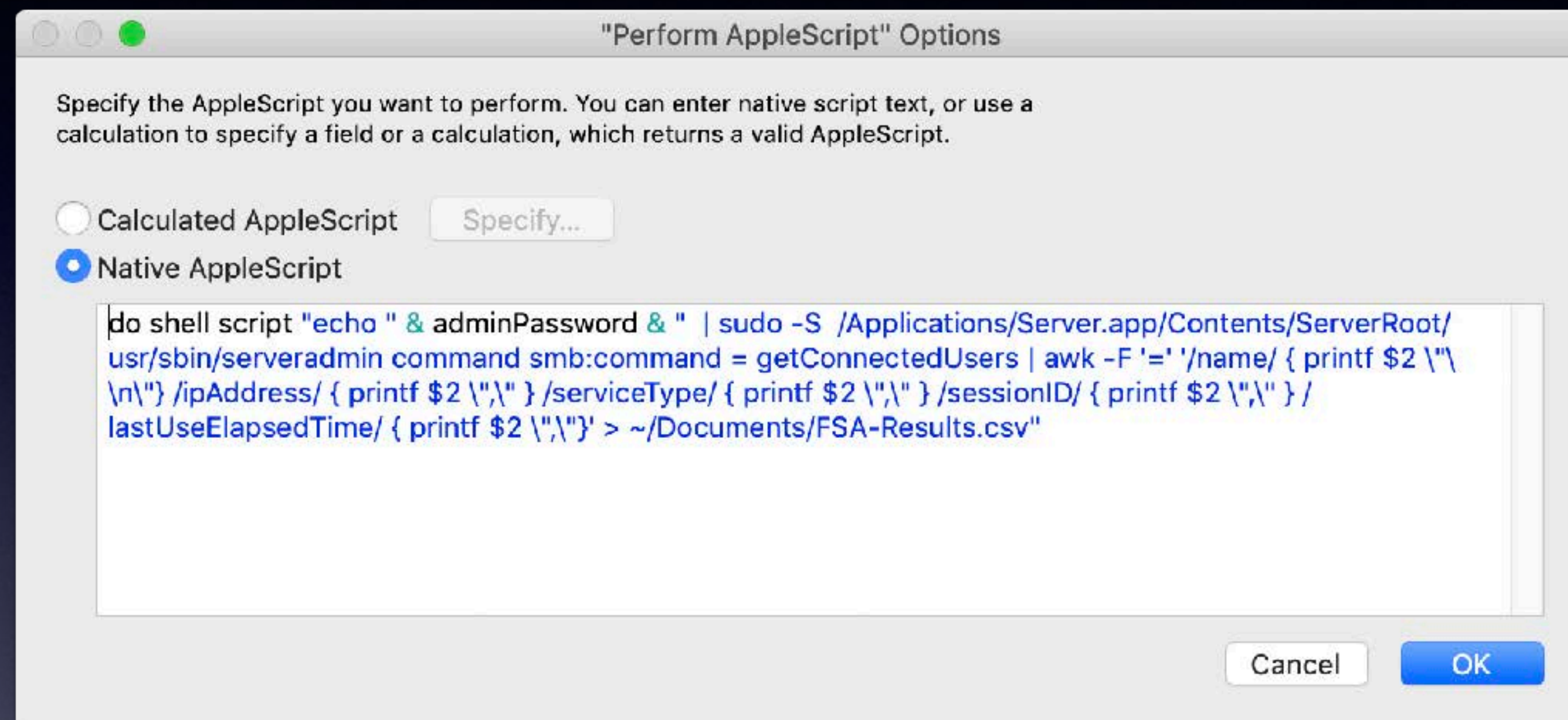


Listing SMB Users

You can use the `serveradmin getConnectedUsers` command to retrieve information about connected SMB users. For example, you can use this command to retrieve the session IDs you need to disconnect users.

To list connected users:

```
$serveradmin command smb:command = getConnectedUsers
```



precursor.ca/slides



Disconnecting SMB Users

You can use the `serveradmin disconnectUsers` command to disconnect SMB users. Users are specified by session ID.

To disconnect users:

```
$ sudo serveradmin command
smb:command = disconnectUsers
smb:sessionIDsArray:_array_index:0 = sessionid1
smb:sessionIDsArray:_array_index:1 = sessionid2
smb:sessionIDsArray:_array_index:2 = sessionid3
[...]
Control-D
```



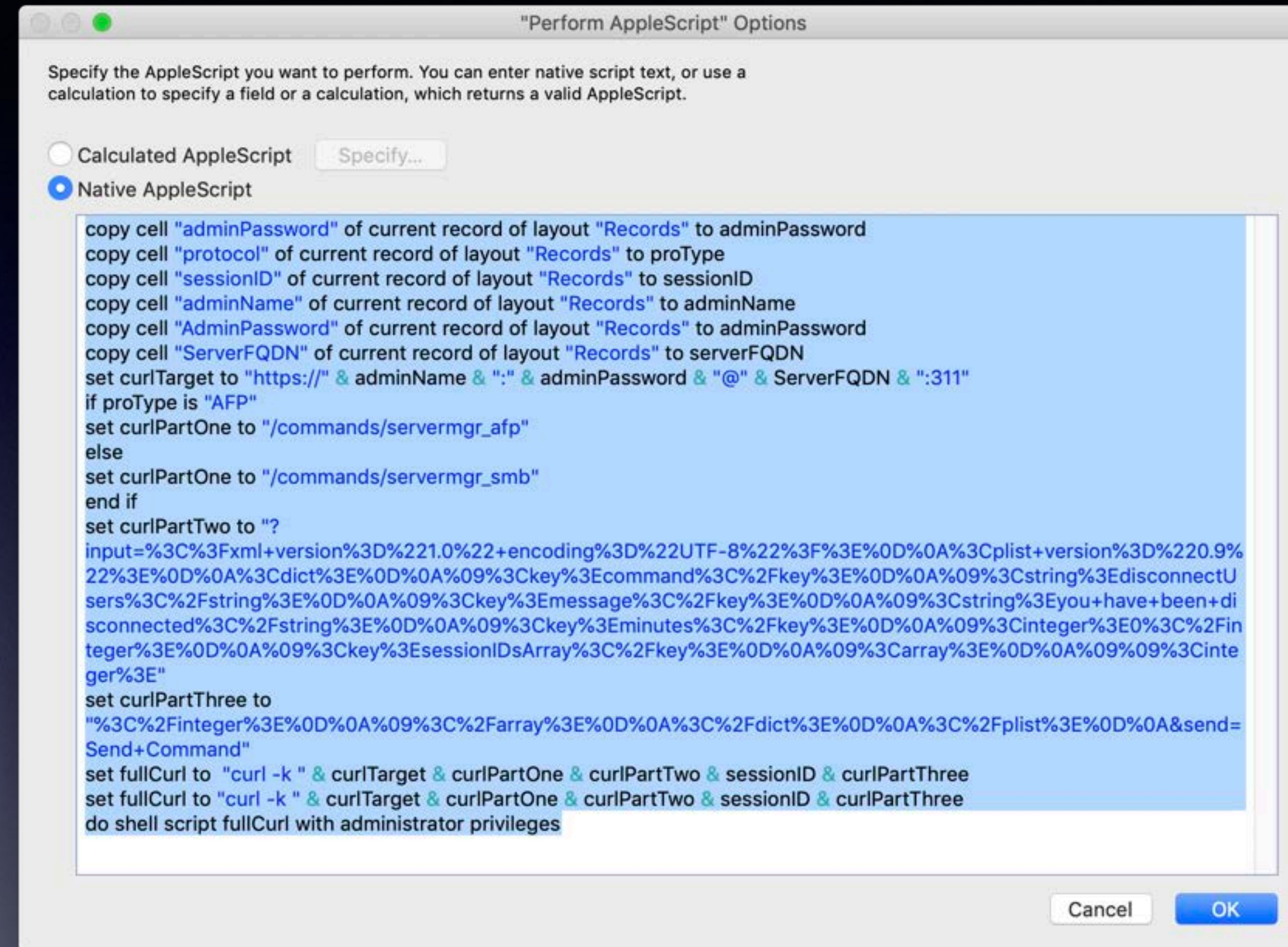
127.0.0.1:311/servermgr_smb

This http form can be used to test 'servermgr_smb'

Command:

```
<?xml version="1.0" encoding="UTF-8"?>
<plist version="0.9">
<dict>
  <key>command</key>
  <string>disconnectUsers</string>
  <key>minutes</key>
  <integer>1</integer>
  <key>sessionIDsArray</key>
  <array>
    <integer>100</integer>
    <integer>101</integer>
  </array>
</dict>
</plist>
```

Click on your browser back button after the result is displayed



precursor.ca/slides

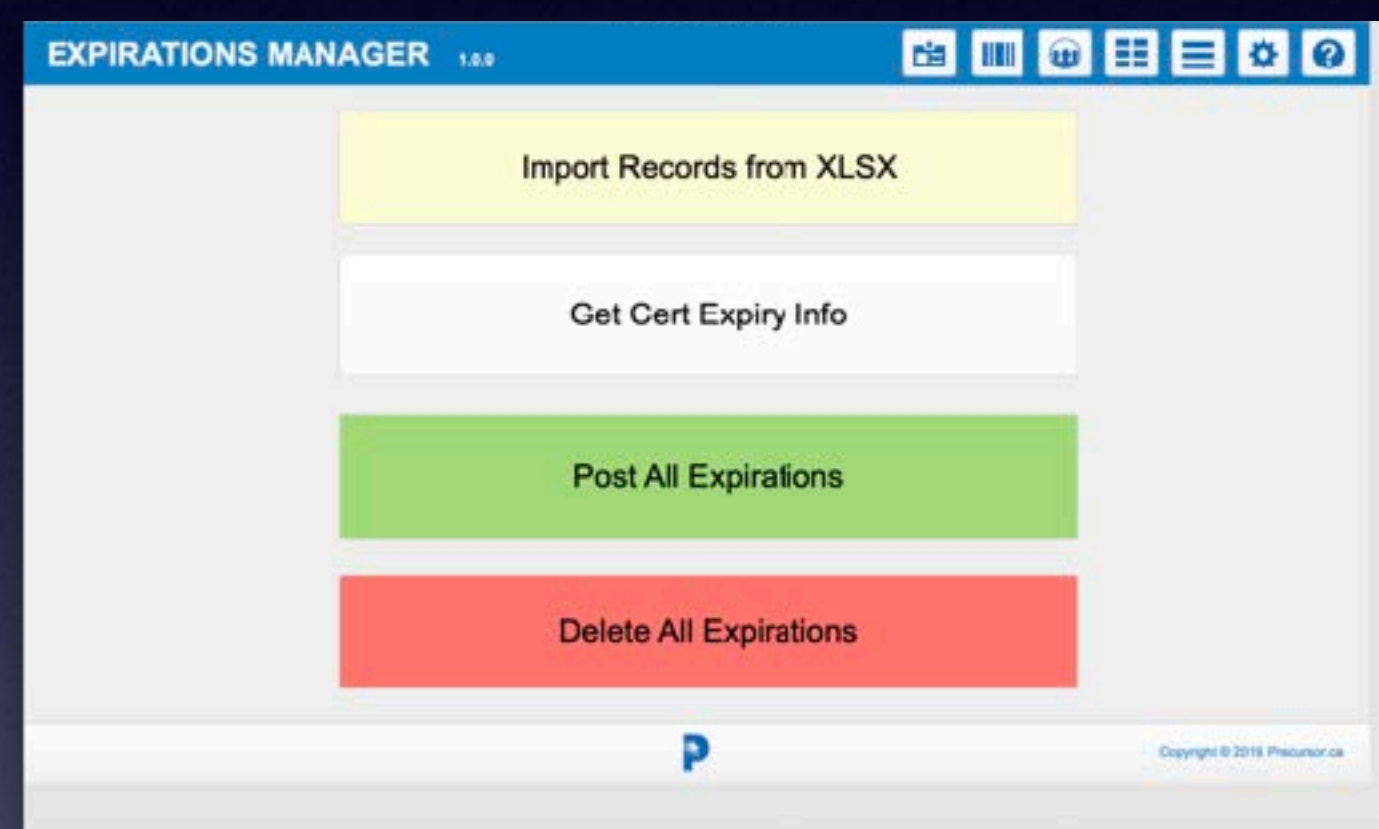


Demo

precursor.ca/slides



Expiration Manager



<https://precursor.ca/wem/>

precursor.ca/slides



The screenshot shows a web browser window with the URL `...monitoringclient.com/expirations?direction=desc&...`. The page title is "Expirations". On the left is a dark teal sidebar with a "Dashboard" header and a list of menu items: Dashboard, Groups, Computers, Plugin Results, Expirations (selected), View/Search, Calendar, and Setup. The main content area has a search bar "Search computers and Groups...", a home icon, and a breadcrumb "Expirations". Below this is a table with columns: Manufacturer, Product, License Key, Group, Computer, and Expiration. The table contains two rows of data.

Manufacturer	Product	License Key	Group	Computer	Expiration
Kerio	Connect (Product)	10512 [redacted] 52...	[redacted]	[redacted] server	2019-09-10
Backblaze	Cloud Backup	tom@[redacted]	[redacted]	SMA [redacted]	Current

precursor.ca/slides



Sort by Date ▾

Monitoring Notification 4/1/19
[Monitoring Client] Pending Expir... Inbox - anarvey
The following Expirations will come due in the next 60 days. View in Dashboard Kerio Product E...

☆ **Monitoring Notification** Inbox - anarvey April 1, 2019 at 7:01 AM MN
[Monitoring Client] Pending Expirations for [Precursor](#)
To: Alex Narvey

The following Expirations will come due in the next 60 days.

Kerio View in Dashboard

Product	Expires At	License Key	Group	Computer
Connect (Product)	2019-04-17	10512-1J[REDACTED]	[REDACTED]	mail
Connect (Product)	2019-04-25	10512-[REDACTED]	[REDACTED]	server
Connect (Product)	2019-05-06	18118-[REDACTED]	[REDACTED]	Mail Server
Connect (Product)	2019-05-14	18118-1[REDACTED]	[REDACTED]	[REDACTED]

This email is a reminder of Expirations which will come due in the next 60 days. Control this, and other emails at <https://precursorca.monitoringclient.com/settings/email>

precursor.ca/slides



Manually enter:

- Search a Group name
- Select a Manufacturer*
- Select a Product*
- Fill in Certificate Name
- Fill in Expiration Date

Track a new Expiration

Group

Search Groups... Cancel

Manufacturer

Select a Manufacturer

The Manufacturer list can be edited in the Expirations Setup...

Product

Select a product

The Product list can be edited in the Expirations Setup...

Expiration Details

License Key* 0/190

Enter a serial number, license, or other identifier.

Expiration Date*

The date this Expiration will expire.

Renewable

Notes about this Expiration

Cancel Add Expiration

“Like an animal!”

precursor.ca/slides



Registrars and Issuers have to be manually added to Manufacturers

Manufacturers & Products

Each Expiration is related to both a Manufacturer and Product. For example: A domain name might have a Manufacturer named "GoDaddy" and a Product named "Domain Registration". Add or edit Manufacturers and Products Below.

Note: The Manufacturers and Products reported by monitored computers are considered Managed, and are not available for editing.

Manufacturers

[Add Manufacturer](#)

Products

[Add Product](#)

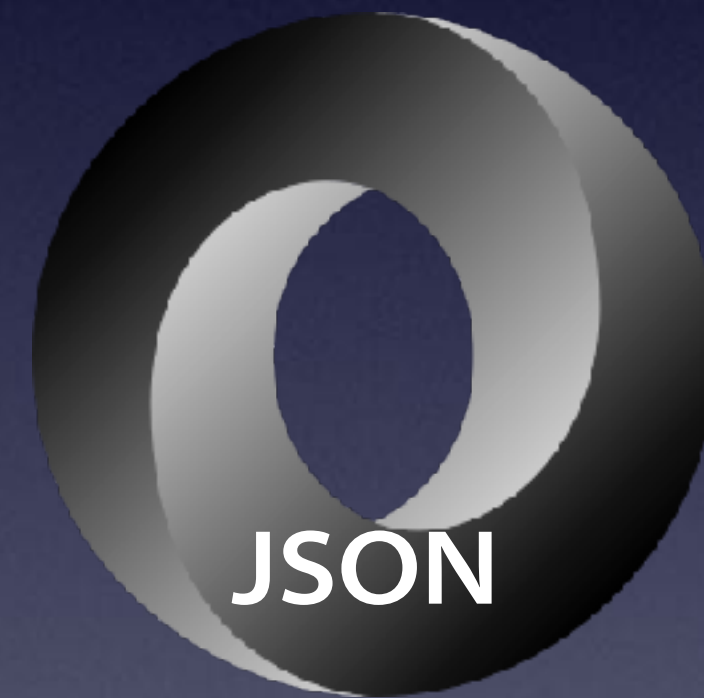
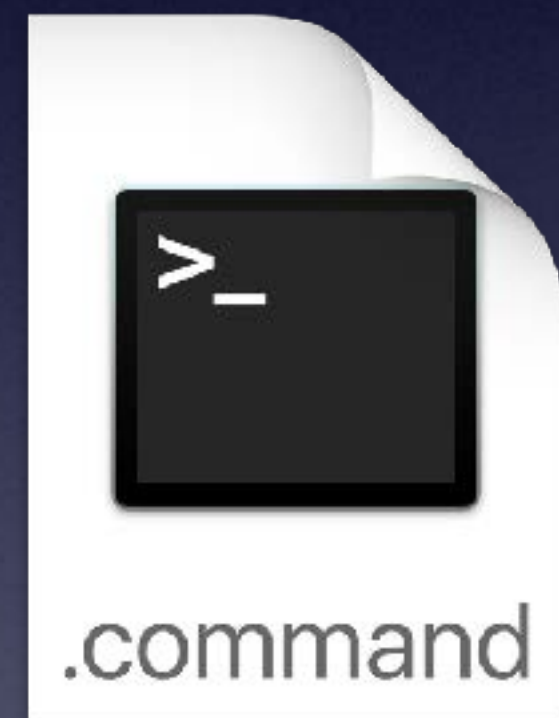
precursor.ca/slides



precursor.ca/slides



Use Watchman's REST API & Automate!



precursor.ca/slides



Automating Domain & SSL Expirations

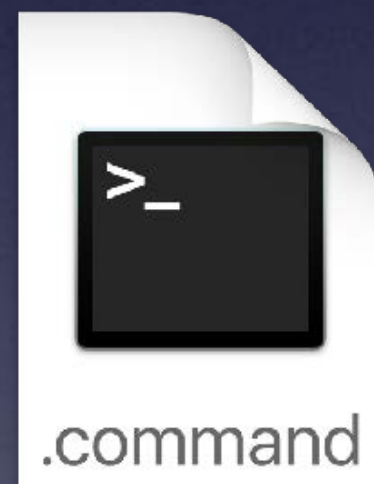
- 1. Get the expiration info online...**
- 2. Populate Watchman with the info...**

precursor.ca/slides



Part 1

Getting the expiration info...



precursor.ca/slides



Domain info: \$ man whois

Certificate info: \$ man openssl

precursor.ca/slides





```
$ echo | whois mactech.com \  
| grep 'Registrar:' \  
| awk NR==1{'print $2,$3}' \  
Automattic Inc.
```

precursor.ca/slides



\$ openssl s_client -servername www.mactech.com -connect www.mactech.com:443

CONNECTED(00000005)
depth=3 C = US, O = "Starfield Technologies, Inc.", OU = Starfield Class 2 Certification Authority
verify return:1
depth=2 C = US, ST = Arizona, L = Scottsdale, O = "Starfield Technologies, Inc.", CN = Starfield Root Certificate Authority - G2
verify return:1
depth=1 C = US, ST = Arizona, L = Scottsdale, O = "Starfield Technologies, Inc.", OU = http://certs.starfieldtech.com/repository/, CN = Starfield Secure Certificate Authority - G2
verify return:1
depth=0 OU = Domain Control Validated, CN = *.mactech.com
verify return:1

Certificate chain
0 s:/OU=Domain Control Validated/CN=*.mactech.com
i:/C=US/ST=Arizona/L=Scottsdale/O=Starfield Technologies, Inc./OU=http://certs.starfieldtech.com/repository//CN=Starfield Secure Certificate Authority - G2
1 s:/C=US/ST=Arizona/L=Scottsdale/O=Starfield Technologies, Inc./OU=http://certs.starfieldtech.com/repository//CN=Starfield Secure Certificate Authority - G2
i:/C=US/ST=Arizona/L=Scottsdale/O=Starfield Technologies, Inc./CN=Starfield Root Certificate Authority - G2
2 s:/C=US/ST=Arizona/L=Scottsdale/O=Starfield Technologies, Inc./CN=Starfield Root Certificate Authority - G2
i:/C=US/O=Starfield Technologies, Inc./OU=Starfield Class 2 Certification Authority
3 s:/C=US/O=Starfield Technologies, Inc./OU=Starfield Class 2 Certification Authority
i:/C=US/O=Starfield Technologies, Inc./OU=Starfield Class 2 Certification Authority

Server certificate
-----BEGIN CERTIFICATE-----
MIIGXjCBUagAwIBAgIITcX7dGcHtcEwDQYJKoZIhvcNAQELBQAwgcYx
CzAJBgNV
BAYTALVTMRAwDgYDVQQIEwBcm16b25hMRMwEQYDVQQLHEwPjY290dH
NkYxLWxLSUw
IwYDVQQKExxTdGFyZmllbGQgVGvjaG5vbG9naWVzLkCBjbmMuMTMwMQ
YDVQQLlEyp
dHRw0i8vY2VydHMuc3RhcmluZmVjaC5jb20vcmluZmV3NpdG9yeS
8xNDAYBgNV

BAMTK1N0YXJmaWVsZCBTZWN1cmUgQ2VydGlmawNhdGUgQXV0aG9yaX
R5IC0gRzIw
HhcNMTkwMzE0MTAzNDIwWhcNMjAwNTEzMjEyMzY4MjA7MSEwHwYDVQ
QLEXhEY21h
aW4gQ29udHJvbCBWYXpZGF0ZWQxZjAUBG9NVBAMMDSoubWFjdGVjaC
5jb20wggEi
MA0GCSqGSIb3DQEBAQUAA4IBDwAwggEKAoIBAQC5ud4enpgmc/
07s1yYM6eNPGVn
X/
Z3JAokyaGzITfVpbz6vNgWdNZBWe8HwXftKdPJVocRmNRCYE+nwr2
53A+h4bv
+xK8cagK9NV9uuENZ0TRdwGgo+drABAH4Y4mnuSCmlz8CgTaTe4Tkx
Sc5Cmawcrm
FsWX1+d7/
hHsjsAwrrTK+ludbtbDAjTtQKpyXEWl4gUKAQnQFuQEMlcb8D5WlHq
X
6R7khr41jxG3B4nH03X/
Nsv2tKxJbEQ2D82ReONJ2QwQrt4CjDGrU+a6luf5w0nP
8vZou/
cPPVumYzDwh53DSMQUQKDG8dp8SYKtvdKzNoD4Z1JqhIRNE05vZBy9
AgMB
AAGjggLYMIIIC1DAMBgNVHRMBAf8EAjAAMB0GA1UdJQQWMBQGCCsGAQ
UFBwMBBggr
BgEFBQcDAjA0BgNVHQ8BAf8EBAMCBaAwPQYDVR0fBDYwNDAyoDcGLo
YsaHR0cDov
L2NybC5zdGFyZmllbGR0ZWNoLmNvbS9zZmllbnMxLmE0S5jcmwYw
YDVR0gBFww
WjBOBgtghkgBhv1uAQcXATA/
MD0GCCsGAQUFBwIBFjFodHRwOi8vY2VydGlmawNhd
dGVzLnN0YXJmaWVsZHRlY2guY29tL3JlcG9zaXRvcnkVMAgBmeBDA
ECATCBggYI
KwYBBQUHAAQEEAjB0MCoGCCsGAQUFBzABhh5odHRwOi8vb2Nzc5zdG
FyZmllbGR0
ZWNoLmNvbS8wRgYIKwYBBQUHMAKG0mh0dHA6Ly9jZXJ0aWZpY2F0ZX
Muc3RhcmluZmVjaC5jb20vcmluZmV3NpdG9yeS9zZmllbnMxLmE0S5jcmwYwYDVR0jBB
gwFoAUJlUwB
aFAmOD07LSy+zWrZtj2zZmMwJQYDVR0RBB4wHIINKi5tYWN0ZWNoLm
NvbYILbWVj
dGVjaC5jb20wHQYDVR00BBYEFNeKaCezUrdCtKh5sntz2bdoNQ5XMI
IBAwYKKwYB
BAHWeQIEAgSB9ASB8QDvAHYAplKjklQYwBSHux0izGdwCjw1mAT5G9
+443fNDsgN
3BAAAAPe8Rr0AAAABAMARzBFAiA/
Ef19x5B1I4cC95Ulxv+snFn9K1ZynFPjpsKZ
vdXtiQIhAI9//5fw1iiUanALW/
FlhR7CTXA0sFkUL013LyPGMN8AHUAXqdz+d9W
w0e1Nkh90EngMnqRmgyEoRIShBh1loFxrVgAAAFpe8Ru0QAABAMARj
BEAiBTPNT9
uQT6UjL6YK3jvWsuXbQPUa4TinzeEVI36c7CowIggmFG9/
cmYcz1HFajQW/Hwerp

C54ggBjPjgAXvKIsP+UwDQYJKoZIhvcNAQELBQADggEBAIR9EVcuzM
Dmjyr7/F00
mfWLxiss20L18CHCeYyb2sxvqicEbIWZTp1AD/
Sb81RSowcWuWRFxqlcT1T9Silv
WpGUXzThdcm8qd9E3CenUn374npjGtX84JtYKzf1Ju20vHcooAga6U
0EvVS31n1U
1KeZBsAf1Rs19q1WJVYZL4gpirJIuiL+vyUnCO+9EVQ3+jnR2xaZxP
UwjmuPbJSR
DoxqphWwj0le0aA8JumaWvAcfhQ0r4qhPC3ETjyYzWszioFC7CPEI1
1hPxVqmwPL
pxbydiQJBSfEtWkiDks3EuXL1YcwHwC8GbUUBMP2Z8tSczITKmJLko
NZqYa2tLYR
Zt0=
-----END CERTIFICATE-----
subject=/OU=Domain Control Validated/CN=*.mactech.com
issuer=/C=US/ST=Arizona/L=Scottsdale/O=Starfield
Technologies, Inc./OU=http://certs.starfieldtech.com/
repository//CN=Starfield Secure Certificate Authority
- G2

No client certificate CA names sent
Server Temp Key: ECDH, P-256, 256 bits

SSL handshake has read 5864 bytes and written 350
bytes

New, TLSv1/SSLv3, Cipher is ECDHE-RSA-AES256-GCM-
SHA384
Server public key is 2048 bit
Secure Renegotiation IS supported
Compression: NONE
Expansion: NONE
No ALPN negotiated
SSL-Session:
Protocol : TLSv1.2
Cipher : ECDHE-RSA-AES256-GCM-SHA384
Session-ID:
023343A77109012919B1EEE8F4252A58D274AEC6F38E4BC1851CD0
4818AA34AD
Session-ID-ctx:
Master-Key:
AE1387A4B4426E4C10E79F51BED55A8F70E88926AB7945B7398ED0
360734F0C81469B98B2C9A27804D609FBEBEA1AC0FE
TLS session ticket lifetime hint: 300 (seconds)
TLS session ticket:
0000 - 9e c7 ce 9e 70 8c 69 d1-99 fb ef a7 14 f2
f0 4dp.i.....M
0010 - 65 ab 1a 1f 16 cf 81 10-9d b4 69 a2 21 58
90 6f e.....i.!X.o
0020 - 4f 57 7c bc 78 c1 e2 dd-7f 74 07 8e c6 9e
83 b8 0W|.x....t.....

0030 - 14 06 7c 83 c4 25 4e 9d-5a 2a 58 fd 87 77
17 30 ..|..%N.Z*X..w.0
0040 - 9e 26 72 ab c7 6d ea 12-3c b2 75 11 b2 71
a4 34 .&r..m..<.u..q.4
0050 - 9d 7e f6 62 4d cf 04 9c-a7 99 cd 45 cd 39
e8 17 .~.bM.....E.9..
0060 - 0d ba 7e 04 0c 68 80 a5-a4 3f 24 87 a0 e4
fc be ..~.h...?\$......
0070 - 0f 93 ce c1 80 69 85 77-45 60 ac 4d 33 26
cc 1bi.wE`.M3&..
0080 - 70 38 93 65 b5 0b 5b a1-84 ab 1f 49 0e 48
7e 8e p8.e..I.H~.
0090 - 43 8a ab b3 b5 15 3e 19-8e f6 48 05 d4 d7
70 bf C.....>...H...p.
00a0 - 62 84 9a 7f 6d 48 da 00-00 b0 d9 a9 01 dc
7e 18 b.....mH.....~.
00b0 - 11 1c a5 54 35 8b 65 f7-60 ba b8 20 2e 29
a8 d4 ...T5.e.`..)..
00c0 - ce 22 b6 f5 a1 2e ba 4e-0d ef 1b ff 73 ec
01 14 ."......N....S...

Start Time: 1567711504
Timeout : 7200 (sec)
Verify return code: 0 (ok)

precursor.ca/slides



```
$ echo | openssl s_client -servername www.mactec.com \
  -connect www.mactech.com:443 2>/dev/null \
  | openssl x509 -noout -issuer \
  | grep -o 'O=.*' \
  | cut -f2 -d= | cut -f1
COMODO CA Limited/CN
```

precursor.ca/slides



AppleScript has a *do shell script* command

FileMaker can perform AppleScripts

FileMaker can enter results of a shell script into a field

precursor.ca/slides



1) import domain names and cert hostnames from an Excel spreadsheet to create individual records in a FileMaker database

precursor.ca/slides



Certificates_and_Domains — Edited

View 125% Add Category Insert Table Chart Text Shape Media Comment Collaborate Format Organize

+ Certificates & Domains

watchman_group	FQDN
MDOYVR	mdoyvr.com
MDOYVR	macdevops.ca
MDOYVR	www.mdoyvr.com
MDOYVR	www.macdevops.ca

Nothing selected.
Select an object to format.

precursor.ca/slides



ExpirationManager_v1.0.0

Records: 1 / 8 Found (Unsorted) | Show All | New Record | Delete Record | Find | Sort | Share | Search

Layout: Expiration_Details | View As: [List View] | Preview | A^a Edit Layout

EXPIRATION DETAILS

watchman_group FQDN

manufacturer manufacturerUID PeriodCount

product productUID

expiration_date expiration_uid

Results

Import Records from XLSX



ExpirationManager_v.1.0.0

Records: 1 / 8 Found (Unsorted) | Show All | New Record | Delete Record | Find | Sort | Share | Search

Layout: Expiration_Details | View As: [List View] | Preview | Edit Layout

EXPIRATION DETAILS

watchman_group: **MDOYVR** | FQDN: **mdoyvr.com**

manufacturer: | manufacturerUID: | PeriodCount:

product: | productUID:

expiration_date: | expiration_uid:

Results:

[Import Records from XLSX](#)



2) a script loops through the records performing the appropriate *whois* or *openssl* command and entering the expiration info into the FileMaker record

precursor.ca/slides



The screenshot shows a 'Script Workspace (ExpirationManager_v.1.0.0)' window. On the left, a 'Scripts' sidebar lists 'Get Expirations Information' and 'GetDOMAINExpInfo'. The main workspace shows a script with two steps. A dialog box titled '"Perform AppleScript" Options' is open, showing the 'Native AppleScript' option selected. The script text in the dialog is as follows:

```
set DOMAINNAME to cell "domain_name" of current record of layout "Expiration_Details"  
set expdate to do shell script "echo | whois " & DOMAINNAME & " | grep 'Registry Expiry Date:' | awk NR==1{'print $4}'"  
set cell "domain_exp_date" of current record of layout "Expiration_Details" to expdate  
set expmonth to do shell script "echo | whois " & DOMAINNAME & " | grep 'Registry Expiry Date:' | awk NR==1{'print $4}' | cut -c 6-7"  
set cell "domain_exp_month" of current record of layout "Expiration_Details" to expmonth  
set expday to do shell script "echo | whois " & DOMAINNAME & " | grep 'Registry Expiry Date:' | awk NR==1{'print $4}' | cut -c 9-10"  
set cell "domain_exp_day" of current record of layout "Expiration_Details" to expday  
set expyear to do shell script "echo | whois " & DOMAINNAME & " | grep 'Registry Expiry Date:' | awk NR==1{'print $4}' | cut -c 1-4"  
set cell "domain_exp_year" of current record of layout "Expiration_Details" to expyear  
set domainregistrar to do shell script "echo | whois " & DOMAINNAME & " | grep 'Registrar:' | awk NR==1{'print $2,$3,$4,$5}'"  
set cell "domain_registrar" of current record of layout "Expiration_Details" to domainregistrar  
set registrarurl to do shell script "echo | whois " & DOMAINNAME & " | grep 'URL:' | awk NR==1{'print $3,$4,$5}'"  
set cell "notes" of current record of layout "Expiration_Details" to registrarurl
```

precursor.ca/slides



ExpirationManager_v1.0.0

Records: 1 / 8 Total (Unsorted) | Show All | New Record | Delete Record | Find | Sort | Share | Search

Layout: Expiration_Details | View As: [List] [Table] [Preview] | Edit Layout

EXPIRATION DETAILS

watchman_group: **MDOYVR** | FQDN: **mdoyvr.com**

manufacturer: | manufacturerUID: | PeriodCount:

product: **Domain Registration** | productUID:

expiration_date: | expiration_uid:

Results

CERTIFICATE		DOMAIN	
cert_name	<input type="text"/>	mdoyvr.com	domain_name
cert_issuer	<input type="text"/>	<input type="text"/>	domain_registrar
cert_exp_date	<input type="text"/>	<input type="text"/>	domain_exp_date
cert_exp_month	<input type="text"/>	<input type="text"/>	domain_exp_month
cert_exp_day	<input type="text"/>	<input type="text"/>	domain_exp_day
cert_exp_year	<input type="text"/>	<input type="text"/>	domain_exp_year
		<input type="text"/>	notes

Get Cert Expiry Info



ExpirationManager_v1.0.0

Records: 1 / 8 Total (Unsorted) | Show All | New Record | Delete Record | Find | Sort | Share | Search

Layout: Expiration_Details | View As: [Grid] | Preview | Edit Layout

EXPIRATION DETAILS

watchman_group: **MDOYVR** | FQDN: **mdoyvr.com**

manufacturer: **Automatic Inc.** | manufacturerUID: | PeriodCount: 1

product: **Domain Registration** | productUID: |

expiration_date: **2019-08-17** | expiration_uid: |

Results

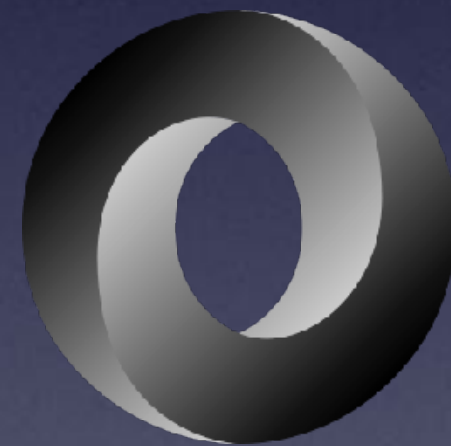
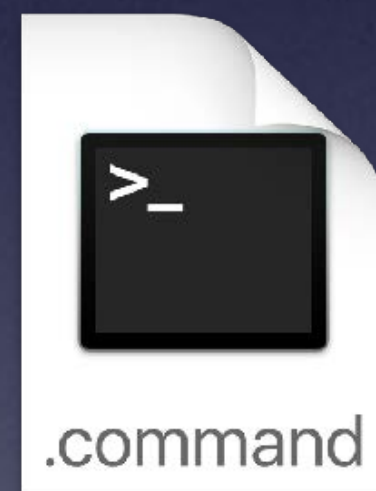
CERTIFICATE		DOMAIN	
cert_name		mdoyvr.com	domain_name
cert_issuer		Automatic Inc.	domain_registrar
cert_exp_date		2019-08-17T20:38:27Z	domain_exp_date
cert_exp_month		08	domain_exp_month
cert_exp_day		17	domain_exp_day
cert_exp_year		2019	domain_exp_year
		http://www.wordpress.com	notes

Get Cert Expiry Info



Part 2

Populate Watchman with expiration info



precursor.ca/slides



The screenshot shows the API documentation for 'Create an Expiration' on the Watchman Monitoring website. The page includes a sidebar with navigation links, a main content area with a note about ownership and a parameters table, and a right-hand panel with a definition, example request, and example object.

WATCHMAN MONITORING Latest - v2.5 v2.2

Create an Expiration

Note about Expiration ownership.
When creating an Expiration you must provide either a `group_id` or `computer_id` for the Expiration to be associated to. Expirations created for a given `computer_id` will automatically be related to the Group of the assigned computer.

Parameters

Param	Default	Purpose	Character Limit
<code>license_key</code>	string	The Expiration's license, serial number, or other identifier	191
<code>expires_at</code>	integer	The date the license expires on	
<code>expiration_manufacturer_id</code>	string	The UID of the expiration_manufacturer	191
<code>expiration_product_id</code>	string	The UID of the expiration_product	191
<code>group_id</code>	string	The UID of the Group	191

Definition
POST `https://your_subdomain.monitoringclient.com/v2.5/expiration`

Example Request

```
curl https://your_subdomain.monitoringclient.com/v2.5/expiration/?api_key=This_Example_API_Key \
-d expiration[license_key]=isghcs-firugs-sdfsdi \
-d expiration[expires_at]=2015-03-30 \
-d expiration[expiration_manufacturer_id]=em_e77660913d \
-d expiration[expiration_product_id]=ep_8a6cf51252 \
-d expiration[group_id]=g_ac21d783d9 \
-d expiration[computer_id]=c_165f745e6b \
-d expiration[renewable]=false
```

Example Object

```
{
  "uid": "e_614b9d8r41",
  "license_key": "A12BC345DEF6",
  "expires_at": null,
  "expiration_manufacturer": "em_e77660913d",
  "expiration_product": "ep_8a6cf51252",
  "computer": "c_165f745e6b",
  "group": "g_ac21d783d9",
  "renewable": false,
  "notes": null,
  "created_at": 1441209663
}
```

<https://api.watchmanmonitoring.com>

precursor.ca/slides



{ REST }

```
curl https://mactech.monitoringclient.com/v2.5/expirations/?  
api_key=g0ZeR1PVYm7dIdwD--PGYDVzuBIOS_sp8aeHzD \  
-d expiration[license_key]=www.mdoyvr.com \  
-d expiration[expires_at]=2019-06-14 \  
-d expiration[expiration_manufacturer_id]=em_6c511bd3ac \  
-d expiration[expiration_product_id]=ep_fe4d20ebcc \  
-d expiration[group_id]=g_ff9679b20e \  
-d expiration[renewable]=true
```

precursor.ca/slides



JSON

```
{  
  "uid": "e_614b9d8c41",  
  "license_key": "A12BC345DEF6",  
  "expires_at": "1558656000",  
  "expiration_manufacturer": "em_6c511bd3ac",  
  "expiration_product": "ep_fe4d20ebcc",  
  "computer": null,  
  "group": "g_ff9679b20e",  
  "renewable": true,  
  "notes": null,  
  "created_at": 1441209663  
}
```

precursor.ca/slides



<https://github.com/mmattozzi/cocoa-rest-client>



monitoringclient.com

URL: `http://mdoyvr.monitoringclient.com/v2.5/expirations?api_key=g0ZeR1PVYm7dldwD--PGYDVzuBIOS_sp8ae` Method: POST Submit

Body Headers Auth Files URL Params

Param Key	Param Value	
		+
		-

Raw Input Field Input/Multipart File Upload Raw File Input

Body Headers (201) Sent Headers

RESPONSE

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Finished in 0.351696 seconds

precursor.ca/slides



<https://github.com/mmattozzi/cocoa-rest-client>



monitoringclient.com

URL: http://mdoyvr.monitoringclient.com/v2.5/expirations?api_key=g0ZeR1PVYm7ldwD--PGYDVzuBIOS_sp8ae Method: POST Submit

Body Headers Auth Files URL Params REQUEST

Param Key	Param Value	
		+
		-

Raw Input Field Input/Multipart File Upload Raw File Input

Body Headers (201) Sent Headers RESPONSE

```
1 - {
2   "uid": "e_614b9d8c41",
3   "license_key": "www.mdoyvr.com",
4   "expires_at": 1558656000,
5   "expiration_manufacturer": "em_6c511bd3ac",
6   "expiration_product": "ep_fe4d20ebcc",
7   "computer": null,
8   "group": "g_ff9679b20e",
9   "renewable": true,
10  "notes": null,
11  "created_at": 1441209663,
12 - "api_info": {
13   "response_version": "2.5",
14   "legacy_call": false,
```

Finished in 0.351696 seconds

precursor.ca/slides



REST can talk to Watchman API



FileMaker's *Insert from URL* can do a REST POST and enter the JSON result into a field.

precursor.ca/slides



{ REST }

```
curl https://mdoyvr.monitoringclient.com/v2.5/expirations/?  
api_key=g0ZeR1PVYm7dIdwD--PGYDVzuBIOS_sp8aeHzD \  
-d expiration[license_key]=www.mdoyvr.com \  
-d expiration[expires_at]=2019-06-14 \  
-d expiration[expiration_manufacturer_id]=em_6c511bd3ac \  
-d expiration[expiration_product_id]=ep_fe4d20ebcc \  
-d expiration[group_id]=g_ff9679b20e \  
-d expiration[renewable]=true
```

precursor.ca/slides



POST

Specify Calculation

This calculation will be evaluated based on context determined at runtime.

ExpirationManager

Search

- PrimaryKey
- CreationTimestamp
- CreatedBy
- ModificationTimestamp

```
"httpspost://" & ExpirationManager::SubDomain &
".monitoringclient.com/v2.5/expirations?api_key=" &
ExpirationManager::APIkey &
"&expiration[expiration_manufacturer_id]=" &
Manufacturers::manufacturerUID & "&expiration[expires_at]=" &
Expirations::cert_exp_date
"&expiration[expiration_product_id]=" & Products::productUID
"&expiration[license_key]=" & Expirations::cert_name &
"&expiration[group_id]=" & Groups::groupUID &
"&expiration[renewable]=True"
```

Calculation result must be Text

Cancel OK

precursor.ca/slides



ExpirationManager_v.1.0.0

Records: 1 / 8 Total (Unsorted)

Show All | New Record | Delete Record | Find | Sort | Share

Layout: Expiration_Listing | View As: [Table View] | Preview | Edit Layout

EXPIRATIONS

Group	HostName	Issuer/Registrar	ExpiryDate	Notes
MDOYVR	mdoyvr.com	Automattic Inc.	2019-08-17	http://www.wordpress.com
MDOYVR	macdevops.ca	CanReg (Infinet Communications Group	2020-01-19	www.canreg.com
MDOYVR	www.mdoyvr.com	Let's Encrypt	2019-05-27	
MDOYVR	www.macdevops.ca	Amazon	2020-02-18	



Demo

precursor.ca/slides



Safari File Edit View History Bookmarks Develop Window Help Precursor Systems

precursorca.monitoringclient.com

Dashboard Search computers and Groups... Precursor.ca, Inc. Notifications

Precursor.ca, Inc. / Expirations

Expirations

Search Export CSV New Expiration

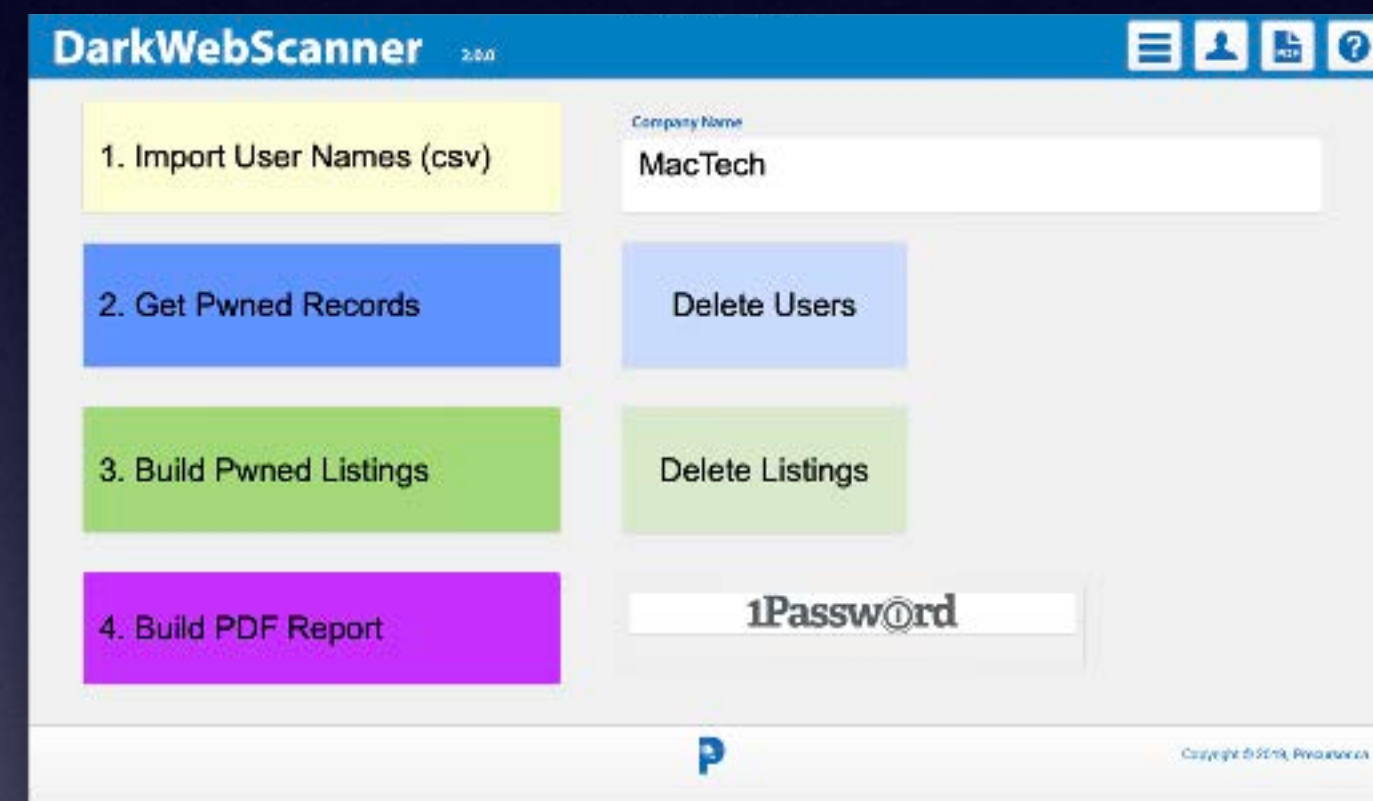
Manufacturer	Product	License Key	Group	Computer	Expiration	Renewable	Actions
Backblaze	Cloud Backup	727374-GHIJKL	North	546 iMac 27	2020-04-08	Yes	Actions
Google	G Suite	ABCDE-12345-FGHIJ...	North	546 iMac 27	2019-07-11	Yes	Actions
Backblaze	Cloud Backup	757678	North	546 MacBook Pro	2020-04-07	Yes	Actions
Microsoft	Office 365	88776-AABBC-55443...	North	546 MacBook Pro	2019-08-16	Yes	Actions
Kerio	Connect (Product)	10512-ZWKJR-8JVF3	North	546server	2020-06-06	Yes	Actions
Apple	AppleCare Limited	C07N60DUDY3J	North	546server	2020-03-05	Yes	Actions

Copyright © 2019, Precursor.ca

precursor.ca/slides



Dark Web Scanner



<https://precursor.ca/dws/>

precursor.ca/slides



Commercial Dark Web Scan

- 1. Expensive?**
- 2. Confusing?**

precursor.ca/slides



HavelBeenPwned?

- 1. Free**
- 2. Easy to understand**
- 3. More for single user**



precursor.ca/slides




Domain verification ✕

Verification successful!

The entire breach history for the domain can be downloaded in the formats listed below. These links are valid for 60 minutes after being verified beyond which you'll need to repeat the verification process to perform another search.

  {JSON}

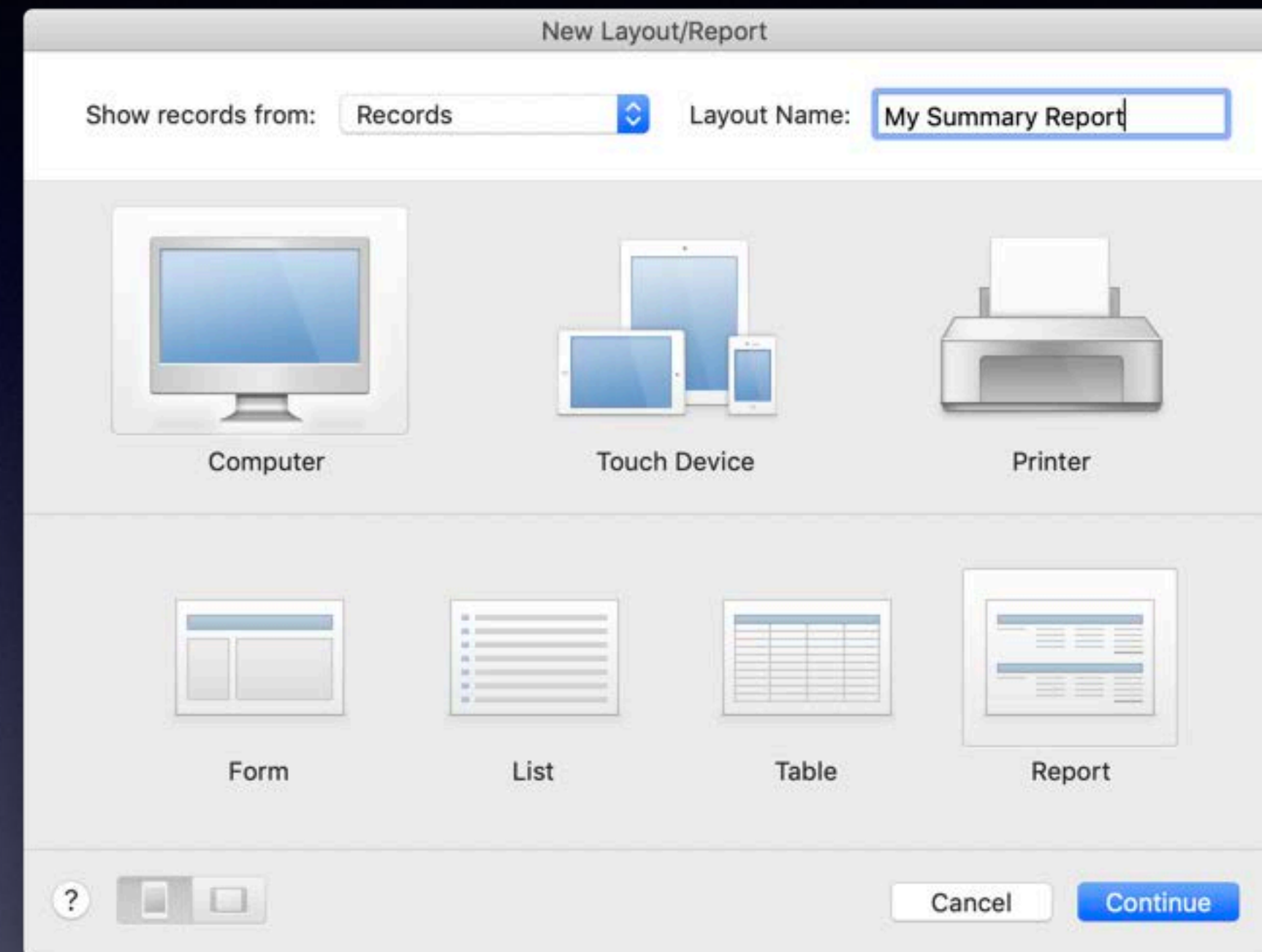
precursor.ca/slides

[Home](#)[Notify me](#)[Domain search](#)[Who's been pwned](#)[Passwords](#)[API](#)[About](#)[Donate](#)  

API v3

The API allows the list of pwned accounts (email addresses and usernames) to be quickly searched via a RESTful service. Check out [who's currently using the API](#).

precursor.ca/slides



precursor.ca/slides



[Redacted] & Assoc

Total Users 39

Total Breaches 83

Precursor Dark Web Report 7/30/2019

[Redacted] & Assoc

Total Users 39

Total Breaches 83

Precursor's Dark Web Scanner leverages the information available at the trusted web site *haveibeenpwned.com*

This report shows email addresses and user names that have been caught up in breaches that are now available on the *Dark Web*. Bad guys and malefactors can retrieve important data like your login credentials, passwords, and other personal data that can be used in phishing and spear phishing attempts and other social engineering methods to compromise your identity.

Protecting Your Identity

- 1 Change your password to services that have been breached (if you haven't already).
- 2 Don't use the same password for two different sites/services.
- 3 Use 1Password (from Agile Bits) on all your devices to help manage complex and unique passwords for each site/service. Precursor will be pleased to show you how.
- 4 Use 2 Factor ID (MFA) with 1Password and/or the Microsoft or Google Authenticator app on your phone.
- 5 1Password's Watchtower feature can show you which of your passwords are in use at multiple sites and even which passwords are out there on the Dark Web.

Copyright © 2019, Precursor Systems | <https://precursor.ca>

Identity	Breaches
admin@...com	0
barb@...com	7
b...@...com	0
brian@...com	10
@...com	0
carla@...com	5
@...com	1
cathy@...com	8
@...com	3
@...com	0
dave@...com	0
@...com	1
@...com	0
dave@...com	0
@...com	1
gail@...com	0
graphics@...com	0
jason@...com	0
@...com	1
jennifer@...com	2
@...com	0
joyce@...com	5
karen@...com	1
larry@...com	1
michael@...com	0
@...com	0
rebecca@...com	1
rick@...com	8
@...com	0
ron@...com	10
sales@...com	2
@...com	5
@...com	11
@...com	0
shipping@...com	1
stewart@...com	0
stores@...com	0
@...com	0

Identity	Breaches
admin@...com	0
barb@...com	7
b...@...com	0
brian@...com	10
@...com	0
carla@...com	5
@...com	1
cathy@...com	8
@...com	3
@...com	0
dave@...com	0
@...com	1
@...com	0
dave@...com	0
@...com	1
gail@...com	0
graphics@...com	0
jason@...com	0
@...com	1
jennifer@...com	2
@...com	0
joyce@...com	5
karen@...com	1
larry@...com	1
michael@...com	0
@...com	0
rebecca@...com	1
rick@...com	8
@...com	0
ron@...com	10
sales@...com	2
@...com	5
@...com	11
@...com	0
shipping@...com	1
stewart@...com	0
stores@...com	0
@...com	0



Demo

precursor.ca/slides

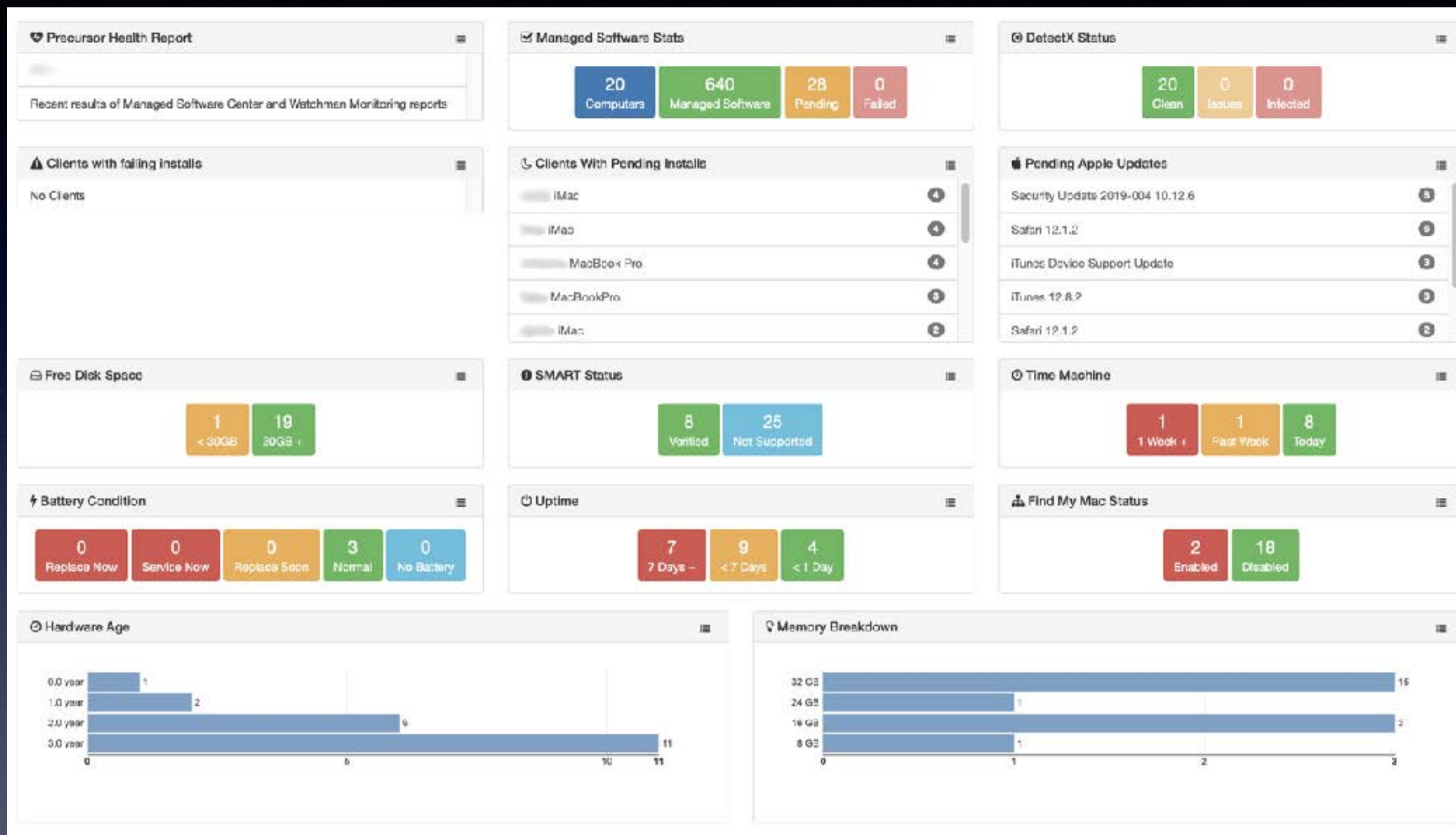


Monthly Reporter



<https://precursor.ca/mra/>

precursor.ca/slides



precursor.ca/slides



MunkiReport 9/5/19, 3:19 PM

♥ Precursor Health Report

Recent results of Managed Software Center and Watchman Monitoring reports

☑ Managed Software Stats

21 Computers
681 Managed Software
23 Pending
0 Failed

⊕ DetectX Status

20 Clean	1 Issue
0 Infected	

⚠ Clients with failing installs

No Clients

🌙 Clients With Pending Installs

iMac	4
MacBookPro	4
MacBook Pro	4
iMac	3
MB Pro	3
iMac	2
iMac	1
iMac	1
iMac	1

🍏 Pending Apple Updates

iTunes Device Support Update	3
iTunes 12.8.2	3
Safari 12.1.2	2
Safari 12.1.2	2
Security Update 2019-004 10.12.6	2
Security Update 2019-004 10.13.6	2
macOS Mojave 10.14.6 Supplemental Update	1
macOS 10.14.6 Update	1

<https://munkireport.precursor.ca/index.php?/show/dashboard/stats> Page 1 of 3

precursor.ca/slides



Each Month!

- **Log in to each client's**
- **Screenshot each client**
- **Rename screenshot**
- **Attach to email**
- **Send mail**

“Like an animal!”

precursor.ca/slides

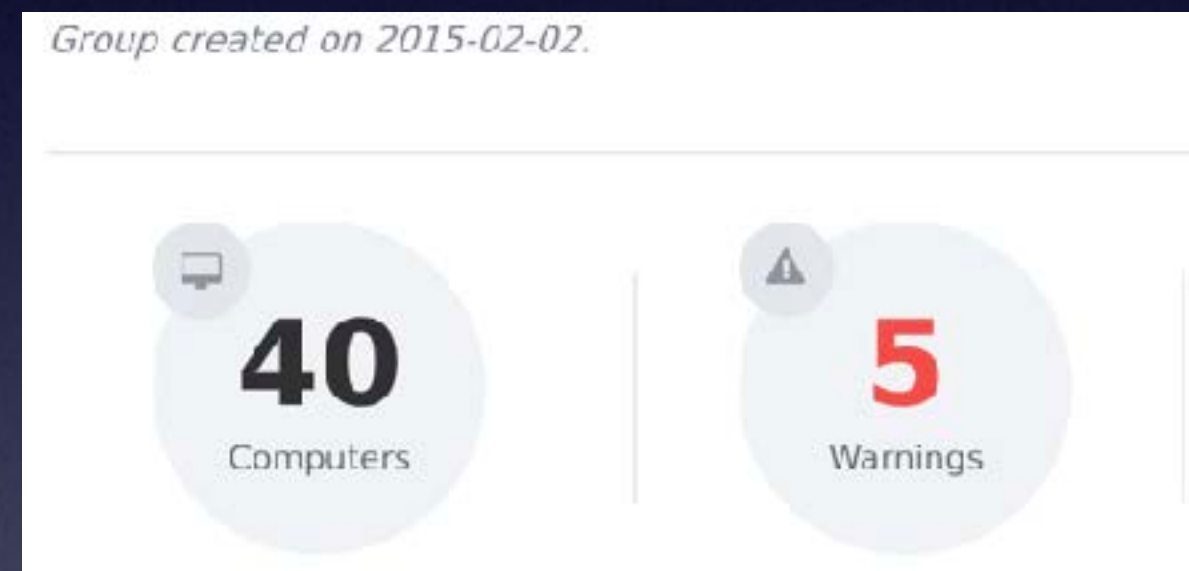


{ REST }

precursor.ca/slides



Watchman Monitoring



precursor.ca/slides



Group Status Report

Group

MacTech ✕ ▼ 4 Computers

Computer warnings

Include details about Computer Warnings on Report

Notes

Include Notes from Group and its Computers

Start Date **End Date**

Note: Pinned Notes are displayed regardless of the selected date range.

[Generate PDF](#)

precursor.ca/slides



Group created on 2019-02-12.


4
Computers


2
Warnings


0
Expirations

COMPUTER RECORDS



Server

First reported on 2019-02-12.



1 Error

LAST USER
701admin

SERIAL NUMBER
C07 [REDACTED] JY7

RAM
16 GB

OS VERSION

EST. MANUFACTURE DATE

precursor.ca/slides



New API Key ✕

Name

MyWatchmanKey

Names are for reference only.

Scope

Full Access

API Keys can have full access or be restricted to AppleCare lookup data only. [Learn More](#)

Cancel Save

https://your_subdomain.monitoringclient.com/settings/api

precursor.ca/slides



WATCHMAN MONITORING | Latest - v2.5 | v2.2

API V2.5

- Introduction
- Stay Up-to-date
- Versioning
- Authentication
- Expanding Objects
- Nested Expansion
- Errors
- Pagination
- Change Log

ENDPOINTS

- Groups
- Computers
- Expirations
- Expiration Manufacturers
- Expiration Products
- Notes
- Plugin Results**
 - Overview
 - Mute
 - Users

The Plugin Result Object

Plugin Results are returned with their related Computer Records. Within Watchman Monitoring there is a concept of "service plugins". These show in Plugin Results with visible set to false. They would not be displayed in the Dashboard and should be hidden in any alternate UI you build for your users.

Note: In former versions of the API the slug was being passed as the id. In version 2.5 and above, the slug and uid are different attributes.

Attributes

Param	Default	Purpose
uid	string	The unique UID for the plugin result
name	string	Name of the plugin
slug	string	Slug for the plugin
status	string	Current reported status: [OK, Warning, Alert, Informational]
details	text	The plugins reported details
last_run	integer	The last time the plugin ran
muted	boolean	Whether or not the plugin is muted
mute_type	string	The type of mute in place. ["muted_forever", "timed_mute", "ticket_muted"]
mute_description	string	A brief description of the mute <small>Only included if plugin is muted</small>

Definition

GET [https://your_subdomain.monitoringclient.com/v2.5/computers/{watchman_id}?api_key=This_Example_API_key&expand\[\]=plugin_results](https://your_subdomain.monitoringclient.com/v2.5/computers/{watchman_id}?api_key=This_Example_API_key&expand[]=plugin_results)

Example Object

```
{
  "uid": "pr_28d2c37b9a",
  "name": "Monitoring Agent",
  "slug": "monitoring-agent",
  "status": "OK",
  "details": "The internal check of the Watchman Monitoring software reports no issues.",
  "last_run": 1372324943,
  "muted": true,
  "mute_type": "timed_mute",
  "mute_description": "Plugin is muted until Sep 27th 2013.",
  "muted_until": 1380258000,
  "visible": true
}
```

https://api.watchmanmonitoring.com/#plugin_result

precursor.ca/slides



precursor.ca/slides

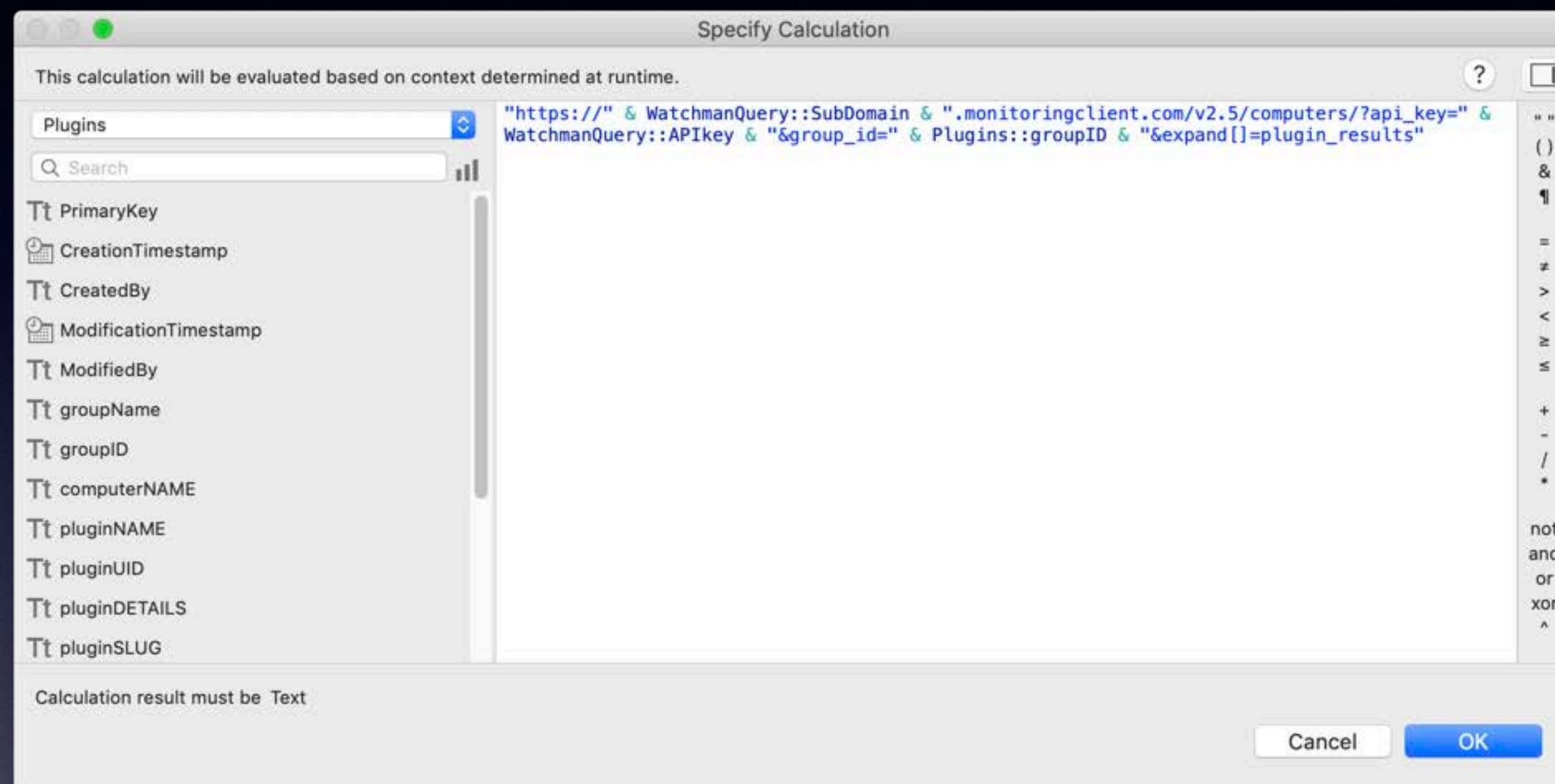


```
Scripts
Search
Get Watchman Groups

Get Watchman Groups

1 Go to Layout [ "Groups" (Groups) ; Animation: None ]
2 If [ WatchmanQuery::APIkey ≠ "" and WatchmanQuery::SubDomain ≠ "" ]
3   Insert from URL [ Select ; With dialog: Off ; Target: $GroupList ;
4     "https://" & WatchmanQuery::SubDomain & ".monitoringclient.com/v2.5/groups?api_key=" & WatchmanQuery::APIkey ]
5   Set Field [ Groups::Results ; "{" & ¶ & "\"groups\" & " : " & ¶ & $GroupList & ¶ & "]" ]
6   Set Variable [ $GroupCount ; Value: ValueCount ( JSONListKeys ( Groups::Results ; "groups" ) ) ]
7   Set Variable [ $i ; Value: 0 ]
8   If [ $GroupCount > 0 ]
9     Loop
10      New Record/Request
11      Set Field [ Groups::groupNAME ; JSONGetElement ( WatchmanQuery::Results ; "groups[" & $i & "]name" ) ]
12      Set Field [ Groups::groupUID ; JSONGetElement ( WatchmanQuery::Results ; "groups[" & $i & "]uid" ) ]
13      Set Field [ Groups::groupDESCRIPTION ; JSONGetElement ( WatchmanQuery::Results ; "groups[" & $i & "]description" ) ]
14      Set Field [ Groups::groupSLUG ; JSONGetElement ( WatchmanQuery::Results ; "groups[" & $i & "]slug" ) ]
15      Set Field [ Groups::groupREFERENCE_EMAIL ; JSONGetElement ( WatchmanQuery::Results ; "groups[" & $i & "]reference_email" ) ]
16      Set Field [ Groups::groupCONTACT_EMAIL ; JSONGetElement ( WatchmanQuery::Results ; "groups[" & $i & "]contact_email" ) ]
17      Set Field [ Groups::groupCREATED_AT ; JSONGetElement ( WatchmanQuery::Results ; "groups[" & $i & "]created_at" ) ]
18      Commit Records/Requests [ With dialog: Off ]
19      Set Variable [ $i ; Value: $i + 1 ]
20      Exit Loop If [ $i ≥ $GroupCount ]
21    End Loop
22  End If
23  Go to Layout [ "WatchmanQuery" (WatchmanQuery) ; Animation: None ]
24  Exit Script [ Text Result: ]
25 Else
26   Perform Script [ Specified: From list ; "Settings Test" ; Parameter: ]
27 End If
```

precursor.ca/slides



precursor.ca/slides



precursor.ca/slides



```
Scripts
Search
Get Watchman Warning Talley

1 Set Variable [ $ComputerCount ; Value: ValueCount ( JSONListKeys ( Plugins::Results ; "plugins" ) ) ]
2 Set Variable [ $c ; Value: 0 ]
3 Set Variable [ $Warnings ; Value: 0 ]
4 If [ $ComputerCount > 0 ]
5   Loop
6     Set Variable [ $PluginsCount ;
7       Value: ValueCount ( JSONListKeys ( Plugins::Results ; "plugins[" & $c & "].plugin_results" ) ) ]
8     Set Variable [ $i ; Value: 0 ]
9     If [ $PluginsCount > 0 ]
10      Loop
11        If [ JSONGetElement ( Plugins::Results ; "plugins[" & $c & "].plugin_results[" & $i & "]status" ) = "warning" ]
12          Set Variable [ $Warnings ; Value: $Warnings + 1 ]
13        End If
14        Set Variable [ $i ; Value: $i + 1 ]
15        Exit Loop If [ $i ≥ $PluginsCount ]
16      End Loop
17    End If
18    Set Variable [ $c ; Value: $c + 1 ]
19    Exit Loop If [ $c ≥ $ComputerCount ]
20  End Loop
21 Set Field [ Plugins::warningsTOTAL ; $Warnings ]
```

precursor.ca/slides



WARNINGS

groupID: g_021a3efa95

Results

```
{
  "plugins": [
    {
      "uid": "c_f3b96b971d",
      "description": null,
      "watchman_id": "20190212-G2SZ-N4EEMA",
      "client_id": "20190212-G2SZ-N4EEMA",
      "agent_version": "6.6.7.115",
      "build_number": "6.6.7.115",
      "last_report": 1568066069,
      "created_at": 1550016745,
      "group": "g_021a3efa95",
      "computer_name": "701 Server",
      "custom_name": null,
      "contact_email": null,
      "reference_email": null,
      "reference_email_computer": null,
      "reference_email_group": null
    }
  ]
}
```

ResultsFormatted

```
{
  "plugins": [
    {
      "active_mac_address": "C8:2A:14:58:F6:D9",
      "agent_removed": false,
      "agent_version": "6.6.7.115",
      "apple_product_description": "Mac mini Server (Mid 2011)",
      "ard_field1": "701 Server",
      "ard_field2": "",
      "ard_field3": "",
      "ard_field4": "",
      "asset_id": null,
      "beacon_missing_threshold_in_minutes": 5,
      "beacon_reporting": true,
      "bomgar_url": null,
      "boot_volume_capacity": "499.25 GB",
      "boot_volume_usage": "55.42 GB",
      "boot_volume_usage_percent": "11.1",
      "build number": "6.6.7.115"
    }
  ]
}
```

Buttons:

- Get Watchman Plugins
- Get Warning Total
- Delete Records

Warning Summary: 2 Warnings



Zendesk



Reporting

Overview Leaderboard Satisfaction

Reporting period: Last 30 days

Ticket Stats

69 New Tickets (total)	40 Solved Tickets (total)
-------------------------------------	--

precursor.ca/slides



zendesk developers 🔍 Docs ▾ Blog Get Started Login / Signup

Support API

Support API ▾

- Introduction
- Getting started
- Restrictions and Responsibilities
- API Changes
- Side-Loading
- Incremental Exports
- Search**
- Results limit
- Query basics
- JSON Format
- List Search Results
- Errors JSON Format

Search

The search API is a unified search API that returns tickets, users, and organizations. You can define filters to narrow your search results according to resource type, dates, and object properties, such as ticket requester or tag.

To search articles in Help Center, see [Search](#) in the Help Center API documentation.

To use the API with Python or Perl, see [Searching with the Zendesk API](#).

Note: It can take up to a few minutes for new tickets, users, and other resources to be indexed for search. If new resources don't appear in your search results, wait a few minutes and try again.

Results limit

The Search API returns a limit of 2,000 pages with 100 results per page, or 200,000 results per query. If you request a page past the limit (`?page=2001`), a 422 (Insufficient Resource Error) is returned.

If you need to retrieve large datasets, Zendesk recommends serializing the search into smaller chunks by limiting results to a specific date range. Alternatively, if you need to export and warehouse large amounts of data, consider using one of the [Incremental Export](#) endpoints.

Note: Starting **October 15, 2019**, the limit of 200,000 results per query will be **limited to 1,000** results. Please refer to our [Help Center article](#) for more information.

https://developer.zendesk.com/rest_api/docs/support/

precursor.ca/slides



API Token Description (optional)

API Token

⚠ Make sure to copy and store this token. We won't show it again after you click Save or leave this page.

https://your_subdomain.zendesk.com/agent/admin/api/settings/tokens

precursor.ca/slides



```
"https://subdomain.Zendesk.com/api/v2/search.json?  
query=type:ticket organization:orgName solved>YYYY-MM-DD"
```

```
"https://" & ZendeskQuery::SubDomain & ".Zendesk.com/api/v2/  
search.json?query=type:ticket organization:\"\" &  
Tickets::ticketORGANIZATION & "\" solved>" & $$Period & "\""
```

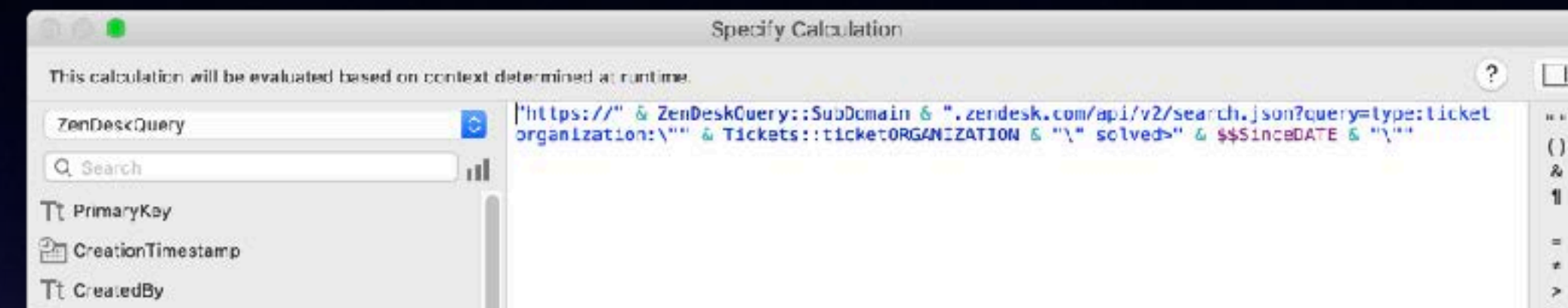
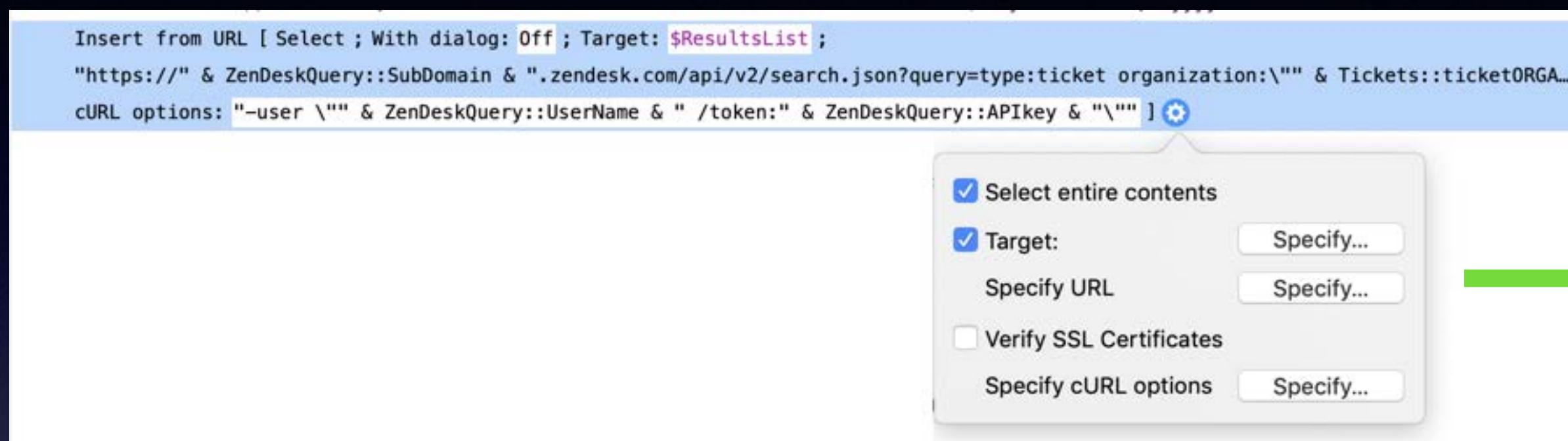
precursor.ca/slides



```
Insert from URL [ Select ; With dialog: Off ; Target: $ResultsList ;  
"https://" & ZenDeskQuery::SubDomain & ".zendesk.com/api/v2/search.json?query=type:ticket organization:\"\" & Tickets::ticketORGA..  
cURL options: "-user \"\" & ZenDeskQuery::UserName & " /token:" & ZenDeskQuery::APIkey & "\"\" ]
```

Select entire contents
 Target:
Specify URL
 Verify SSL Certificates
Specify cURL options

precursor.ca/slides



Insert from URL

```
"https://" & ZendeskQuery::SubDomain & ".Zendesk.com/api/v2/  
search.json?query=type:ticket organization:\'' &  
Tickets::ticketORGANIZATION & '\'' solved>" & $$Period & "\'
```

precursor.ca/slides



Insert from URL [Select ; With dialog: Off ; Target: \$ResultsList ;
"https://" & ZenDeskQuery::SubDomain & ".zendesk.com/api/v2/search.json?query=type:ticket organization:\" & Tickets::ticketORGA...
cURL options: "-user \" & ZenDeskQuery::UserName & " /token:" & ZenDeskQuery::APIkey & "\"]

- Select entire contents
- Target: Specify...
- Specify URL Specify...
- Verify SSL Certificates
- Specify cURL options Specify...

Specify Calculation

This calculation will be evaluated based on context determined at runtime.

ZenDeskQuery [https://" & ZenDeskQuery::SubDomain & ".zendesk.com/api/v2/search.json?query=type:ticket organization:\" & Tickets::ticketORGANIZATION & "\" solved:" & \$\$SinceDATE & "\"

Search []

PrimaryKey

CreationTimestamp

CreatedBy

Specify Calculation

This calculation will be evaluated based on context determined at runtime.

ZenDeskQuery ["-user \" & ZenDeskQuery::UserName & " /token:" & ZenDeskQuery::APIkey & "\"

Search []

PrimaryKey

CreationTimestamp

CreatedBy

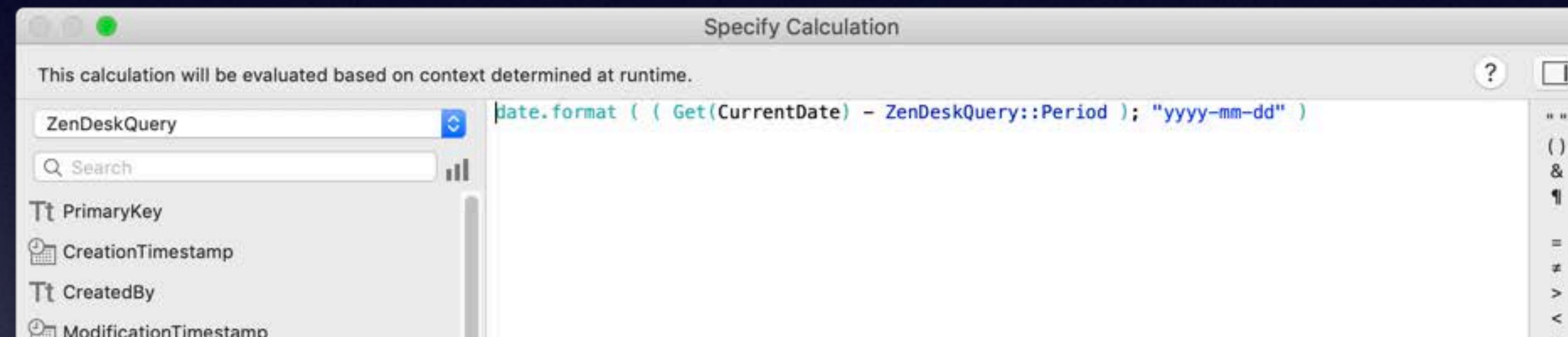
cURL Options

"-user \" & **ZenDeskQuery::UserName** & " /token:" &
ZenDeskQuery::APIkey & "\"

precursor.ca/slides



```
date.format ( ( Get(CurrentDate) - ZendeskQuery::Period ); "yyyy-mm-dd" )
```



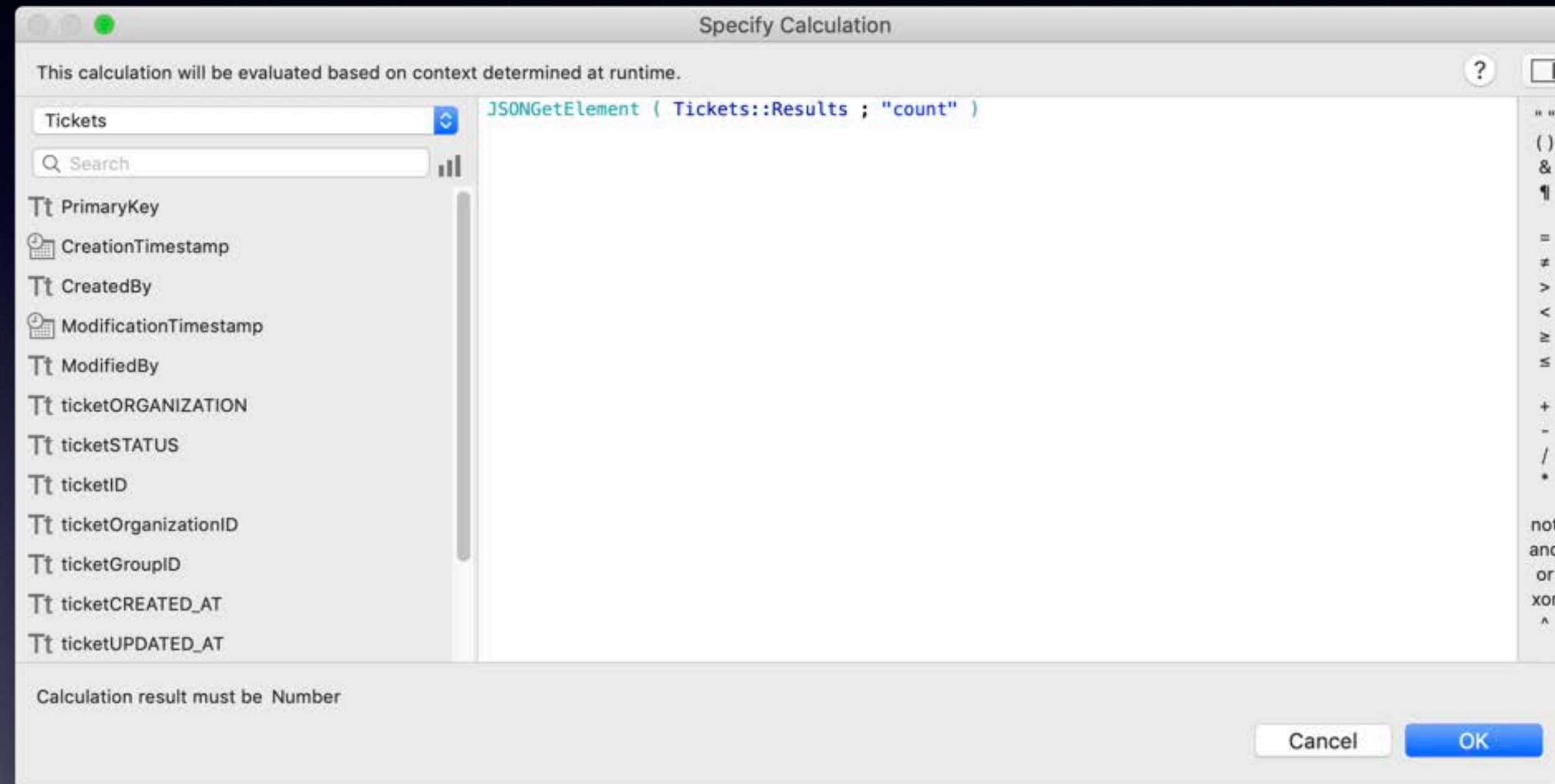
date.format custom function by Tim Anderson Group
<https://www.briandunning.com/cf/893>

precursor.ca/slides



```
If [ ZenDeskQuery::APIkey ≠ "" and ZenDeskQuery::SubDomain ≠ "" ]
  Insert from URL [ Select ; With dialog: Off ; Target: $OrganizationList ;
  "https://" & ZenDeskQuery::SubDomain & ".zendesk.com/api/v2/organizations.json" ; cURL options:
  "-user \" & ZenDeskQuery::UserName & " /token:" & ZenDeskQuery::APIkey & "\" ]
  Set Field [ Organizations::Results ; $OrganizationList ]
  Set Variable [ $OrganizationCount ; Value: ValueCount ( JSONListKeys ( Organizations::Results ; "organizations" ) ) ]
  Set Variable [ $i ; Value: 0 ]
  If [ $OrganizationCount > 0 ]
    Loop
      New Record/Request
      Set Field [ Organizations::organizationNAME ; JSONGetElement ( Organizations::Results ; "organizations[" & $i & "]"name" ) ]
      Set Field [ Organizations::organizationID ; JSONGetElement ( Organizations::Results ; "organizations[" & $i & "]"id" ) ]
      Set Field [ Organizations::organizationDESCRIPTION ;
      JSONGetElement ( Organizations::Results ; "organizations[" & $i & "]"details" ) ]
      Set Field [ Organizations::organizationURL ; JSONGetElement ( Organizations::Results ; "organizations[" & $i & "]"url" ) ]
      Set Field [ Organizations::organizationDOMAINS ;
      JSONGetElement ( Organizations::Results ; "organizations[" & $i & "]"domain_names" ) ]
      Set Field [ Organizations::organizationNOTES ; JSONGetElement ( Organizations::Results ; "organizations[" & $i & "]"notes" ) ]
      Set Field [ Organizations::organizationCREATED_AT ;
      JSONGetElement ( Organizations::Results ; "organizations[" & $i & "]"created_at" ) ]
      Commit Records/Requests [ With dialog: Off ]
      Set Variable [ $i ; Value: $i + 1 ]
      Exit Loop If [ $i ≥ $OrganizationCount ]
    End Loop
  End If
  Exit Script [ Text Result: ]
Else
  Perform Script [ Specified: From list ; "Settings Test" ; Parameter: ]
End If
```

precursor.ca/slides



precursor.ca/slides




ZenDesk API Query 1.0

Get ZenDesk Organizations

Set Organization

Set Time Period (Days)

Get ZenDesk Solved Tickets

 Copyright © 2019, Precursor.ca

precursor.ca/slides



TICKETS MacTech

ticketOrganizationID: 2875232583
ticketID: 3245
ticketSTATUS: closed
ticketGroupID: 22123425
ticketCREATED_AT: 2019-09-14T15:45:18Z
ticketUPDATED_AT: 2019-09-13T16:03:38Z

4
TOTAL CLOSED

Get ZenDesk Tickets
Delete Ticket Records

Results

```
{
  "results": [
    {
      "url": "https://precursorca.zendesk.com/api/v2/tickets/3245.json",
      "id": 3454,
      "external_id": null,
      "via": {
        "channel": "email",
        "source": {
          "from": {
            "address": "neilt@mactech.com",
            "name": "Neil"
          },
          "to": {
            "name": "Precursor Systems",
            "address": "intake@precursorca.zendesk.com",
            "rel": null
          }
        },
        "created_at": "2019-08-26T19:11:20Z",
        "updated_at": "2019-08-30T20:02:45Z",
        "type": null,
        "subject": "ADVICE : ",
        "raw_subject": "ADVICE : ",
        "description": "MacTech : neil\n (204) 777-7789\nhi Alex. I have a pop-up stating\n Backup Failed. Time Machine couldn't back up to \nMacTech_Server.local\n". Close or Details. Any suggestions on what this is all about? Thank you\n\nError Message: \nDate: Monday, Setp 8, 2019\nTime: 2:09:06 PM\nSubject: ADVICE : \nCustomer Name: MacTech\nFrom: neilt@mactech.com",
        "priority": null,
        "status": "closed",
        "assignee": "support@precursorca.zendesk.com"
      }
    }
  ]
}
```

Formatted

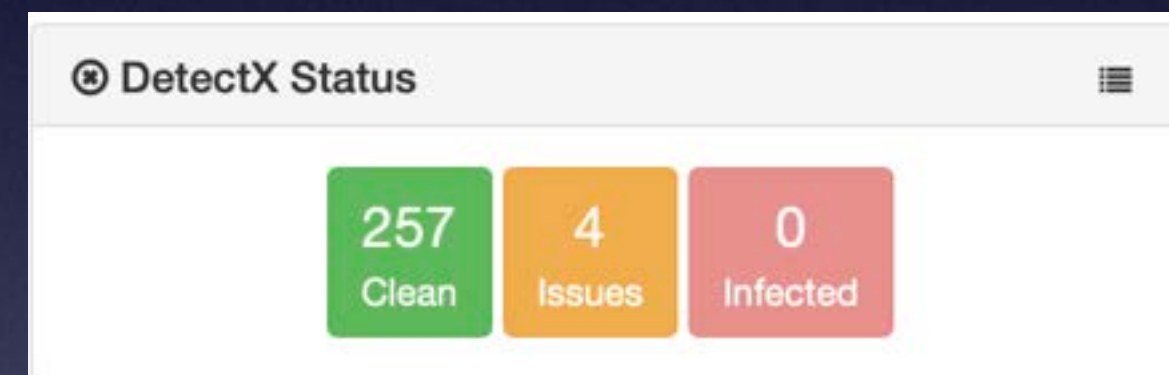
```
{
  "count": 4,
  "facets": null,
  "next_page": null,
  "previous_page": null,
  "results": [
    {
      "allow_attachments": true,
      "allow_channelback": false,
      "assignee_id": 379667215,
      "brand_id": 450055
    }
  ]
}
```

Copyright © 2019, Precursor.ca

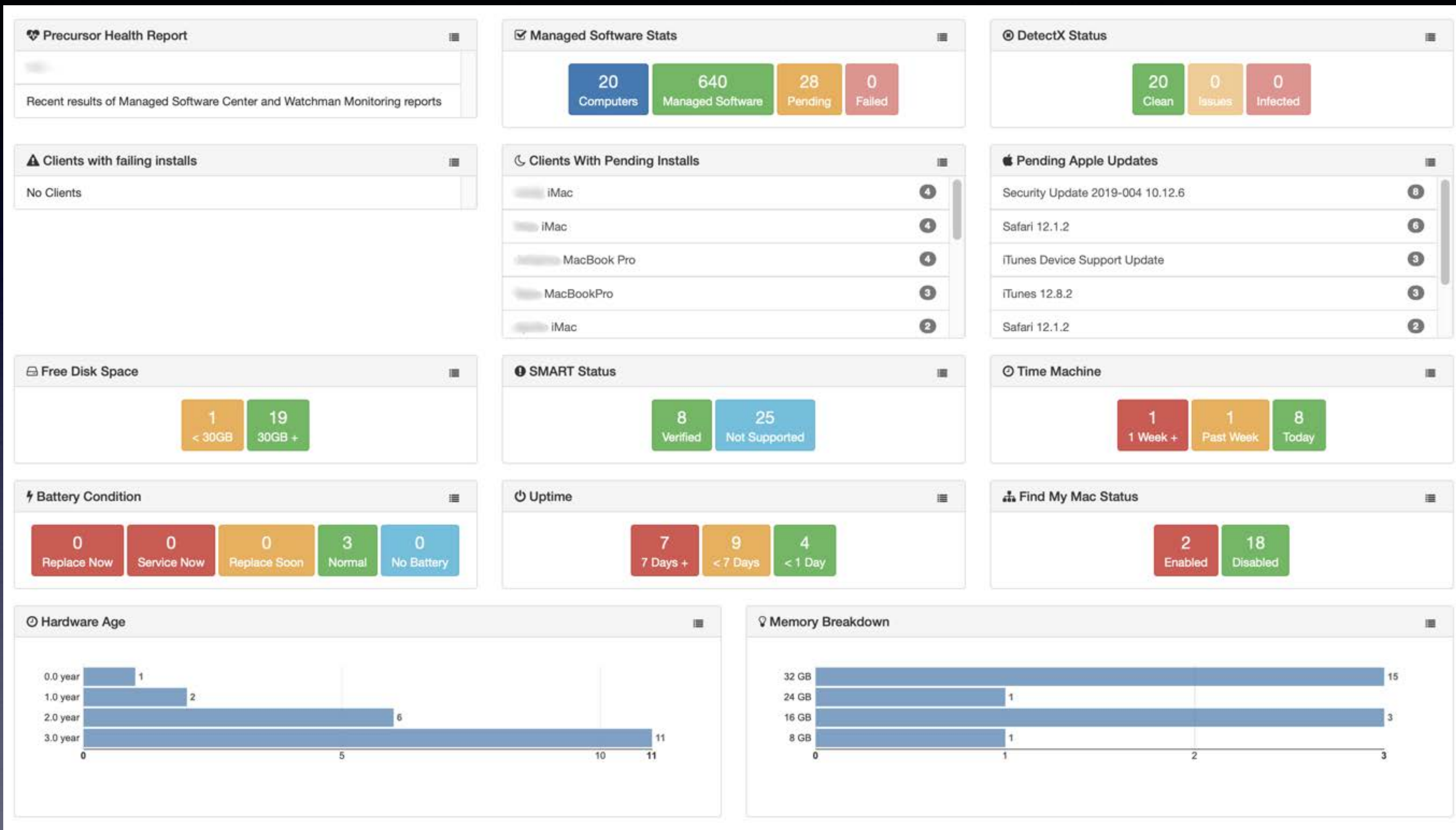
precursor.ca/slides



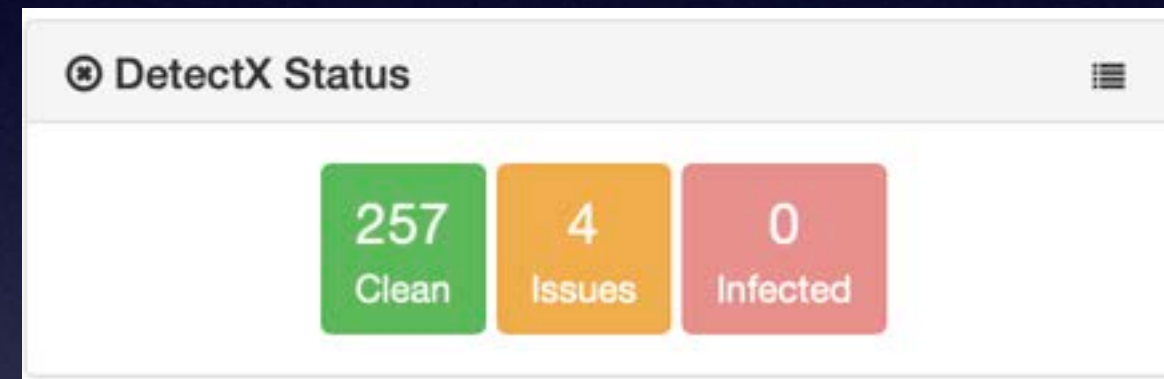
munkireport



precursor.ca/slides



precursor.ca/slides



precursor.ca/slides



**DETECTX SWIFT
MANAGEMENT**
\$299.00
Quantity

**DetectX
Swift**

STATUS:
macOS: Version 10.12.6 (Build 16G1114)
File System: hfs
Temp: The thermal state is within normal limits.
Boot time: Sat Jan 6 22:16:38 2018

- Search**
Find and remove potential problems, adware, malware and keyloggers.
- Profile**
Create a profile of your system for analysis and troubleshooting.
- History**
See a history of changes to this Mac recorded by DetectX.

DetectX Status

257 Clean	4 Issues	0 Infected
--------------	-------------	---------------

<https://sqwarq.com/detectx/>

precursor.ca/slides



API

Arjen van Bochoven edited this page on Apr 12, 2017 · 6 revisions

To get data out of Munkireport there is a Datatables API that is also used for the listing reports. To help you get started use the small shell script or python script below. To get the data to CSV format, pipe the output to JSON to CSV parser (see below).

Shell Version

```
#!/bin/sh
#
# Script to run automated queries against the munkireport datatables API
#
# Results are returned in JSON format
# The actual entries are in the 'data' variable
#
# To make this work, set up a regular user in munkireport and adjust the
# proper values below
#
# Author: Arjen van Bochoven
# Date: 2015-11-06

# Retrieve data from munkireport
# DEBUG=1
MR_BASE_URL='https://yourmunkireportserver/index.php?'
MR_DATA_QUERY='/datatables/data'
MR_LOGIN='datauser'
MR_PASSWORD='secretpassword'

CLIENT_COLUMNS=(
  "machine.serial_number"
  "machine.hostname"
```

<https://github.com/munkireport/munkireport-php/wiki/API>

precursor.ca/slides

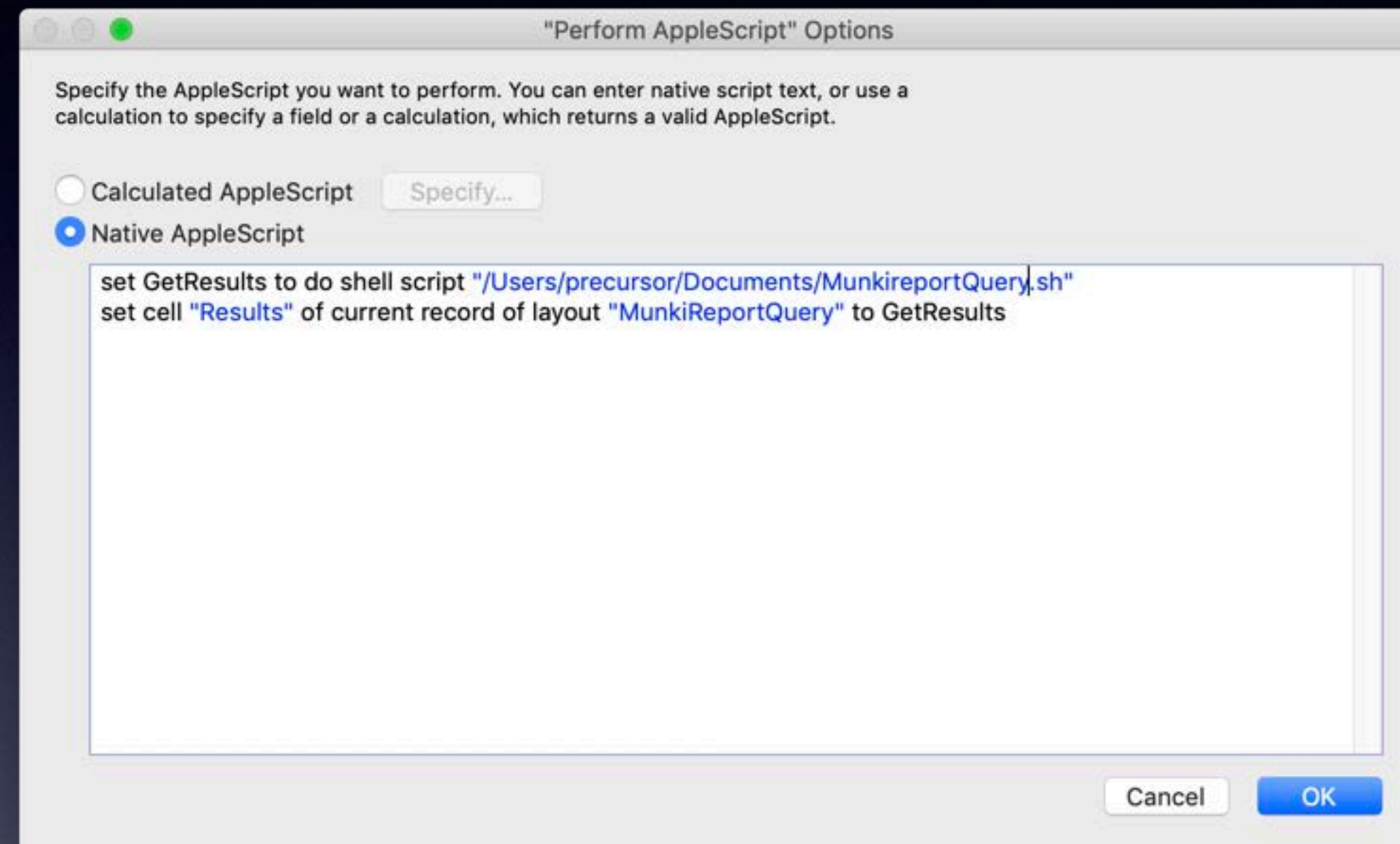


```
CLIENT_COLUMNS=(  
  "machine.serial_number"  
  "machine.hostname"  
  "machine.machine_desc"  
  "reportdata.timestamp"  
  "reportdata.console_user"  
  "machine.os_version"  
  "reportdata.remote_ip"  
  "munkireport.manifestname"  
)
```

“detectx.status”

“detectx.numberofissues”

precursor.ca/slides



precursor.ca/slides



https://munkireport.example.com/index.php?/module/detectx/get_stats/

```
$.getJSON( appUrl + '/module/detectx/get_stats', function( data ) {  
  if(data.error){  
    //alert(data.error);  
    return;  
  }  
  
  $.each(['Clean', 'Issues', 'Infected'], function(index, type){
```

Status: Clean Issues Infected

precursor.ca/slides



```
# Authenticate and capture cookie
if [ $DEBUG ]; then echo 'Authenticating to munkireport..'; fi
COOKIE_JAR=$(curl -s --cookie-jar - --data "login=${MR_LOGIN}&password=${MR_PASSWORD}" --url "${MR_BASE_URL}login" --output /dev/null)
SESSION_COOKIE=$(echo $COOKIE_JAR | sed 's/.*PHPSESSID /PHPSESSID=/')

# Retrieve data with session cookie
columns_to_query CLIENT_COLUMNS[@]
if [ $DEBUG ]; then echo 'Retrieving client data..'; fi
echo $(curl -s --cookie "$SESSION_COOKIE" --data $MR_QUERY ${MR_BASE_URL}${MR_DATA_PATH})
```

precursor.ca/slides



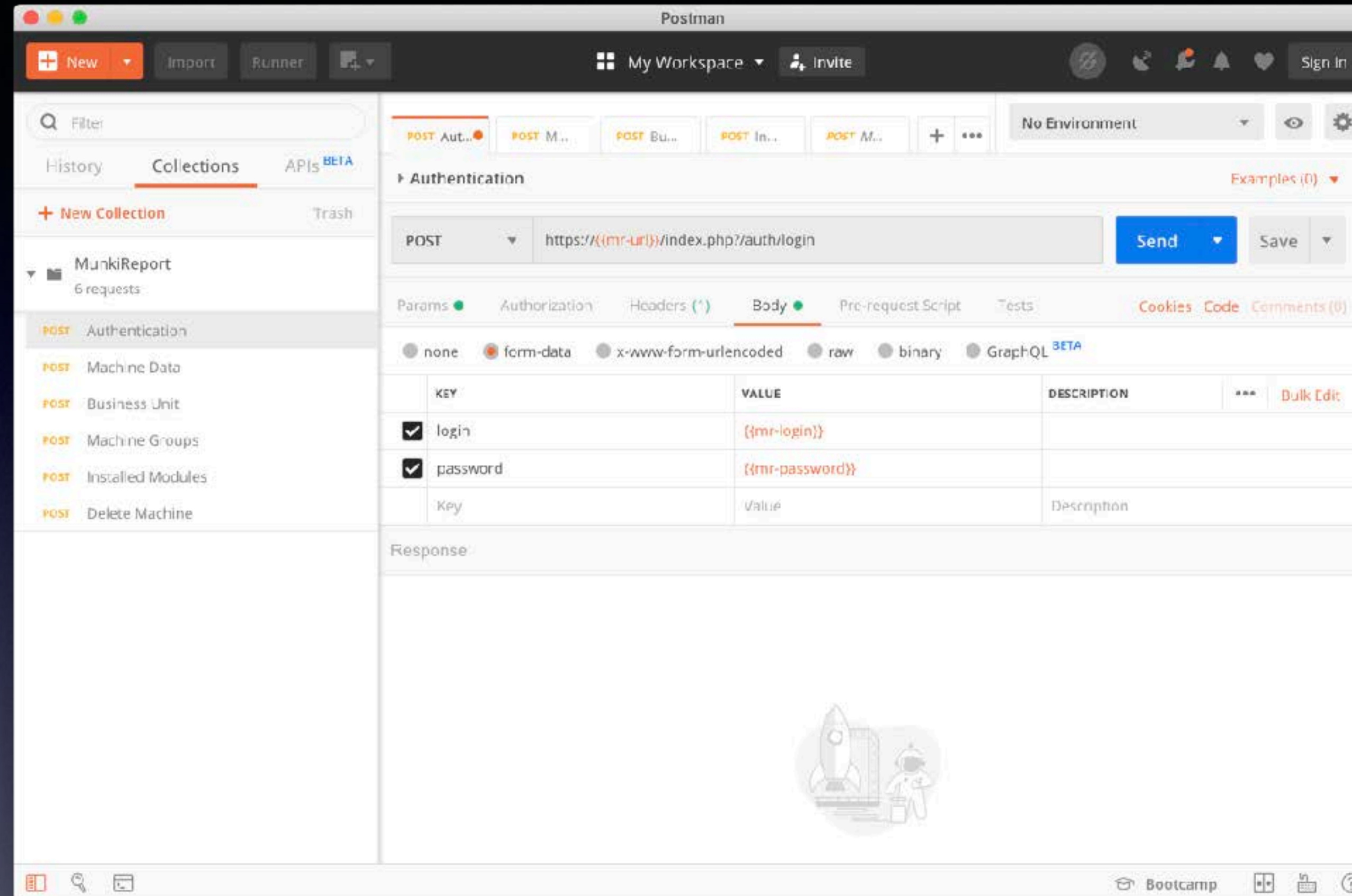
```
// the authentication data we wish to send  
"-d @$data " &amp;  
  
// set the Content type header to JSON  
"--header Content-Type:application/json " &amp;  
  
// create a cookie jar to store cookies in  
"--cookie-jar $$CookieJar "
```

```
Set Variable [ $CookieString ; Value : Substitute ( $$CookieJar ; "¶" ; Char(10) )
```

```
// for debugging ONLY set error reporting on  
"--show-error " &amp;  
"--dump-header $$Headers " &amp;  
  
// set the Content type header to JSON  
"--header Content-Type:application/json " &amp;  
  
// send the cookies with the request  
"--cookie $CookieString"
```

<https://msdev.co.uk/adventures-in-filemaker-curl-the-cookie-jar/>

precursor.ca/slides

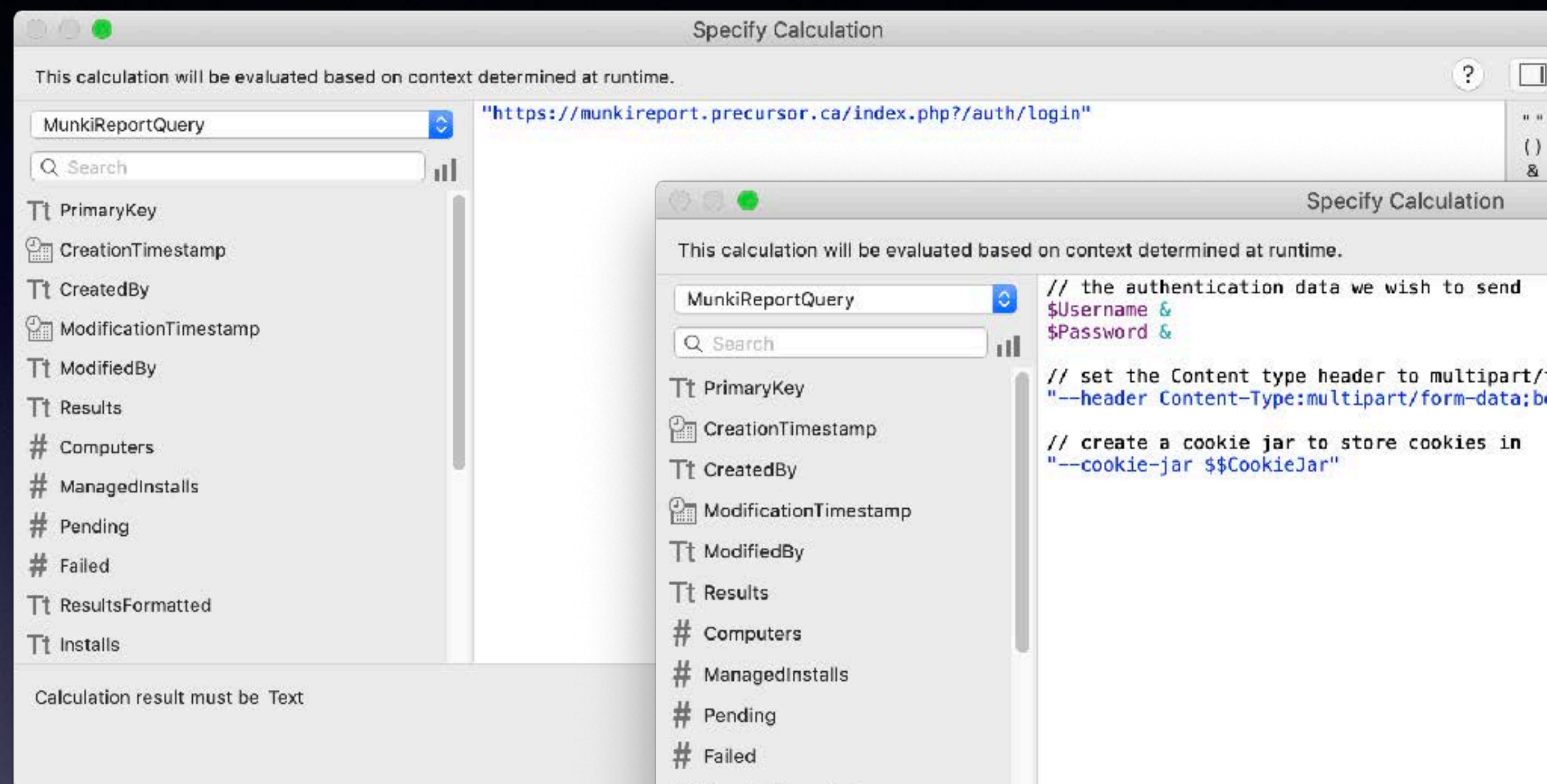


<https://github.com/joncrajin/munkireport-postman-collection>

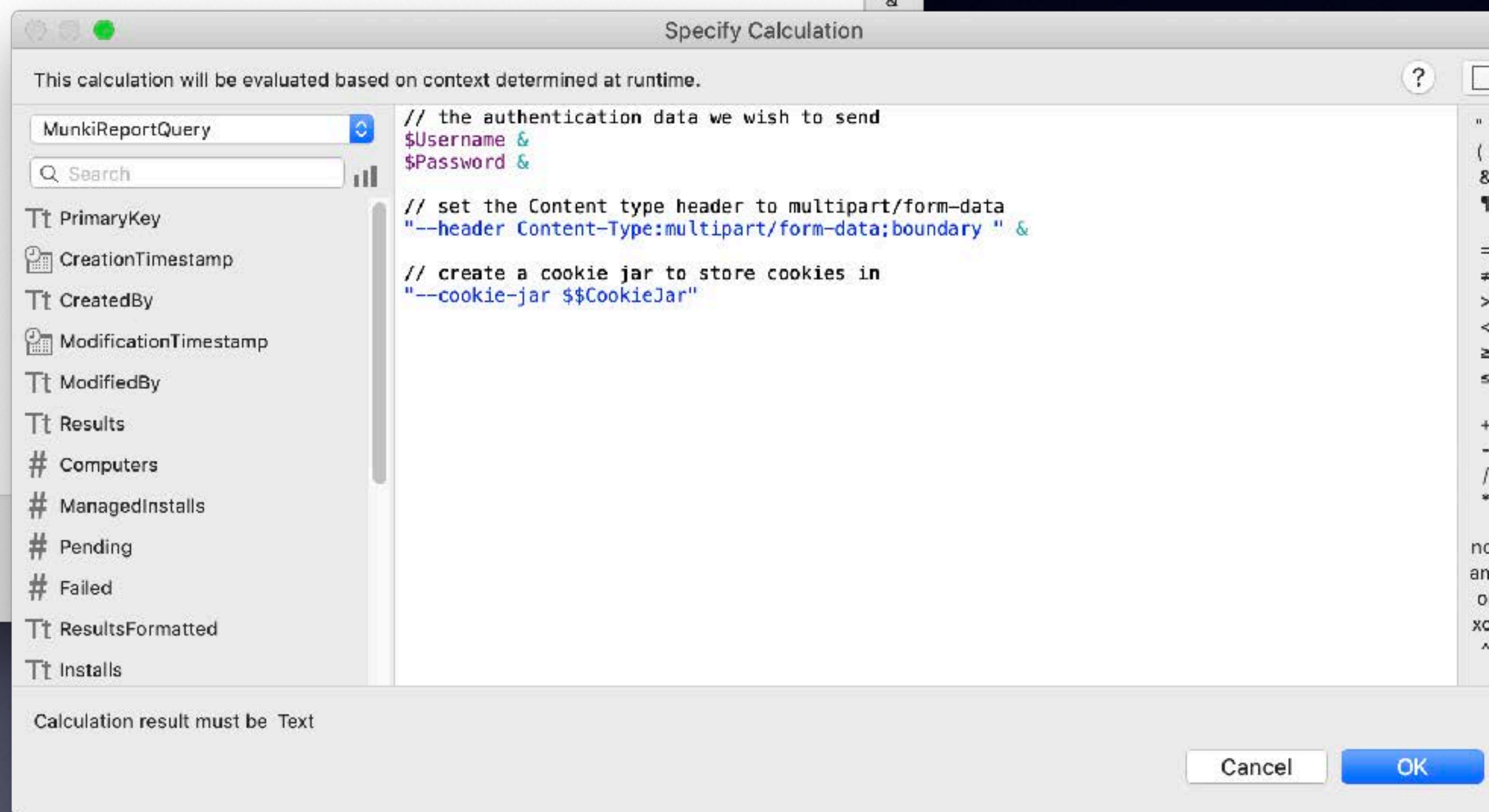
precursor.ca/slides



Specify URL



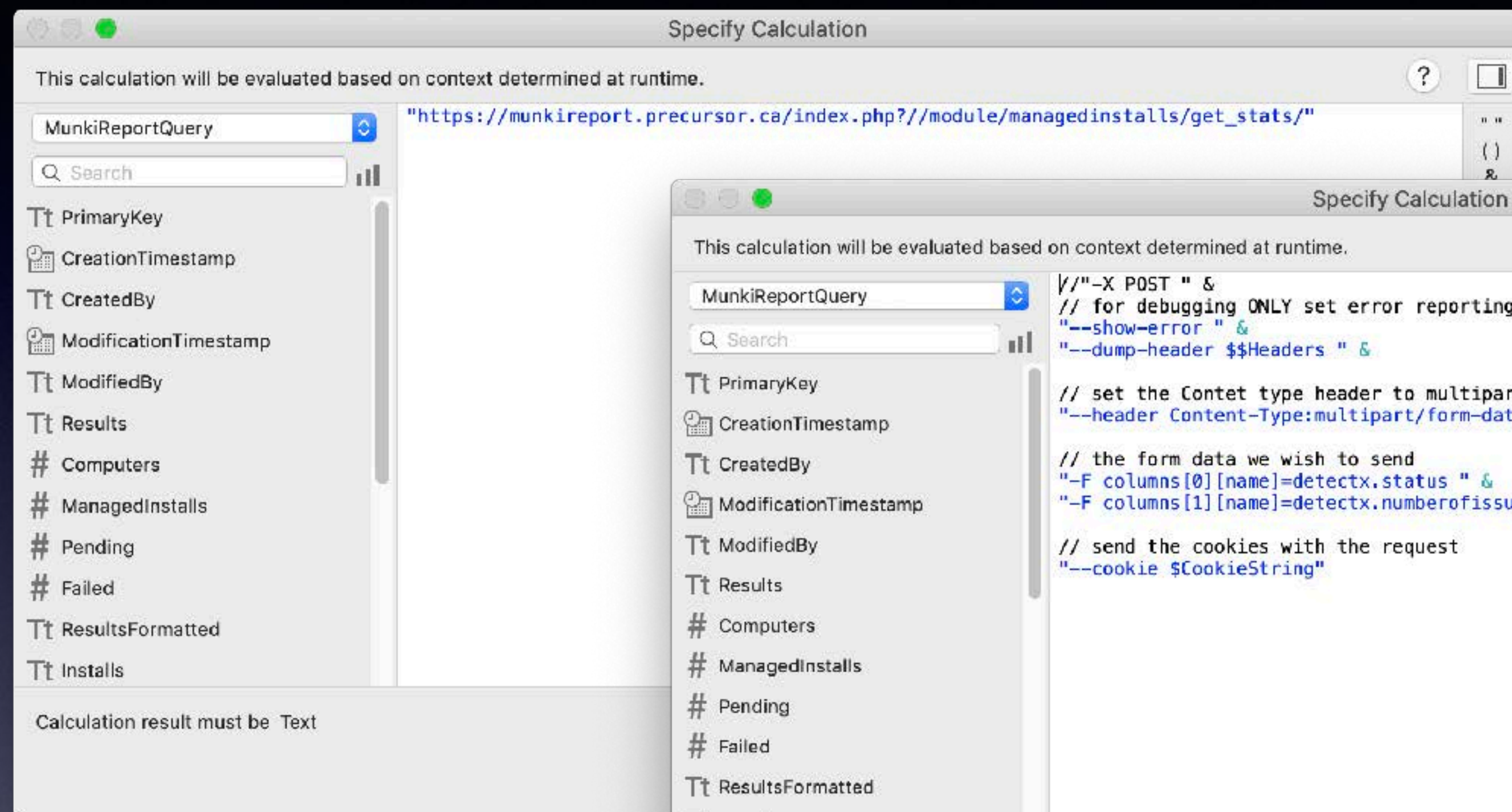
cURL options



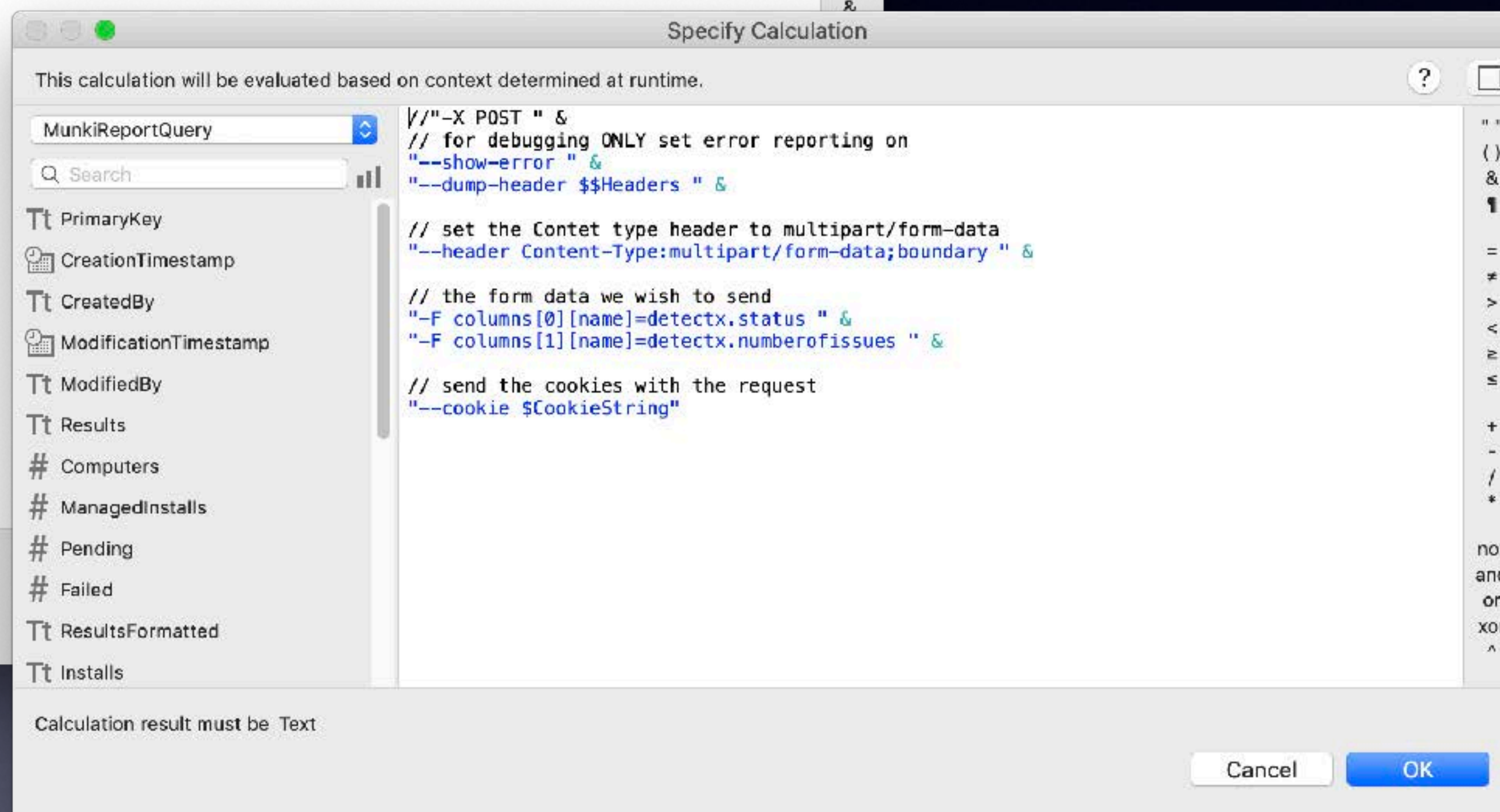
precursor.ca/slides



Specify URL



cURL options



precursor.ca/slides



Business Units

Nathan Perkins edited this page on Jan 30 · 4 revisions

Business Units

Business Units are a way to use one munkireport instance for more than one business/group.

Business Units can have:

- One or more Machine Groups (which reference Machines with the same machine_group)
- One or more Users (who can visit the unit pages)
- One or more Managers (who can add/delete users, add/delete Machine Groups)

Configure Business Units

If you want to enable Business Units, add the following line to `.env` :

```
ENABLE_BUSINESS_UNITS=TRUE
```

<https://github.com/munkireport/munkireport-php/wiki/Business-Units>

precursor.ca/slides



```
Set Variable [ $theCount ; Value: JSONListValues ( MunkiReportQuery::Results ; "data" ) ]  
Set Field [ MunkiReportQuery::DetectXclean ; PatternCount ( $theCount ; "Clean" ) ]  
Set Field [ MunkiReportQuery::DetectXissues ; PatternCount ( $theCount ; "Issues" ) ]  
Set Field [ MunkiReportQuery::DetectXinfected ; PatternCount ( $theCount ; "Infected" ) ]
```

precursor.ca/slides



Monthly Report Mailer



September

An automated report generated by FileMaker via API calls for:

Managed Software Center

DETECTX STATUS



257

Clean

4

Issues

0

Infected

ZenDesk

CLOSED TICKETS



8

Watchman



14

Warnings

support@precursor.ca



Copyright © 2019, Precursor.ca

precursor.ca/slides

Copyright © 2019, Alex Narvey



Monthly Report September

An automated report generated by FileMaker via API calls for:

Managed Software Center

DETECTX STATUS

	257 Clean	4 Issues	0 Infected
---	---------------------	--------------------	----------------------

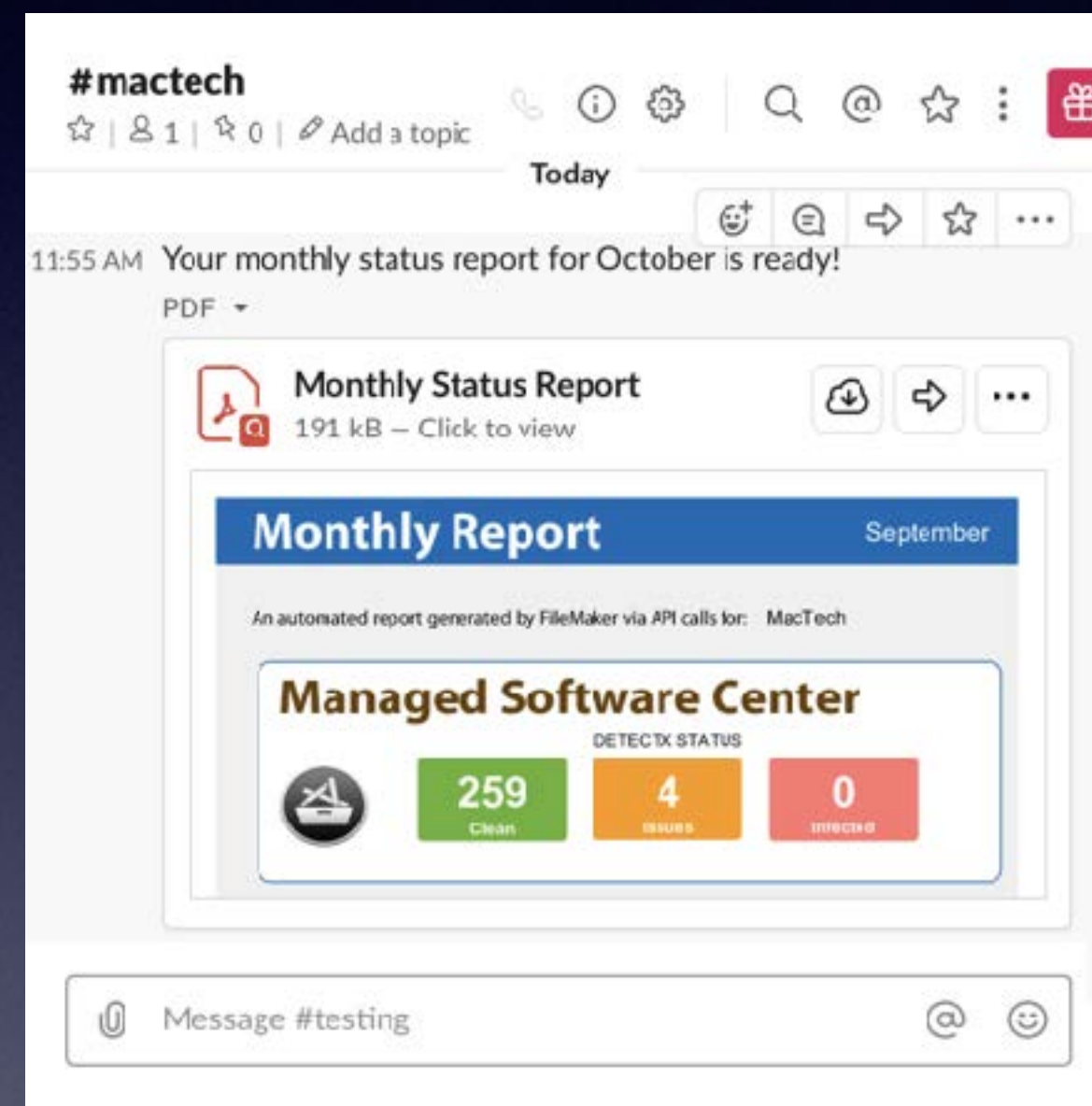
ZenDesk 	8 CLOSED TICKETS	Watchman 	14 Warnings
---	----------------------------	--	-----------------------

support@precursor.ca  Copyright © 2019, Precursor.ca

precursor.ca/slides



Slack



precursor.ca/slides



Web API

Events API

Conversations API

Real Time Messaging API

Methods

Object Types

Event Types

SCIM API

Audit Logs API

<https://api.slack.com>

precursor.ca/slides



Method URL:	<code>https://slack.com/api/chat.postMessage</code>						
Preferred HTTP method:	<code>POST</code>						
Accepted content types:	<code>application/x-www-form-urlencoded</code> , <code>application/json</code>						
Rate limiting:	<code>Special</code>						
Works with:	<table><thead><tr><th>Token type</th><th>Required scope(s)</th></tr></thead><tbody><tr><td><code>bot</code></td><td><code>bot</code></td></tr><tr><td><code>user</code></td><td><code>chat:write:user</code> <code>chat:write:bot</code></td></tr></tbody></table>	Token type	Required scope(s)	<code>bot</code>	<code>bot</code>	<code>user</code>	<code>chat:write:user</code> <code>chat:write:bot</code>
Token type	Required scope(s)						
<code>bot</code>	<code>bot</code>						
<code>user</code>	<code>chat:write:user</code> <code>chat:write:bot</code>						

<https://api.slack.com/methods/chat.postMessage>

precursor.ca/slides



Argument	Example	Required	Description
<code>token</code>	<code>xxxx-xxxxxxxx- xxxx</code>	Required	Authentication token bearing required scopes.
<code>channel</code>	<code>C1234567890</code>	Required	Channel, private group, or IM channel to send message to. Can be an encoded ID, or a name. See below for more details.
<code>text</code>	<code>Hello world</code>	Required	Text of the message to send. See below for an explanation of formatting . This field is usually required, unless you're providing only <code>attachments</code> instead. Provide no more than 40,000 characters or risk truncation .

precursor.ca/slides



```
CURL EXAMPLE </>  
  
curl -X POST -H 'Authorization: Bearer xoxb-1234-56789abcdefghijklmnop' \br/>-H 'Content-type: application/json' \br/>--data '{"channel":"C061EG9SL","text":"I hope the tour went well, Mr' \br/>https://slack.com/api/chat.postMessage
```

https://api.slack.com/web#posting_json

precursor.ca/slides



Authentication

Authenticate your Web API requests by providing a [bearer token](#), which identifies a single user, bot user, or workspace-application relationship.

[Register your application](#) with Slack to obtain credentials for use with our [OAuth 2.0](#) implementation, which allows you to negotiate tokens on behalf of users and workspaces.

https://api.slack.com/web#posting_json

precursor.ca/slides



Your Apps

Create New App

ⓘ If your app is (or will be) listed in the Slack App Directory, please review our new [Slack App Directory Agreement](#). These terms are in addition to the existing Developer Policy, API TOS, and Brand Guidelines.

By keeping your app in the App Directory or review process, you're confirming your agreement to the Slack App Directory Agreement and to providing additional information for security review, if requested. If you don't agree with this Agreement, please send an email to feedback@slack.com, and we'll remove your app from the App Directory or the review process.

I Agree



<https://api.slack.com/apps>

precursor.ca/slides



Add features and functionality

Choose and configure the tools you'll need to create your app (or review all [our documentation](#)).

-  **Incoming Webhooks**
Post messages from external sources into Slack.
- Interactive Components**
Add buttons to your app's messages, and create an interactive experience for users.
- Slash Commands**
Allow users to perform app actions by typing commands in Slack.
- Event Subscriptions**
Make it easy for your app to respond to activity in Slack.
- Bots**
Add a bot to allow users to exchange messages with your app.
-  **Permissions**
Configure permissions to allow your app to interact with the Slack API.

<https://api.slack.com/methods/chat.postMessage>

precursor.ca/slides



Webhook URLs for Your Workspace

To dispatch messages with your webhook URL, send your [message](#) in JSON as the body of an `application/json` POST request.

Add this webhook to your workspace below to activate this curl example.

Sample curl request to post to a channel:

```
curl -X POST -H 'Content-type: application/json' --data '{"text":"Hello, World!"}'  
https://hooks.slack.com/services/T0508V0QC/BN3HC102F/00ZcyMkcypx309hsEq8Dhze  
4
```

Copy

<https://api.slack.com/incoming-webhooks>

precursor.ca/slides



✓ Incoming Webhooks

Post messages from external sources into Slack.

App Credentials

These credentials allow your app to access the Slack API. They are secret. Please don't share your app credentials with anyone, include them in public code repositories, or store them in insecure ways.

App ID

XXXXXXXXXXXX

Date of App Creation

August 25, 2019

Client ID

50XXXXXXXXXXXX.7XXXXXXXXXXXX

Client Secret

.....

You'll need to send this secret along with your client ID when making your [oauth.access](#) request.

Signing Secret

.....

Slack signs the requests we send you using this secret. Confirm that each request comes from Slack by verifying its unique signature.


Verification Token

LUXXXXXXXXXXXX

This deprecated Verification Token can still be used to verify that requests come from Slack, but we strongly recommend using the above, more secure, signing secret instead.

precursor.ca/slides



 **Permissions**
Configure permissions to allow your app to interact with the Slack API.

OAuth Tokens & Redirect URLs

Tokens for Your Workspace

These tokens were automatically generated when you installed the app to your team. You can use these to authenticate your app. [Learn more.](#)

OAuth Access Token


xoxp-500...-5...-7...3-c Copy

[Reinstall App](#)

<https://api.slack.com/docs/oauth>

precursor.ca/slides





 **Permissions**
Configure permissions to allow your app to interact with the Slack API.

Select Permission Scopes

Add permission by scope or API method... ▼

CONVERSATIONS

Send messages as user 
chat:write:user

Post to specific channels in Slack 
incoming-webhook

<https://api.slack.com/docs/oauth-scopes>

precursor.ca/slides



Specify Calculation

This calculation will be evaluated based on context determined at runtime.

SlackPoster

```
//The cURL details
"-X POST" &
//The cURL details
"-d @$data" &
//Error reporting
"--trace $$Trace" &
"--show-error $$Error" &
"--dump-header $$Headers" &
// set the Content type header to application/json
"--header Content-Type:application/json " &
//The Authorization header
"-H \"Authorization: Bearer xoxp-...\""
```

Calculation result must be Text

Cancel OK

Specify Calculation

This calculation will be evaluated based on context determined at runtime.

SlackPoster

```
// Create the data which we wish to send to the remote server
// the folloinwg JSON
// {"test":"test text","channel":"<password>","token":"xxxx-11234-5678-asdfghjk"}
Let([
  ~json = JSONSetElement ( "{}" ; "text" ; $Comment ; 1 );
  ~json = JSONSetElement ( ~json ; "channel" ; $Channel ; 1 )
];
~json
)
```

Calculation result must be Text

Cancel OK

precursor.ca/slides



SLACK API POST Message 1.0.0

Slack Channel:

Title:

Comment:

Headers


```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8
Content-Length: 225
Connection: keep-alive
Date: Tue, 17 Sep 2019 15:17:46 GMT
```

Trace

```
== Info: Trying 13.249.92.185...
== Info: Connected to slack.com (13.249.92.185) port 443 (#0)
== Info: ALPN, offering http/1.1
-- Info: Cipher selected: ECDHE-RSA-AES128-GCM
```

SlackResult

```
{
  "ok": true,
  "channel": "KADMF3ADFL",
  "ts": "1568711866.004100",
  "message": {
    "bot_id": "A068179627",
    "type": "message",
    "text": "Your Monthly Report is now available!",
    "user": "U068179627",
    "ts": "1568711866.004100",
    "team": "T068179627"
  },
  "warning": "missing_charset",
  "response_metadata": {
    "warnings": [
      "missing_charset"
    ]
  }
}
```

 Copyright © 2019, Precursor.ca

precursor.ca/slides



SLACK API POST Message 1.0.0

Slack Channel:

Title:

Comment:

Headers


```
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8
Content-Length: 225
Connection: keep-alive
Date: Tue, 17 Sep 2016 15:17:46 GMT
```

Trace

```
== Info: Trying 13.249.92.155...
== Info: Connected to slack.com (13.249.92.155) port 443 (#0)
== Info: ALPN, offering http/1.1
-- Info: Cipher selection: ECDHE-RSA-AES128-GCM
```

SlackResult


```
{
  "ok": true,
  "channel": "KADMF3ADFL",
  "ts": "1474287066.004100",
  "message": {
    "bot_id": "B0123456789",
    "type": "message",
    "text": "Your Monthly Report is now available!",
    "user": "U0123456789",
    "ts": "1474287066.004100",
    "team": "T0123456789"
  },
  "warning": "missing_charset",
  "response_metadata": {
    "success": true,
    "warning": "missing_charset"
  }
}
```

 Copyright © 2019, Precursor.ca

#mactech

☆ | 👤 1 | ✨ 0 | ✎ Add a topic

Today

 **Precursor Systems** 12:16 PM

Your Monthly Report is now available!

precursor.ca/slides



Method URL:	<code>https://slack.com/api/files.upload</code>						
Preferred HTTP method:	<code>POST</code>						
Accepted content types:	<code>multipart/form-data</code> , <code>application/x-www-form-urlencoded</code>						
Rate limiting:	<code>Tier 2</code>						
Works with:	<table><thead><tr><th>Token type</th><th>Required scope(s)</th></tr></thead><tbody><tr><td><code>bot</code></td><td><code>bot</code></td></tr><tr><td><code>user</code></td><td><code>files:write:user</code></td></tr></tbody></table>	Token type	Required scope(s)	<code>bot</code>	<code>bot</code>	<code>user</code>	<code>files:write:user</code>
Token type	Required scope(s)						
<code>bot</code>	<code>bot</code>						
<code>user</code>	<code>files:write:user</code>						

<https://api.slack.com/methods/files.upload>

precursor.ca/slides



```
</> Present arguments as parameters in application/x-www-form-urlencoded  
querystring or POST body. This method does not currently accept  
application/json.
```

precursor.ca/slides



```
cURL -F "file=@$FilePath" -F "initial_comment=Your monthly status report is ready!"  
-F "title=Monthly Status Report" -F "filename=Monthly_Report.pdf" -F channels=CMXXYYZZ  
-H "Authorization: Bearer xoxp-123456789-900054321-45362718-de83920fj093874788372829f9"  
https://slack.com/api/files.upload
```

precursor.ca/slides



SLACK API POST file.upload 1.0.1

Slack Channel: [redacted]

Title: [redacted]

Comment: Your Monthly Report is now available!

FileType: [redacted]

FileName: [redacted]

File:

Post files.upload

SlackResult:

```
{
  "ok": true,
  "file": {
    "id": "FNX3AJ4GZ",
    "created": 1570391902,
    "timestamp": 1570391902,
    "name": "theFile",
    "title": "MacTech_Monthly_Report_October.pdf",
    "mimetype": "application/vpdf",
    "filetype": "pdf",
    "pretty_type": "PDF",
    "user": "U0508V0R4",
    "editable": false,
    "size": 193334,
    "mode": "hosted",
    "is_external": false,
    "external_type": "",
    "is_public": true,
    "public_url_shared": false
  }
}
```

Headers:

```
HTTP/1.1 100 Continue
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8
Content-Length: 557
Connection: keep-alive
Date: Sun, 06 Oct 2019 21:19:12 GMT
Server: Apache/2.4.18 (Ubuntu)
```

Trace:

```
== Info: Trying 99.84.174.165...
== Info: Connected to slack.com (99.84.174.165) port 443 (#0)
== Info: ALPN, offering http/1.1
== Info: Cipher selection: ECDHE-RSA-AES128-GCM
```

Copyright © 2019, Precursor.ca



SLACK API POST file.upload 1.0.1


Slack Channel: [redacted]

Title: [redacted]

Comment: Your Monthly Report is now available!

FileType: [redacted]

FileName: [redacted]

File: 

Post files.upload

SlackResult:

```
{\"ok\":true,\"file\":{\"id\":\"FNX3AJ4GZ\",\"created\":1570391902,\"timestamp\":1570391902,\"name\":\"theFile\",\"title\":\"MacTech_Monthly_Report_October.pdf\",\"mimetype\":\"applicationVpdf\",\"filetype\":\"pdf\",\"pretty_type\":\"PDF\",\"user\":\"U0508V0R4\",\"editable\":false,\"size\":193334,\"mode\":\"hosted\",\"is_external\":false,\"external_type\":\"\",\"is_public\":true,\"public_url_shared\":false,\"...\"}}
```

Headers:

```
HTTP/1.1 100 Continue
HTTP/1.1 200 OK
Content-Type: application/json; charset=utf-8
Content-Length: 557
Connection: keep-alive
Date: Sun, 06 Oct 2019 21:19:12 GMT
Server: Apache
```

Trace:

```
== Info: Trying 99.84.174.165...
== Info: Connected to slack.com (99.84.174.165) port 443 (#0)
== Info: ALPN, offering http/1.1
-- Info: Cipher selection: ECDHE_RSA_AES128_GCM
```

Copyright © 2019, Precursor.ca

#mactech

11:55 AM Your monthly status report for October is ready!

PDF

Monthly Status Report
191 kB – Click to view

Monthly Report September

An automated report generated by FileMaker via API calls for: MacTech

Managed Software Center

DETECTIX STATUS

	259 Clean	4 Issues	0 Infectio
--	---------------------	--------------------	----------------------

Message #testing

precursor.ca/slides



Demo

precursor.ca/slides

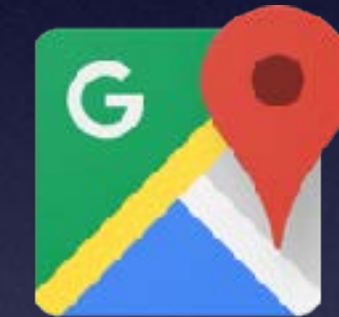


Triggers & Web Hooks

precursor.ca/slides



REST APIs



precursor.ca/slides



FileMaker

45 day demo

<https://www.filemaker.com/trial/>

ACN (FileMaker is free to members)

<https://consultants.apple.com>

FileMaker DevCon (FileMaker is included with your DevCon ticket)

<https://community.filemaker.com/en/s/devcon>

FileMaker Partners (free to partners)

<https://www.filemaker.com/partners/become-a-partner.html>

Purchase at Retail

<https://store.filemaker.com>

precursor.ca/slides



Claris Connect

INT24 - An Introduction to Claris Connect

<https://support.filemaker.com/s/article/INT24-2019>

precursor.ca/slides



Alex Narvey



<https://Precursor.ca>



@precursorca

precursor.ca/slides