PSK Rotator Guide

by Tim Smith, SA – 08/22/2024 – v1.0.1

Overview:

Security is paramount in wireless networks. Regularly rotating the PSK (Pre-Shared Key) for your SSID (Service Set Identifier) helps enhance security by minimizing the risk of unauthorized access. The ExtremeCloud IQ (XIQ) platform allows you to manage PSKs efficiently, ensuring only authorized users can connect to your network.
This guide will walk you through setting up and running the script that rotates the PSK for an XIQ SSID. Whether you're securing a corporate network, a guest network, or any other wireless environment, following these steps will help keep your network safe and your users connected.

This script checks for devices in a mismatched configuration state, retrieves a PSK from a CSV list, updates the SSID in XIQ, and then updates the configuration on the devices. Finally, it emails the updated PSK to a specified list of email addresses using Gmail APIs or SMTP.

Target Audience: Technical

PSK Rotator Use Cases:

- Schedule PSK
- Email new PSK to users
- Secure SSID access

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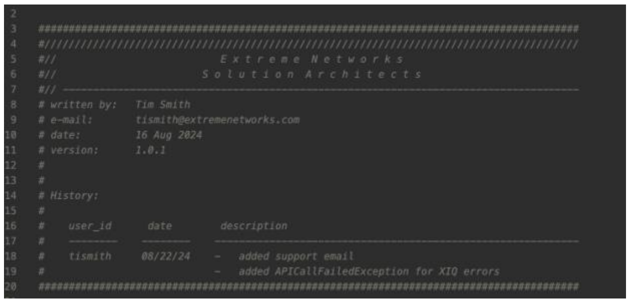
Prerequisites:

- Knowledge of XIQ by adding access points, creating network policies, and SSIDs
- XIQ PSK SSID
- One or more XIQ native access points
- Download the following files and keep them in the same folder.
    - XIQ_PSK_Rotator.py
        - Version 1.0.1 is the current version. See lines 3-20 in the script.
    - psk_list.csv – list of PSKs to use. Edit this list with the list of PSKs you would like to use
    - variables.yml – variables and information for the script (outlined below)
    - requirements.txt (needed Python modules - see modules section)
    - app/ (folder containing the following scripts)
        - gmail.py (handles all Gmail APIs)
        - smtp.py (handles SMTP email)
        - logger.py (handles all logging)
        - xiq_api.py (handles all XIQ APIs)



```
2
3   ##########################################################################################
4   #/////////////////////////////////////////////////////////////////////////////////////////
5   #//                         E x t r e m e   N e t w o r k s
6   #//                      S o l u t i o n   A r c h i t e c t s
7   #// --------------------------------------------------------------------------------------
8   # written by:   Tim Smith
9   # e-mail:       tismith@extremenetworks.com
10  # date:         16 Aug 2024
11  # version:      1.0.1
12  #
13  #
14  # History:
15  #
16  #    user_id      date        description
17  #    --------    --------    -------------------------------------------------------------
18  #    tismith     08/22/24    -   added support email
19  #                            -   added APICallFailedException for XIQ errors
20  ##########################################################################################
```

Scripting Environment Preparation:

Information:

The XIQ_PSK_Rotator.py script requires Python 3.9 at minimum and has been tested up to Python 3.12. It can be executed manually but ideally scheduled to run automatically as a cronjob or Windows Task (see Scheduling the Script). This script can be executed from any device with Python and the needed modules installed. The device running the script needs to be able to reach the following:

1. **ExtremeCloud IQ**: The device must be able to connect to ExtremeCloud IQ.
2. **Gmail APIs**: If using Gmail APIs, the device needs access to Google's Cloud.
3. **SMTP**: If using SMTP, the device must be able to reach the SMTP server or relay.

These requirements ensure the device can communicate with the necessary services for its intended functionality.

When run, the script creates a PSK_rotator_log.log file. This file shows information about the PSK rotation, CSV file updates, and any API errors experienced.

Device Choice:

This script can be executed from any device running Python 3.9 or higher. The device could be a RedHat server, a PC/laptop running Windows or Mac OSX, or even a Raspberry Pi-type device. The device must be on the network and able to reach the Gmail cloud or SMTP server and

ExtremeCloud IQ. This can be done through a proxy. Proxy config is beyond the scope of this guide.
NOTE: If using Gmail, the device will also need a browser installed, as that will be required for the initial Gmail API setup.

Python Installation:

Depending on the device used, you may need to install Python or a different version of Python. The easiest way to check the version of Python is to open the terminal (Power Shell on Windows) and type this command.

```
python --version
```

You may need to use this command on Macs, Linux, and other systems with Python 2 installed.

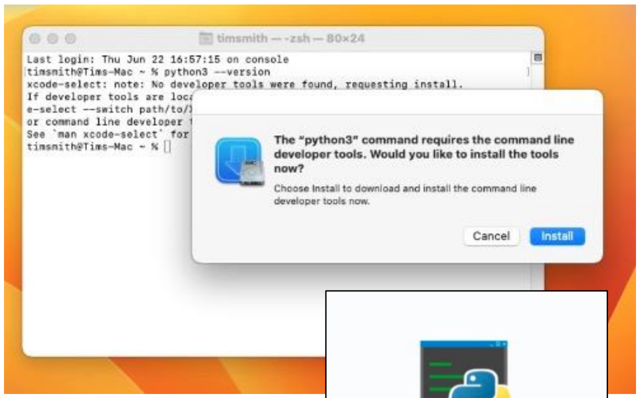
```
Python3 --version
```

Below are some examples of installing Python 3 for Windows and Mac OSX. The tested Linux systems all had Python3.6 or higher installed by default. You should upgrade to at least Python 3.9, as the script will not function correctly. Upgrading Python is beyond the scope of this guide. Here is a link to information.
https://www.redswitches.com/blog/upgrade-python/

Mac OSX Ventura Installation

- Open the terminal and enter python3 –version
    - This triggers the installation of Developer Tools
- Click Install
- Click Agree

- The Developer tools that installed python3 will also install pip3 in Ventura.



```
Last login: Thu Jun 22 16:57:15 on console
timsmith@Tims-Mac ~ % python3 --version
xcode-select: note: No developer tools were found, requesting install.
If developer tools are loc
e-select --switch path/to/
or command line developer
See `man xcode-select` for
timsmith@Tims-Mac ~ % 
```

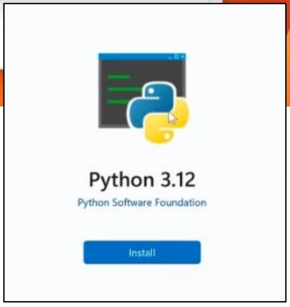
The "python3" command requires the command line developer tools. Would you like to install the tools now?

Choose Install to download and install the command line developer tools now.

Windows 11 Installation

- Search Microsoft Store for Python 3.12 and click install
- Log in with Microsoft credentials

- The Windows store installs pip3 with python3. Pip3 will be used to install the needed modules.



Required Modules:

The **requests, PyYAML, google-api-python-client, google-auth-httplib2, google-auth-oauthlib**
 modules are the only modules required for the XIQ_PSK_Rotator.py script.

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Checking for existing Modules

You can check if the required module is installed using the terminal (PowerShell for Windows). Run the following command.

```
python3 -c “import requests”
```

The module is not installed if a ‘*ModuleNotFoundError: No module named '<module name>*' error is returned.

Installing required modules

The required module can be installed using pip3 using the downloaded requirements.txt file with the following command.

```
pip3 install -r requirements.txt
```

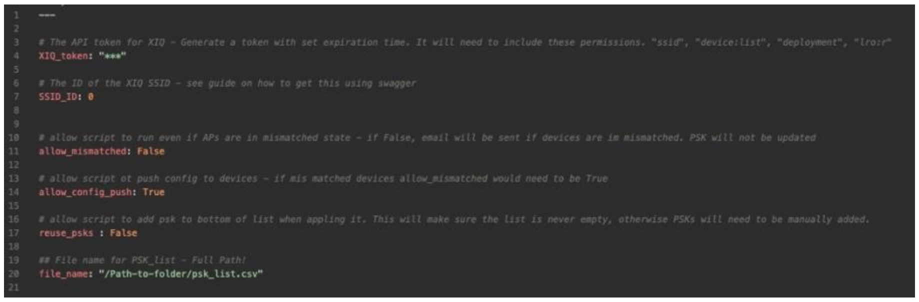
NOTE: If you are using the ‘python --version’ command, you should use ‘pip install’ instead of ‘pip3 install’

Or the module can be installed individually using:

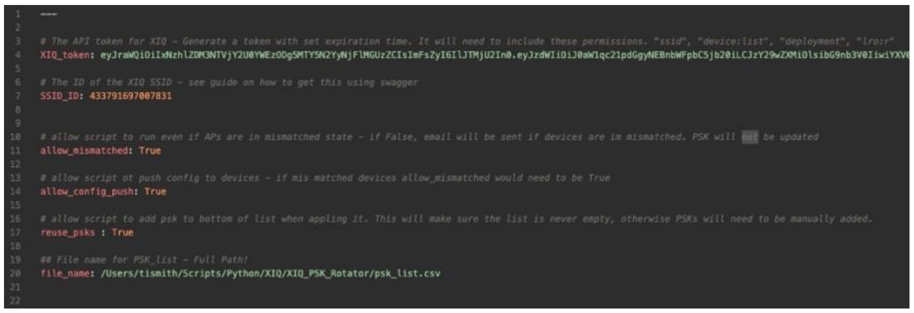
```
pip3 install requests
pip3 install PyYAML
pip3 install google-api-python-client
pip3 install google-auth-httplib2
pip3 install google-auth-oauthlib
```

Script Variables:

The script's custom variables will be loaded through the variables.yml file. This file must be updated with the correct values. We will briefly cover each of these and go into more detail below.



```
1  ---
2
3  # The API token for XIQ - Generate a token with set expiration time. It will need to include these permissions. "ssid", "device:list", "deployment", "lro:r"
4  XIQ_token: "***"
5
6  # The ID of the XIQ SSID - see guide on how to get this using swagger
7  SSID_ID: 0
8
9
10 # allow script to run even if APs are in mismatched state - if False, email will be sent if devices are im mismatched. PSK will not be updated
11 allow_mismatched: False
12
13 # allow script ot push config to devices - if mis matched devices allow_mismatched would need to be True
14 allow_config_push: True
15
16 # allow script to add psk to bottom of list when appling it. This will make sure the list is never empty, otherwise PSKs will need to be manually added.
17 reuse_psks : False
18
19 ## File name for PSK_list - Full Path!
20 file_name: "/Path-to-folder/psk_list.csv"
21
```



```
1  ---
2
3  # The API token for XIQ - Generate a token with set expiration time. It will need to include these permissions. "ssid", "device:list", "deployment", "lro:r"
4  XIQ_token: eyJraWQiOiIxNzhlZDM3NTVjY2U0YWEzODg5MTY5N2YyNjFlMGUzZCIsImFsZyI6IlJTMjU2In0.eyJzdWIiOiJ0aW1qc21pdGgyNEBnbWFpbC5jb20iLCJzY29wZXMiOlsibG9nb3V0IiwiYXV
5
6  # The ID of the XIQ SSID - see guide on how to get this using swagger
7  SSID_ID: 433791697007831
8
9
10 # allow script to run even if APs are in mismatched state - if False, email will be sent if devices are im mismatched. PSK will not be updated
11 allow_mismatched: True
12
13 # allow script ot push config to devices - if mis matched devices allow_mismatched would need to be True
14 allow_config_push: True
15
16 # allow script to add psk to bottom of list when appling it. This will make sure the list is never empty, otherwise PSKs will need to be manually added.
17 reuse_psks : True
18
19 ## File name for PSK_list - Full Path!
20 file_name: /Users/tismith/Scripts/Python/XIQ/XIQ_PSK_Rotator/psk_list.csv
21
22
```

XIQ and script behavior

Line 4 XIQ_Token – a token can be generated to only allow access to view/edit SSIDs, list devices, deploy configuration, and check the status of operations. Details on generating this token are below in the Generating the XIQ Token, specifically the Generating Specific Tokens sub-section.

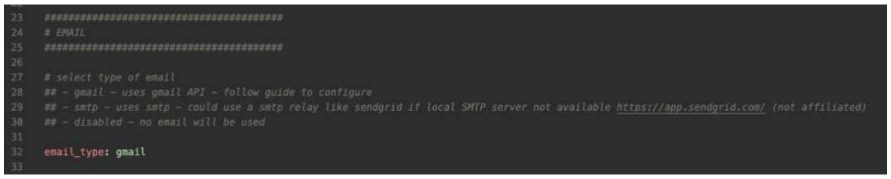
Line 7 SSID_ID—When created, Each SSID in XIQ has a unique ID assigned to it. In the XIQ SSID ID section, we will cover how to get this ID.

Line 11 allow_mismatched—If this is set to False, the script will not run if any devices are mismatched. Devices can be corrected, and the script can be rerun. If this is set to **True**, the script will change the PSK and push all pending configuration changes with the PSK change.

Line 14 allow_config_push - If this is set to **False**, the script will change the PSK, but a user would need to manually push the configuration to the devices for it to be applied. If this is set to **True**, the script will push a delta config to the devices.
Line 17 reuse_psks – If this is set to **True**, the script will add the PSK to the bottom of the list after applying it. If it's set to **False**, the PSK will be removed from the CSV.
Line 20 file_name – This is the filename for the PSK CSV with the full path to the folder. You can update the included psk_list.csv file, but the full path needs to be added.

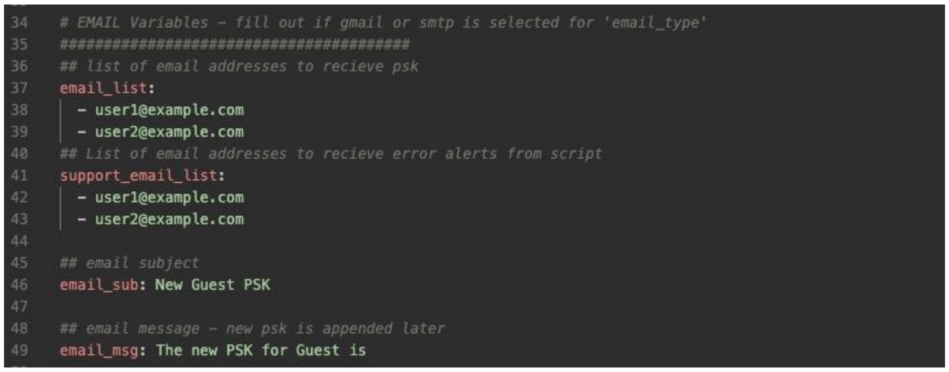
Email

Line 32 email_type – You can specify how the script will use email.
The following options are available:



```
23  ########################################
24  # EMAIL
25  ########################################
26
27  # select type of email
28  ## - gmail - uses gmail API - follow guide to configure
29  ## - smtp - uses smtp - could use a smtp relay like sendgrid if local SMTP server not available https://app.sendgrid.com/ (not affiliated)
30  ## - disabled - no email will be used
31
32  email_type: gmail
33
```

1. **gmail**: use the Gmail API to send emails from a Gmail account. See the Creating the Google Cloud Token and Refresh Token section.
2. **smtp**: use an SMTP server or SMTP relay. See the SMTP section. Or the SMTP Relay section.
3. **disabled**: if emails will not be used by the script. Email messages will be added to the log file.

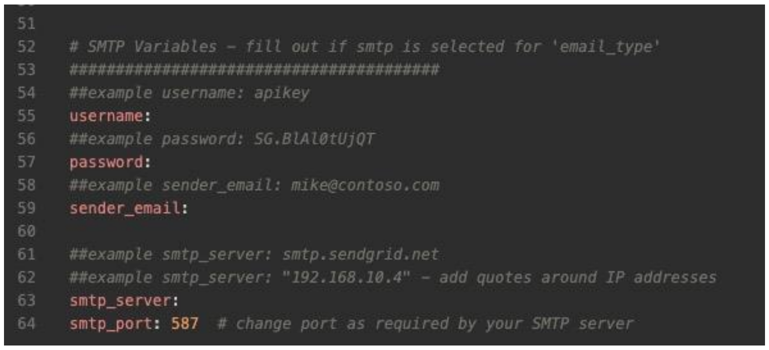


```
34  # EMAIL Variables - fill out if gmail or smtp is selected for 'email_type'
35  ########################################
36  ## list of email addresses to recieve psk
37  email_list:
38    - user1@example.com
39    - user2@example.com
40  ## List of email addresses to recieve error alerts from script
41  support_email_list:
42    - user1@example.com
43    - user2@example.com
44
45  ## email subject
46  email_sub: New Guest PSK
47
48  ## email message - new psk is appended later
49  email_msg: The new PSK for Guest is
```

Line 37 email_list – a list of email addresses to which you want the PSK to be sent. Add the email address below with a **–** in front of them as seen.
Line 41 support_email_list – a list of email addresses to receive errors from the script.
Line 46 email_sub – the subject for the email to be sent
Line 49 email_msg – this is what the email body will contain. The PSK, when generated, will be appended to the end of this message.

SMTP (optional)

If you use SMTP, the last section of the variables.yml file needs to be updated.
Line 55 username – The username for the SMTP user.
Line 57 password – The users password
Line 59 sender_email – the email address of the sender
Line 63 smtp_server – the FQDN or IP address of the SMTP server.



```
51
52  # SMTP Variables - fill out if smtp is selected for 'email_type'
53  ########################################
54  ##example username: apikey
55  username:
56  ##example password: SG.BlAl0tUjQT
57  password:
58  ##example sender_email: mike@contoso.com
59  sender_email:
60
61  ##example smtp_server: smtp.sendgrid.net
62  ##example smtp_server: "192.168.10.4" - add quotes around IP addresses
63  smtp_server:
64  smtp_port: 587  # change port as required by your SMTP server
```

NOTE: You will need to add “”s around IP addresses.

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Line 64 smtp_port – 587 is the standard port, but it can be changed here if needed.

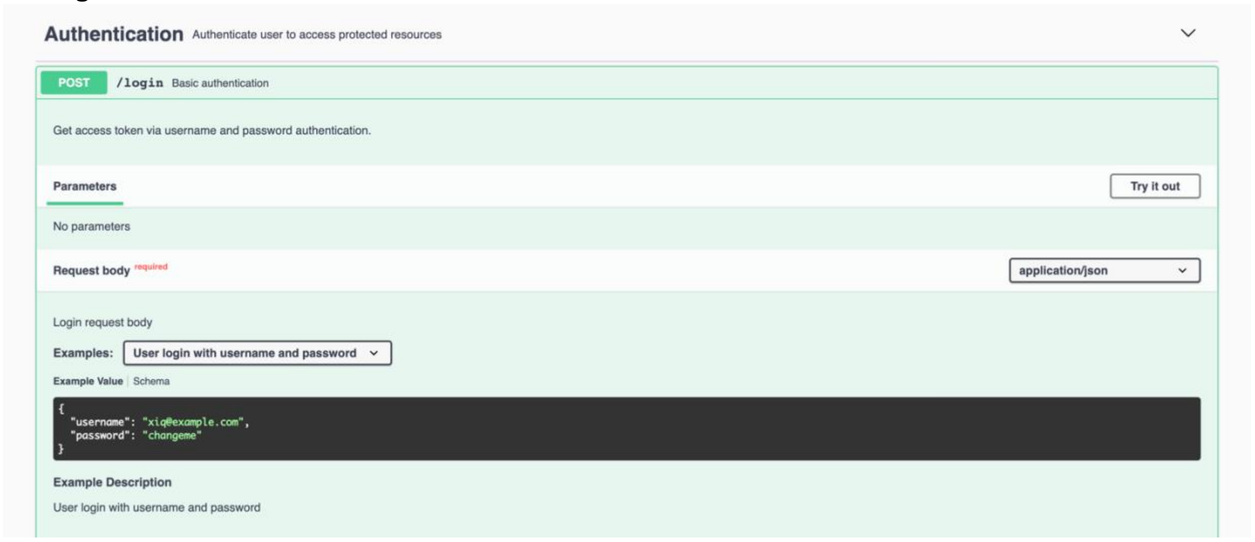
Generating the XIQ Token

You can view our developer portal site at https://developer.extremecloudiq.com. You can find a link to our swagger page and other developer tools here. There is also a Communities section to reach out to with any questions.

Swagger

We will use the swagger interface to generate the token https://api.extremecloudiq.com/. On the swagger page, clicking on any API will expand information about the API and allow you to try it. Clicking the "Try it out" button, filling out any needed information, and then clicking the execute button will allow you to try that specific API call.

The second-generation APIs are based on access tokens generated by an XIQ account. For more details, see A Guide to Getting Started with v2 APIs in XIQ. Currently, these tokens can only be generated through the /login POST API request; they cannot be generated through the XIQ GUI.



Get access token via username and password authentication.

No parameters

Login request body

```
{
  "username": "xiq@example.com",
  "password": "changeme"
}
```

Example Description

User login with username and password

Login

Request Body

```
{
  "username": "xiq@example.com",
  "password": "changeme"
}
```

The */login* POST request is used to generate an access token. In the request body, enter a local administrator XIQ account username and password, and the API will respond with an access token that can be used for any following calls. This token will be valid for **24 hours** after

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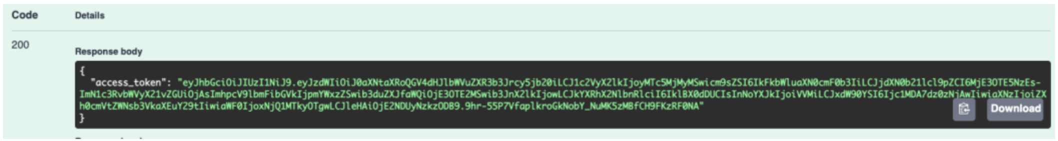
creation, and this token will have the ability to be used for **any** of the API calls the user is authorized for within XIQ.

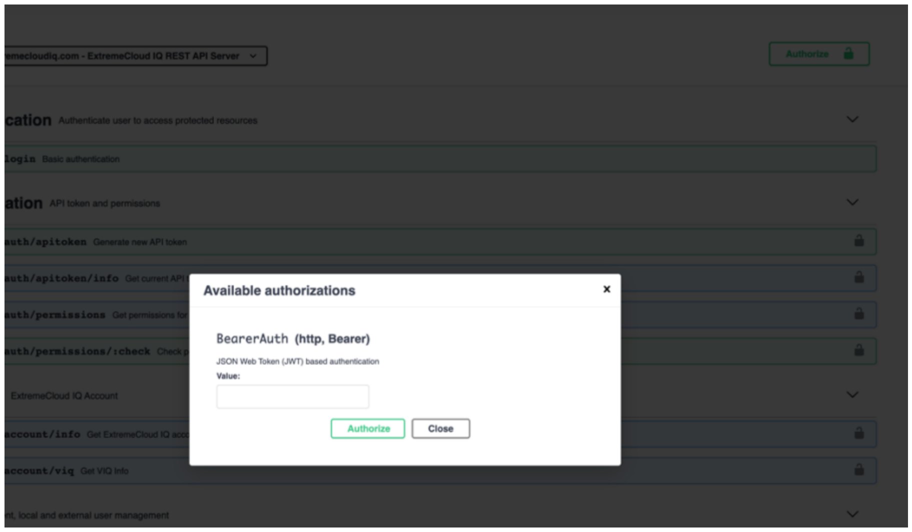


```
{
  "access_token": "eyJhbGciOiJIUzI1NiJ9.eyJzdWIiOiJ0aXNtaXRoQGV4dHJlbWVuZXR3b3Jrcy5jb20iLCJ1c2VyX2lkIjoyMTc5MjMyMSwicm9sZSI6IkFkbWluaXN0cmF0b3IiLCJjdXN0b21lcl9pZCI6MjE3OTE5NzEs-
ImN1c3RvbWVyX21vZGUiOjAsImhpcV9lbmFibGVkIjpmYWxzZSwib3duZXJfaWQiOjE3OTE2MSwib3JnX2lkIjowLCJkYXRhX2NlbnRlciI6IklBX0dDUCIsInNoYXJkIjoiVVMiLCJxdW90YSI6Ijc1MDA7dz0zNjAwIiwiaXNzIjoiZX
h0cmVtZWNsb3VkaXEuY29tIiwiaWF0IjoxNjQ1MTkyOTgwLCJleHAiOjE2NDUyNzkzODB9.9hr-5SP7VfaplkroGkNobY_NuMK5zMBfCH9FKzRF0NA"
}
```

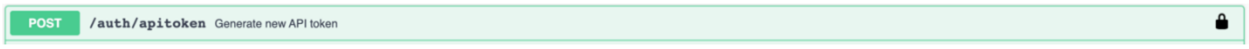
For this script, we will use this token to generate a separate token with limited access and a specified expiration time. Copy the access token created, not including the “”s.

Authorize in Swagger

At the top of the Swagger page, click the authorize button. A window will pop up, allowing you to paste the access token. Clicking “Authorize” Swagger will set Swagger to use the added access token for the API calls on the page.


emecloudiq.com - ExtremeCloud IQ REST API Server
Authorize
cation Authenticate user to access protected resources
login Basic authentication
ation API token and permissions
auth/apitoken Generate new API token
auth/apitoken/info Get current API
auth/permissions Get permissions for
auth/permissions/:check Check p
ExtremeCloud IQ Account
account/info Get ExtremeCloud IQ acc
account/viq Get VIQ Info
nt, local and external user management
Available authorizations
BearerAuth (http, Bearer)
JSON Web Token (JWT) based authentication
Value:
Authorize
Close

Generating Specific Tokens



The */auth/apitoken* POST request allows you to specify an expiration time and set permissions for a token. This is a great way to create a token for a specific application or script, only allowing the token to perform the needed tasks.
The expiration time uses Epoch time, which is the number of seconds since midnight on Jan 1, 1970 (UTC). https://www.epochconverter.com/ is a webpage that can convert a readable time to an epoch time or epoch time to a more readable time. Set a time for 1 year out and get the epoch time.
For this script, we will want to have the following permissions - *"ssid", "device:list", "deployment", "lro:r"*

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This will give us access to view and update SSIDs, view the devices, deploy delta configuration updates, and check the status of operations.
Adding the desired expiration time and a list of permissions, this API will return a token that is only usable by the specified APIs.

Request Body

```
{
  "description": "Token for XIQ_PSK_Rotator.py  script",
  "expire_time": 1723901676,
  "permissions": [
"ssid",
"device:list",
"deployment",
"lro:r"
  ]
}
```

Response Body

```
{
  "access_token":
"eyJhbGciOiJIUzI1NiJ9.eyJzdWIiOiJ0aW1qc21pdGgyNEBwcm90b25tYWlsLmNvbSIsInNjb3BlcyI6WyJhY2NvdW50OnIiXSwidXNlcklkIjoyMTc5MjMyMSwicm9sZSI6IkFkbWluaXN0
cmF0b3IiLCJjdXN0b21lcklkIjoyMTc5MTk3MSwiY3VzdG9tZXJNb2RlIjowLCJoaXFFbmFibGVkIjpmYWxzZSwib3duZXJJZCI6MTc5MTYxLCJvcmdJZCI6MCwiZGF0YUNlbnRlciI6IklB
X0dDUCIsImlzcyI6ImV4dHJlbWVjbG91ZGlxLmNvbSIsImlhdCI6MTYyODE4MzA4OSwiZXhwIjoxNjI4MTg2NDI4fQ.CtBGq4YVGB9FzCodr6Oi5IG8yy1-4B-77AWl5rVG3S0",
  "create_time": "2021-11-29T15:47:57.000+0000",
  "expire_time": "2021-11-29T16:10:08.000+0000",
  "creator_id": 21792321,
  "customer_id": 21791971,
  "description": "Token for XIQ_PSK_Rotator.py script",
  "permissions": [
    "ssid",
    "device:list",
    "deployment",
    "lro:r"
  ]
}
```

Copy the newly created **access_token** and add it to the **XIQ_token** variable in the variable.yml file.

Creating the Google Cloud Token and Refresh Token

A token must be generated every time the script is run to access the Gmail using API. This token is only valid for 1 hour but can be easily generated within the script using a provided credentials.json file and a Refresh token. The sections below cover what is needed to allow API access to your Google Cloud environment, create the credentials.json file, authorize the script to use the JSON file information and generate the refresh token. If you are not going to Gmail's API this section can be skipped.

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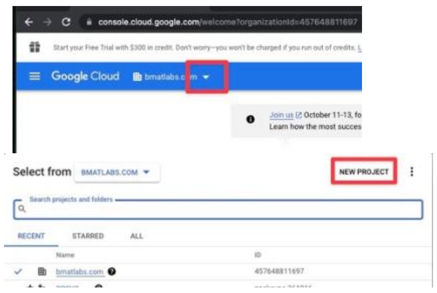
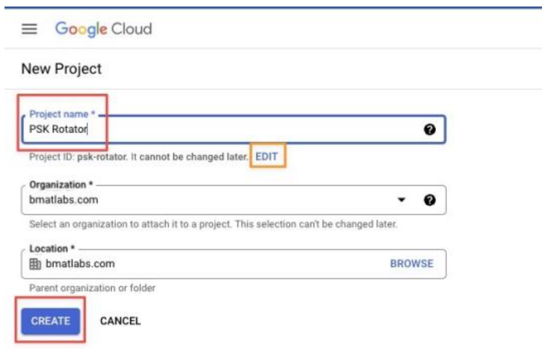
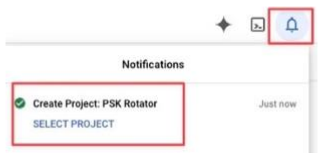
Creating the Google Cloud Project



To create the Google Cloud Project needed to access Gmail using API, open a browser and go to console.cloud.google.com. Once logged in, click the dropdown on the top left. This could be the domain name you are using, another project you've created, or you may say "New Project." Clicking that dropdown will open a new window allowing you to select different projects you have. A button to create a new project is on the top right of that window.

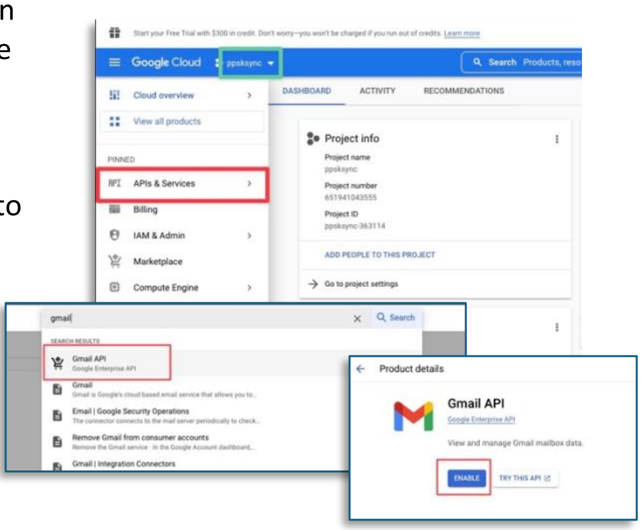

Google Cloud
New Project
Project name *
PSK Rotator
Project ID: psk-rotator. It cannot be changed later.
EDIT
Organization *
bmatlabs.com
Select an organization to attach it to a project. This selection can't be changed later.
Location *
bmatlabs.com
BROWSE
Parent organization or folder
CREATE
CANCEL

In the newly opened window, set the project name you will create. You can edit the Project ID optionally as well. Once completed, click the **Create button.**



The project will take a second to create. You can monitor the notification section to see once it's complete.

Once you see the green check in the notifications, you can open the project by clicking Select Project or selecting the new project from the dropdown.



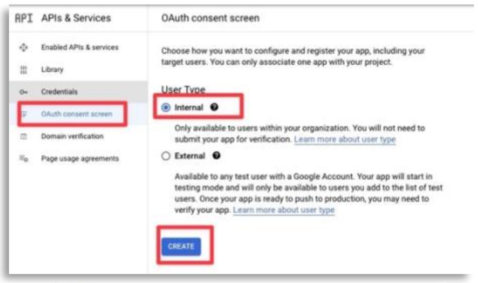
First, we must enable the Gmail API, granting API access to the logged-in user's email.

Search for "Gmail API" and select the result. This will open a window where you can choose to **Enable** the APIs.

Creating the Google Cloud API OAuth Consent Screen

Now that your Google Cloud project is created, you must set up the Consent Screen for OAuth. This will allow you to provide approval to grant access to the script. This page will just be shown the first time the script is run. See the [Generating Google Cloud token and refresh token]() section.

On the left of the APIs & Services page, select the **OAuth consent screen** tab, select the **Internal** User Type button, and click **Create.**

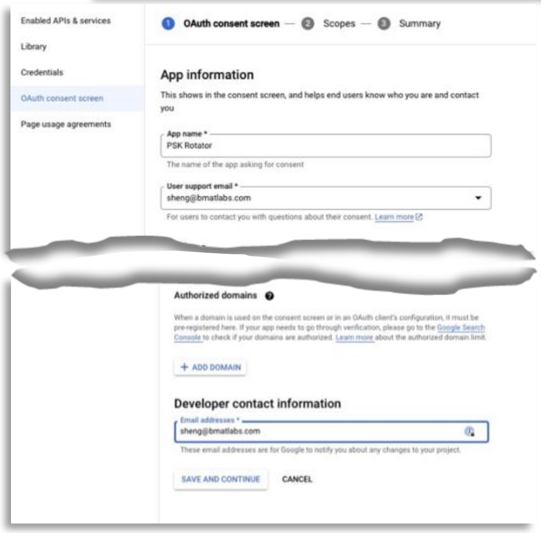


Choose how you want to configure and register your app, including your target users. You can only associate one app with your project.

Internal: Only available to users within your organization. You will not need to submit your app for verification. Learn more about user type

External: Available to any test user with a Google Account. Your app will start in testing mode and will only be available to users you add to the list of test users. Once your app is ready to push to production, you may need to verify your app. Learn more about user type

For the app information, fill out the app name, select the user support email, and enter your email for the developer's contact information. Everything else on the form can be left blank.



This shows in the consent screen, and helps end users know who you are and contact you

App name *: PSK Rotator
The name of the app asking for consent

User support email *: sheng@bmatlabs.com
For users to contact you with questions about their consent. Learn more

When a domain is used on the consent screen or in an OAuth client's configuration, it must be pre-registered here. If your app needs to go through verification, please go to the Google Search Console to check if your domains are authorized. Learn more about the authorized domain limit.

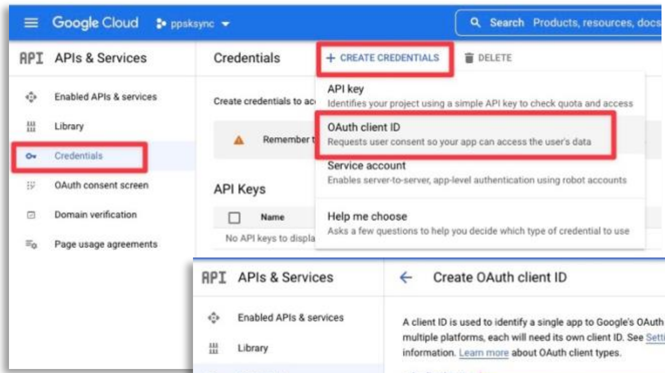
Email addresses *: sheng@bmatlabs.com
These email addresses are for Google to notify you about any changes to your project.

Click the **save and continue** button. On the scopes page, leave everything blank and click the **save and continue** button at the bottom. We will be setting the scope the first time the script runs.

Creating the Google Cloud API OAuth Credentials

Next, we must create the OAuth credentials for the Google Cloud API.

Select the Credentials tab on the left of the APIs & Services page. At the top of that page, choose **Create Credentials** and select **OAuth client ID** from the drop-down.



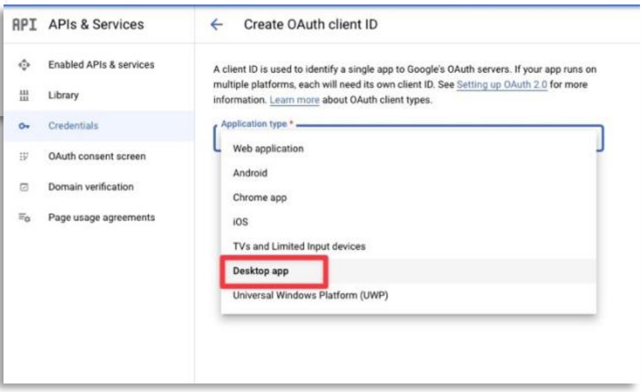
API key: Identifies your project using a simple API key to check quota and access

OAuth client ID: Requests user consent so your app can access the user's data

Service account: Enables server-to-server, app-level authentication using robot accounts

Help me choose: Asks a few questions to help you decide which type of credential to use

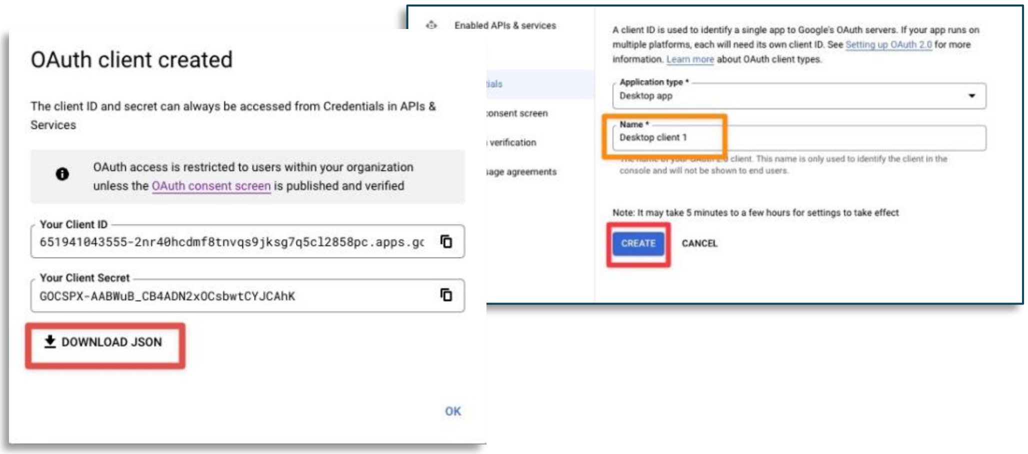
When the OAuth client ID opens, select the **Desktop app** for the Application Type.



A client ID is used to identify a single app to Google's OAuth servers. If your app runs on multiple platforms, each will need its own client ID. See Setting up OAuth 2.0 for more information. Learn more about OAuth client types.

Then, enter the name you would like for the client in the next window and click **Create**.

Select the 'Download JSON' button when the OAuth client is created.


OAuth client created

The client ID and secret can always be accessed from Credentials in APIs & Services

OAuth access is restricted to users within your organization unless the OAuth consent screen is published and verified

Your Client ID: 651941043555-2nr40hcdmf8tnvqs9jksg7q5cl2858pc.apps.gc

Your Client Secret: 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

A client ID is used to identify a single app to Google's OAuth servers. If your app runs on multiple platforms, each will need its own client ID. See Setting up OAuth 2.0 for more information. Learn more about OAuth client types.

Application type *: Desktop app

Name *: Desktop client 1

client. This name is only used to identify the client in the console and will not be shown to end users.

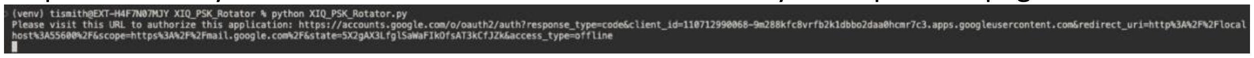
Note: It may take 5 minutes to a few hours for settings to take effect

The JSON file will download to your browser's default location. The file will be named something like "**client_secret_{the_id_created}pc.apps.googleusercontent.com.json**". Rename this file to "**credentials.json**" and move it to the folder where the script is located.

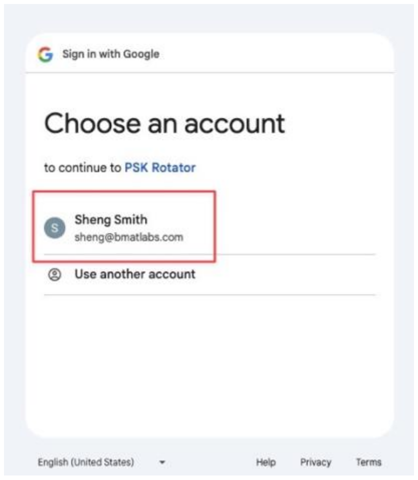
NOTE: The first time the script runs, it will read the credentials.json file and ask you to authenticate the Google app **in the browser**. After doing this the first time, the script will save a file called token.pickle. As long as this token.pickle file is present, the script will not need to authenticate in the browser again.

Generating a Token and Refresh token

The first time the script is run (or if the token.pickle file is missing), the script will use the credentials.json file to authorize the script to access your Gmail. Ensure the credentials.json file has been renamed and added to the same folder as the script. When the script is run, a URL will be provided for you to authorize access. A web browser may also open this page.


```
(venv) tismith@EXT-H4F7N07MJY XIQ_PSK_Rotator % python XIQ_PSK_Rotator.py
Please visit this URL to authorize this application: https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=110712990068-9m288kfc8vrfb2k1dbbo2daa0hcmr7c3.apps.googleusercontent.com&redirect_uri=http%3A%2F%2Flocal
host%3A55600%2F&scope=https%3A%2F%2Fmail.google.com%2F&state=5X2gAX3LfglSaWaFIkOfsAT3kCfJZk&access_type=offline
█
```

With the linked browser page open, select the Google Cloud user.



Choose an account

to continue to PSK Rotator

Sheng Smith
sheng@bmatlabs.com

On the next page, confirm the Project name. You can also see what permissions the script requests. This grants the script permission to read, compose, send, and delete emails. This script will only ever send emails.

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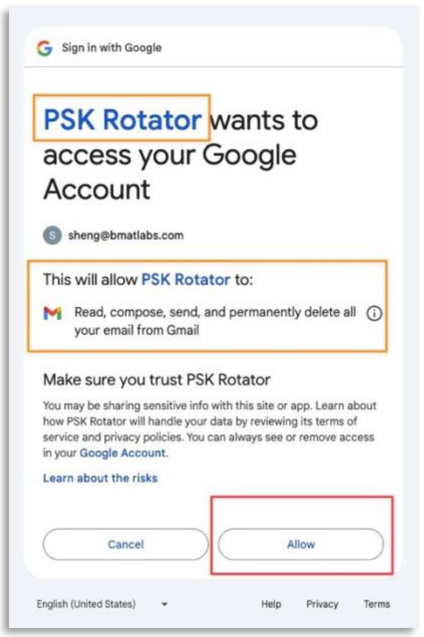
Once validated, select Allow. You can then close the browser, and the script will complete. A new file will be created called token.pickle. This file has the needed token and refresh token info, the client ID, and the client secret. It will be used in the gmail.py script to generate a new token each time the script is run.



Sign in with Google

PSK Rotator wants to access your Google Account

sheng@bmatlabs.com

This will allow PSK Rotator to:

Read, compose, send, and permanently delete all your email from Gmail

Make sure you trust PSK Rotator

You may be sharing sensitive info with this site or app. Learn about how PSK Rotator will handle your data by reviewing its terms of service and privacy policies. You can always see or remove access in your Google Account.

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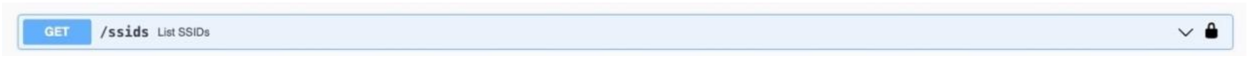
XIQ SSID ID

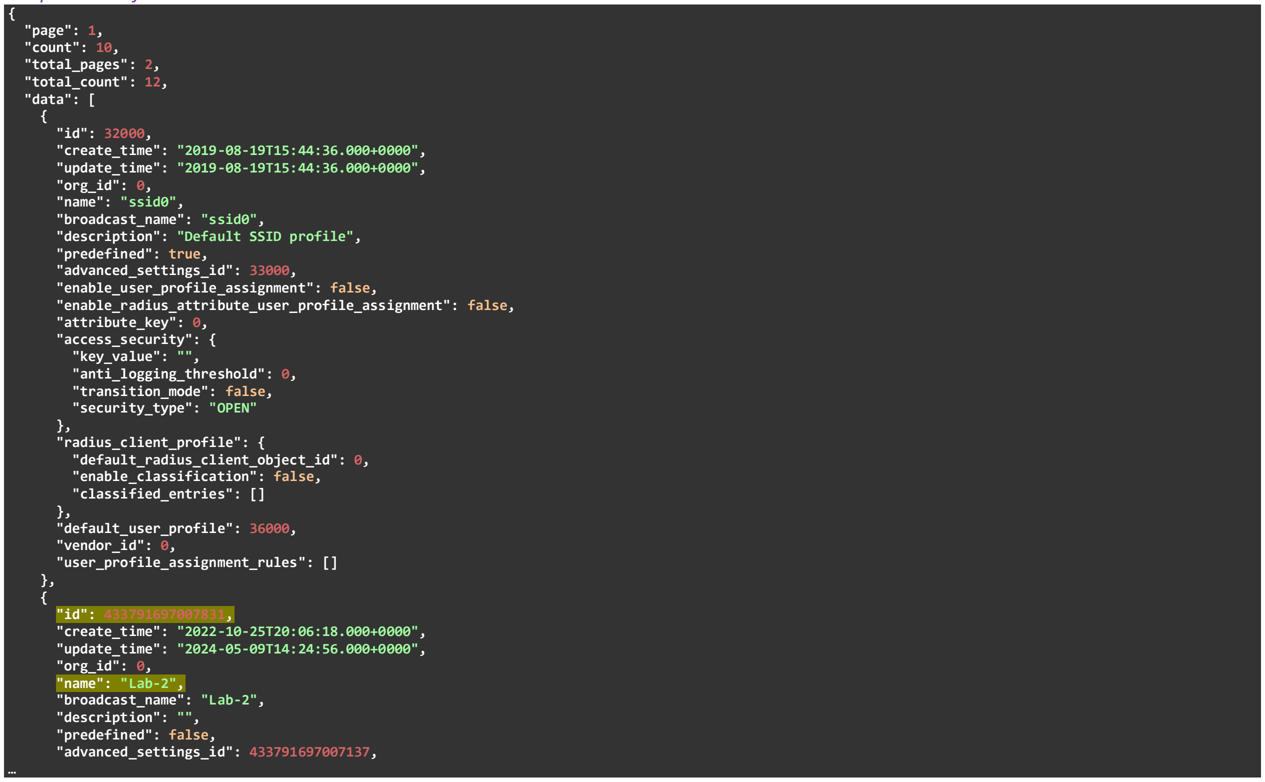
Each XIQ SSID will be assigned a unique ID when created. This is something that the backend systems use and is not seen in the GUI. The easiest way to get the ID is from the Swagger page.
Return to the swagger page, scroll to the Configuration – Policy section, and find the */ssids* GET request.



GET /ssids List SSIDs

Click the "Try it out" button, then the "Execute" button. When you find the Name of the XIQ SSID you want to use, it will be inside a pair of {curly brackets}. Inside the same pair of curly brackets will be an element called **id,** and this is the ID that is needed.

Response Body



```
{
  "page": 1,
  "count": 10,
  "total_pages": 2,
  "total_count": 12,
  "data": [
    {
      "id": 32000,
      "create_time": "2019-08-19T15:44:36.000+0000",
      "update_time": "2019-08-19T15:44:36.000+0000",
      "org_id": 0,
      "name": "ssid0",
      "broadcast_name": "ssid0",
      "description": "Default SSID profile",
      "predefined": true,
      "advanced_settings_id": 33000,
      "enable_user_profile_assignment": false,
      "enable_radius_attribute_user_profile_assignment": false,
      "attribute_key": 0,
      "access_security": {
        "key_value": "",
        "anti_logging_threshold": 0,
        "transition_mode": false,
        "security_type": "OPEN"
      },
      "radius_client_profile": {
        "default_radius_client_object_id": 0,
        "enable_classification": false,
        "classified_entries": []
      },
      "default_user_profile": 36000,
      "vendor_id": 0,
      "user_profile_assignment_rules": []
    },
    {
      "id": 433791697007831,
      "create_time": "2022-10-25T20:06:18.000+0000",
      "update_time": "2024-05-09T14:24:56.000+0000",
      "org_id": 0,
      "name": "Lab-2",
      "broadcast_name": "Lab-2",
      "description": "",
      "predefined": false,
      "advanced_settings_id": 433791697007137,
…
```

Once that is obtained, add it to the SSID_ID variable in the variables.yml file.

SMTP Relay

An SMTP relay is a service that facilitates the transmission of email messages from one server to another. SendGrid, a free cloud service, allows you to send up to 100 daily messages. To use this service, you must create an account and update your API key, 'To' address, and 'From' address variables. You can sign up at SendGrid, which is not affiliated with Extreme. The setup for the SMTP relay is not covered in this guide, but the necessary information should be collected and added to the SMTP section of the variable.yml file.

Running the Script:

To run the script, open the terminal (PowerShell for Windows) to the location of the script and run:

```
Python3 XIQ_PSK_Rotator.py
```

You can also make the script executable by running

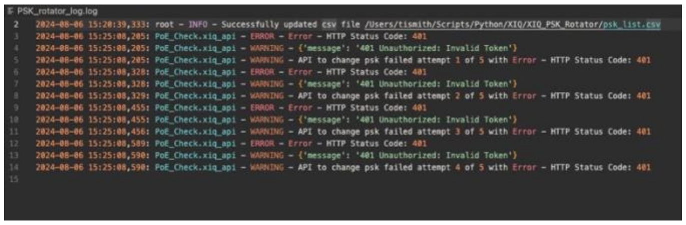
```
chmod +x XIQ_PSK_Rotator.py
```

Then, you can run the script by typing

```
./XIQ_PSK_Rotator.py
```

Log File

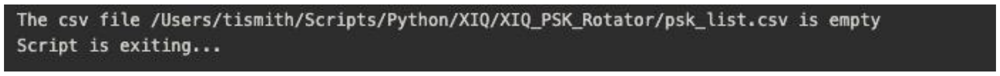
Upon running the script, a log file named PSK_rotator_log.log will be created. Additional runs of the script will be appended to this log file.
This file will contain successful PSK updates, CSV file updates, and any API issues.



```
PSK_rotator_log.log
2024-08-06 15:20:39,333: root - INFO - Successfully updated csv file /Users/tismith/Scripts/Python/XIQ/XIQ_PSK_Rotator/psk_list.csv
2024-08-06 15:25:08,205: PoE_Check.xiq_api - ERROR - Error - HTTP Status Code: 401
2024-08-06 15:25:08,205: PoE_Check.xiq_api - WARNING - {'message': '401 Unauthorized: Invalid Token'}
2024-08-06 15:25:08,205: PoE_Check.xiq_api - WARNING - API to change psk failed attempt 1 of 5 with Error - HTTP Status Code: 401
2024-08-06 15:25:08,328: PoE_Check.xiq_api - ERROR - Error - HTTP Status Code: 401
2024-08-06 15:25:08,328: PoE_Check.xiq_api - WARNING - {'message': '401 Unauthorized: Invalid Token'}
2024-08-06 15:25:08,329: PoE_Check.xiq_api - WARNING - API to change psk failed attempt 2 of 5 with Error - HTTP Status Code: 401
2024-08-06 15:25:08,455: PoE_Check.xiq_api - ERROR - Error - HTTP Status Code: 401
2024-08-06 15:25:08,455: PoE_Check.xiq_api - WARNING - {'message': '401 Unauthorized: Invalid Token'}
2024-08-06 15:25:08,456: PoE_Check.xiq_api - WARNING - API to change psk failed attempt 3 of 5 with Error - HTTP Status Code: 401
2024-08-06 15:25:08,589: PoE_Check.xiq_api - ERROR - Error - HTTP Status Code: 401
2024-08-06 15:25:08,590: PoE_Check.xiq_api - WARNING - {'message': '401 Unauthorized: Invalid Token'}
2024-08-06 15:25:08,590: PoE_Check.xiq_api - WARNING - API to change psk failed attempt 4 of 5 with Error - HTTP Status Code: 401
```

CSV File

When run, the script will take the top PSK from the list in the CSV file. If the reuse_psks variable is set to True, the PSK will be added to the bottom of the list; if it is set to False, the PSK will be removed. After the PSK has been updated in XIQ the script will save the CSV file. Make sure to add additional PSKs to the CSV as needed. If the CSV list is empty, the script will print and email a message that the list is empty and quit.



```
The csv file /Users/tismith/Scripts/Python/XIQ/XIQ_PSK_Rotator/psk_list.csv is empty
Script is exiting...
```

Scheduling Script to Run

Mac & Linux-based Systems

A Cron job can be set up to run the script at a specified interval automatically. Ideally, this could be set for every day, week, or month, ensuring that the PSK is rotated automatically. The script can also be run manually between those times if a PSK needs to be rotated immediately.

Setting up a Cron Job

Open and edit the crontab and configure the job according to the command you want to run. From the terminal window, enter the following command.

```
crontab -e
```

There are three parts to a cron job configuration.

Cron Job Time Format

Part 1 of the cron job

The first five characters, a b c d e, represent the job's time, date, and repetition.

a – Minute (0-59)
b – Hour (0-23)
c – Day (0-31)
d – Month (0-12) – 0=None and 12 = December
e – Day of the Week (0-7) – 0=Sunday and 7=Sunday

- **An asterisk (*)** stands for all values. Use this operator to keep tasks running during all months, or all days of the week.
- **A forward-slash (/)** is used to divide a value into steps. (*/2 would be every other value, */3 would be every third, */10 would be every tenth, etc.)

The time format would look like this to set the Cron job to run daily at 3 am.

```
0 3 * * *
```

The time format would look like this to set the Cron job to run at midnight on the 1st of the month.

```
0 0 1 * *
```

The time format would look like this to set the Cron job to run at 8 AM every Sunday.

```
0 8 * * 0
```

Cron Job Script and Script Location

Part 2 of the cron job

The next part is where you enter the script you want to run and its location.

```
python3 /home/admin/documents/scripts/XIQ_PSK_Rotator.py
```

You can make the script executable, so you don't have to type python3 before entering the script. Instead, you will enter a period before the location.

```
chmod +x /home/admin/documents/scripts/XIQ_PSK_Rotator.py
```

```
./home/admin/documents/scripts/XIQ_PSK_Rotator.py
```

Cron Job Output and Job Completion

Optional Part 3 of the cron job

The last part is optional and specifies where the script's output and completion should go. If not set, the cron will email the owner of the crontab file.

It is recommended that something be set for the output to avoid filling up the server's inbox. This can be set to append to a file.

```
>> /home/admin/documents/scripts/XIQ_PSK_Rotator-Output.txt
```

Or can it be set to turn off the email output

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```
> /dev/null 2>&1
```

Cron Job Command Example

The command should be entered in a single line and saved in the crontab file.

Every Monday at 8 am turning off the output

```
0 8 * * 1 python3 /home/admin/documents/scripts/XIQ_PSK_Rotator.py > /dev/null 2>&1
```

Every Month on the 15th at Midnight, with saved output

```
0 0 15 * * ./home/admin/documents/scripts/XIQ_PSK_Rotator.py >> /home/admin/documents/scripts/XIQ_PSK_Rotator-Output.txt
```

Windows based Systems

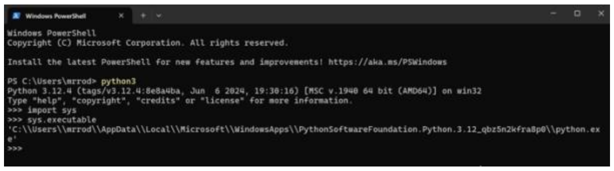
A Windows task schedule can be set up to run the script at a specified interval automatically. Ideally, this could be set for every day, week, or month, ensuring that the PSK is rotated automatically. The script can also be run manually between those times if a PSK needs to be rotated immediately.

Setting up Windows Task Scheduler

Open Control Panel > System and Security > Administrative Tools > Task Scheduler
Selected 'Create basic task....'
Give your task a name like 'XIQ_PSK_Rotator' and click 'Next.'
Select if you want the script to run Daily, Weekly, Monthly, etc, and click 'Next.'
Adjust settings for the scheduled and click 'Next.'
Select 'Start a program and click 'Next.'

Start a Program

For the Program/script: section, enter the path of your python.exe file.
The location of your python.exe file depends on how it was installed. An easy way to find this location is to open Windows PowerShell and enter python3. This will open the Python interpreter. In the interpreter, enter **import sys,** then **sys.executable**.



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\mrrod> python3
Python 3.12.4 (tags/v3.12.4:8e8a4ba, Jun  6 2024, 19:30:16) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import sys
>>> sys.executable
'C:\\Users\\mrrod\\AppData\\Local\\Microsoft\\WindowsApps\\PythonSoftwareFoundation.Python.3.12_qbz5n2kfra8p0\\python.ex
e'
>>>
```

This will output the location of the python.exe file. Enter **exit()** to exit the interpreter.

Enter the full path of the python.exe file in the Program/Script: field. Make sure not to copy the ''s around the path.

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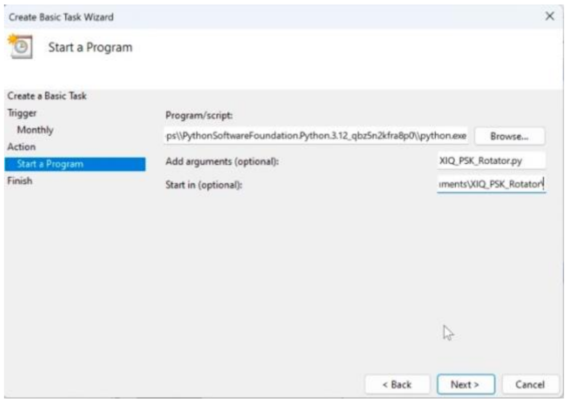
Enter the script's name in the Add arguments (optional) field.

```
XIQ_PSK_Rotator.py
```

Enter the script's location in the Start in the (optional) field.

```
C:\user\your_python_project_path
```

Click 'Next.'
Click 'Finish'


Create Basic Task Wizard

Start a Program

Program/script: ps\\PythonSoftwareFoundation.Python.3.12_qbz5n2kfra8p0\\python.exe

Add arguments (optional): XIQ_PSK_Rotator.py

Start in (optional): ıments\XIQ_PSK_Rotator\