# Verizon ESPX Qlik Task Python Trigger

Bardess Group Ltd.

Gary Strader

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# Features

* Pass in either a task name or ID to trigger task.
* Performs asynchronous polling to wait for task status.
* Configurable timeout for how long to wait for a task to return.
* Configurable polling frequency – how often to recheck task status.
* Console and file-based logging of task trigger status.

# Requirements and Installation

## Python

Installation of python 3.x on the server triggering the tasks. This utility may work on python 2.x but it was tested on 3.8.1 64 bit for Windows. This should work on linux but was only tested on Windows.

Python may be downloaded here: <https://www.python.org/downloads/>

## Install requests package

After python is installed, from a command prompt run the following:

pip install requests

Then run the following:

pip install requests\_ntlm

## Script Files

Two files are required to be placed in any folder on the server that will be triggering the tasks.

qrspy.py – a python wrapper that calls the QRS API. It is important to use the script we have provided.  
qlik\_task\_start.py – this is the custom script that Bardess wrote.

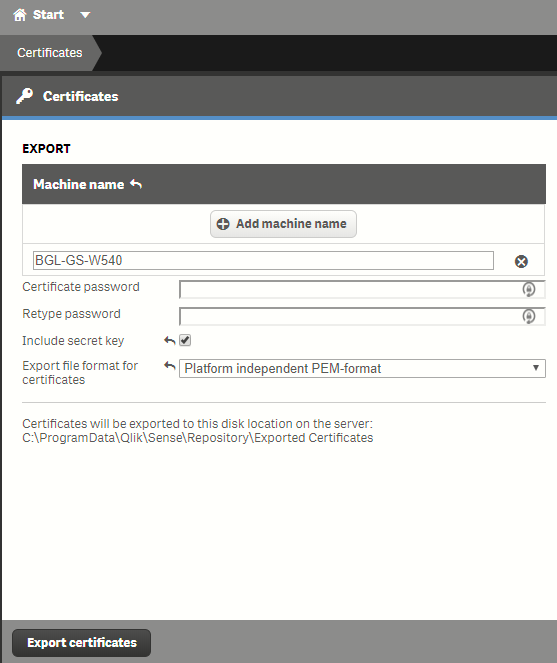
For example, you could place these two scripts in a folder such as c:\Qlik\Utilities\. It doesn’t matter where the scripts are placed so you may organize them as you see fit.

## Qlik Certificates

You will need to export the certificates from the Qlik server you would like to trigger the tasks on. Exported certificates need to be placed in a folder on the server you are triggering the tasks from.

On the Qlik Scheduler server you want trigger tasks on, go to QMC and Certificates. You will enter the local hostname of the server. Don’t enter a password. Check the “include secret key” checkbox. Change “Export file format” to “Platform independent PEM-format”. Then you will go to the folder shown in “Certificates will be exported to this disk location on the server:” and copy two files - client.pem and client\_key.pem. These need to be copied over to a folder on the ESPX server that you will be triggering the tasks from. This ESPX server folder location is an argument to the script (see below).

Example of certificate export screen:



# Usage and Parameters

> python qlik\_task\_start.py

usage: qlik\_task\_start.py [-h]

--task\_id\_or\_name TASK\_ID\_OR\_NAME

--host\_name HOST\_NAME

--certificate\_path CERTIFICATE\_PATH

[--timeout\_seconds TIMEOUT\_SECONDS]

[--poll\_frequency POLL\_FREQUENCY]

[--kill\_task KILL\_TASK]

## --task\_id\_or\_name

Required argument. Pass in either a task ID or task name. Script will query the server looking for other and only run the task if it is found by either ID or name.

## --host\_name

Required argument. Host name of the Qlik scheduling server to trigger the task. Can be host name only, FQDN, or IP address – whatever is network addressable from the triggering server.

## --certificate\_path

Required argument. Path to the certificate files exported from Qlik. The script will use these certificate files to authenticate against the Qlik scheduling server and connect to the QRS API to trigger tasks. client.pem and client\_key.pem certificate files are used for this.

## --timeout\_seconds

Optional argument, default 60 seconds. The number of seconds that the script will wait for a task status result before exiting script. Note that this setting does not affect the running task, only polling the results. If the polling timeout is set to 60, but the task takes 90 seconds to complete, the task will still complete.

## --poll\_frequency

Optional argument, default 30 seconds. The number of seconds in between each poll of the started task.

## --kill\_task

Optional argument, default 0. 0 = do NOT kill task after timeout expires, 1 = kill task after timeout expires. Once the timeout seconds expire without success or failure of the task, this setting determines whether to attempt to stop the task or not. There is no guarantee the task will be successfully stopped. If the task is successfully stopped, it will show a status of “Aborted” in the QMC task list.

# Task Status Logging and Return Codes

The script will output log to two places. A file called qlik\_task\_start.log in the same folder as the python script. Each run will append to this log file so you can view history. The same information is also logged to the console output. Of course the console output only persists for your console session, but it is also saved in the log file. A standard CSV logging format is used which can be imported into many tools for analysis. See examples below.

The script will also return an operating system return code of 0 (success) or 1 (failure) which can be read using a method that depends on what operating system you are using. For example, in Windows using cmd.exe, you can read environment variable %ERRORLEVEL% to get the script return code.

# Qlik Task Status List

The following are the possible task statuses returned from Qlik Scheduler.

"0: NeverStarted"

"1: Triggered"

"2: Started"

"3: Queued"

"4: AbortInitiated"

"5: Aborting"

"6: Aborted"

"7: FinishedSuccess"

"8: FinishedFail"

"9: Skipped"

"10: Retry"

"11: Error"

"12: Reset"

WAIT statuses: the first four task statuses 0 – 3 will cause the script to wait until the status changes, up to the script timeout setting.

SUCCESS status: task status 7 FinishedSuccess is the only status return code that will be considered a task success.

ERROR statuses: tasks statuses 4 – 6 and 8 – 12 are considered task failures and will cause the script to exit with an error code.

# Possible error conditions and return codes

## Required parameters are not passed in

Three parameters are required, --task\_id\_or\_name, --host\_name, and –certificate\_path. If any of these three parameters are not passed in you will receive a message like this.

PS C:\Customers\Verizon\ESPX Qlik Trigger> python qlik\_task\_start.py

2020-02-26 10:30:34,551 6fa69063-6241-42dd-bad4-2421b07caee5 INFO Starting qlik\_task\_start.py

usage: qlik\_task\_start.py [-h] --task\_id\_or\_name TASK\_ID\_OR\_NAME --host\_name HOST\_NAME --certificate\_path CERTIFICATE\_PATH

[--timeout\_seconds TIMEOUT\_SECONDS] [--poll\_frequency POLL\_FREQUENCY] [--kill\_task KILL\_TASK]

qlik\_task\_start.py: error: the following arguments are required: --task\_id\_or\_name, --host\_name, --certificate\_path

## Invalid certificate used

If an invalid or wrong certificate is used you will receive a message like this.

2020-02-26 10:43:58,086 d4af694b-b59c-4962-8c39-092ea2ab4616 INFO Connecting to Qlik QRS API

2020-02-26 10:43:58,182 d4af694b-b59c-4962-8c39-092ea2ab4616 ERROR Qlik QRS API connection failure: <class 'json.decoder.JSONDecodeError'>

# Examples of calling from cmd.exe with return codes

> **python qlik\_task\_start.py --task\_id\_or\_name "Python Task Trigger - Success Immediate" --host\_name "bgl-gs-w540" --certificate\_path "C:/ProgramData/Qlik/Sense/Repository/Exported Certificates/BGL-GS-W540"**

2019-10-25 13:52:13,774 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Starting qlik\_start\_task.py

2019-10-25 13:52:13,775 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Timeout threshold seconds: 60

2019-10-25 13:52:13,776 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Poll frequency in seconds: 30

2019-10-25 13:52:13,781 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Running task 'Python Task Trigger - Success Immediate'

2019-10-25 13:52:13,782 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Hostname = bgl-gs-w540

2019-10-25 13:52:13,783 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Certificate path = C:/ProgramData/Qlik/Sense/Repository/Exported Certificates/BGL-GS-W540

2019-10-25 13:52:13,783 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Connecting to Qlik QRS API

2019-10-25 13:52:13,784 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Connected to Qlik QRS API

2019-10-25 13:52:13,880 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Last task execution: 2019-10-25T20:51:47.035Z

2019-10-25 13:52:13,880 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Starting task 'Python Task Trigger - Success Immediate'

2019-10-25 13:52:13,905 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Task started, response: (204 b'')

2019-10-25 13:52:13,929 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    WAIT: Task 'Python Task Trigger - Success Immediate' (3515d4cb-4f90-4150-bceb-db2c185e4e18) not started yet, waiting 30 seconds

2019-10-25 13:52:43,971 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Task execution detail: 'Changing task state to Triggered'

2019-10-25 13:52:43,971 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Task execution detail: 'Trying to start task. Sending task to slave scheduler bgl-gs-w540'

2019-10-25 13:52:43,978 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Task execution detail: 'Changing task state from Triggered to Started'

2019-10-25 13:52:43,981 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Task execution detail: 'Reference to scriptlog added'

2019-10-25 13:52:43,988 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    Task execution detail: 'Changing task state from Started to FinishedSuccess'

2019-10-25 13:52:43,993 1f3928c2-78ce-4b79-b0c7-b3d1c8d3e9d2    INFO    SUCCESS: Task 'Python Task Trigger - Success Immediate' (3515d4cb-4f90-4150-bceb-db2c185e4e18) finished with status FinishedSuccess

> echo %ERRORLEVEL%

0

> **python qlik\_task\_start.py --task\_id\_or\_name "d63984b1-9c81-4742-be1e-36b0d270a1d4" --host\_name "bgl-gs-w540" --certificate\_path "C:/ProgramData/Qlik/Sense/Repository/Exported Certificates/BGL-GS-W540" --poll\_frequency 5**

2019-10-25 13:53:21,569 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Starting qlik\_start\_task.py

2019-10-25 13:53:21,570 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Timeout threshold seconds: 60

2019-10-25 13:53:21,572 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Poll frequency in seconds: 5

2019-10-25 13:53:21,573 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Running task 'd63984b1-9c81-4742-be1e-36b0d270a1d4'

2019-10-25 13:53:21,580 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Hostname = bgl-gs-w540

2019-10-25 13:53:21,580 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Certificate path = C:/ProgramData/Qlik/Sense/Repository/Exported Certificates/BGL-GS-W540

2019-10-25 13:53:21,590 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Connecting to Qlik QRS API

2019-10-25 13:53:21,590 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Connected to Qlik QRS API

2019-10-25 13:53:21,655 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Last task execution: 2019-10-25T20:42:46.927Z

2019-10-25 13:53:21,655 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Starting task 'd63984b1-9c81-4742-be1e-36b0d270a1d4'

2019-10-25 13:53:21,679 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Task started, response: (204 b'')

2019-10-25 13:53:21,708 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    WAIT: Task 'Python Task Trigger - Failure 10 s' (d63984b1-9c81-4742-be1e-36b0d270a1d4) not started yet, waiting 5 seconds

2019-10-25 13:53:26,743 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    WAIT: Task 'Python Task Trigger - Failure 10 s' (d63984b1-9c81-4742-be1e-36b0d270a1d4) current status Started, 5 seconds elapsed

2019-10-25 13:53:31,770 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    WAIT: Task 'Python Task Trigger - Failure 10 s' (d63984b1-9c81-4742-be1e-36b0d270a1d4) current status Started, 10 seconds elapsed

2019-10-25 13:53:36,841 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Task execution detail: 'Changing task state to Triggered'

2019-10-25 13:53:36,842 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Task execution detail: 'Trying to start task. Sending task to slave scheduler bgl-gs-w540'

2019-10-25 13:53:36,850 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Task execution detail: 'Changing task state from Triggered to Started'

2019-10-25 13:53:36,852 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Task execution detail: 'Message from ReloadProvider: Reload failed in Engine. Check engine or script logs.'

2019-10-25 13:53:36,853 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Task execution detail: 'Changing task state from Started to FinishedFail'

2019-10-25 13:53:36,855 1e55fe38-df5c-48bf-8628-42b6718380ed    INFO    Task execution detail: 'Max retries reached (0)'

2019-10-25 13:53:36,856 1e55fe38-df5c-48bf-8628-42b6718380ed    ERROR   ERROR: Task 'Python Task Trigger - Failure 10 s' (d63984b1-9c81-4742-be1e-36b0d270a1d4) finished with status FinishedFail

> echo %ERRORLEVEL%

1