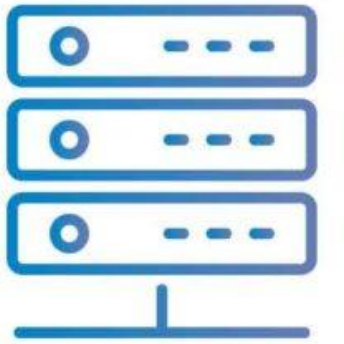
NPSS Server User Guide



By Michael Stich

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First Time Setup Guide

By Michael Stich

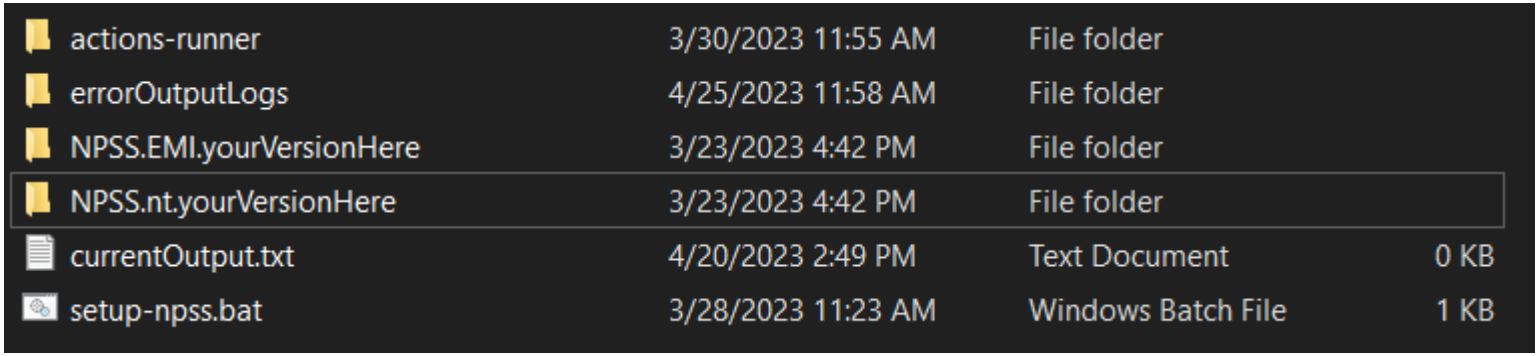
In order to setup a NPSS Server for a target GitHub repository, follow these 5 steps:

1. Find or allocate a machine that can natively run Window's PowerShell

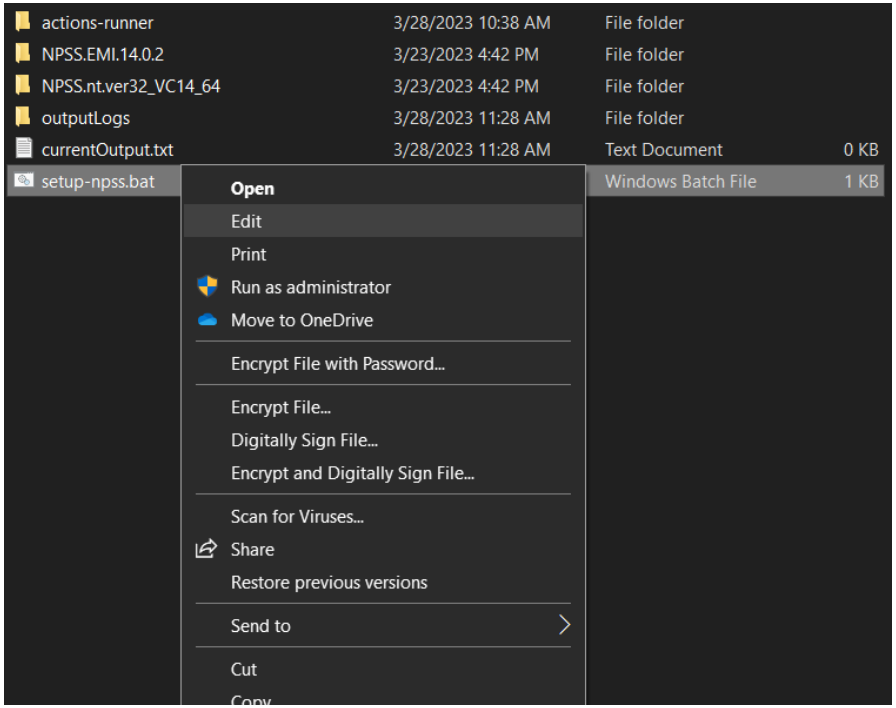
2. Download and extract the NPSS-Server Directory to your machine from this repository:

https://github.com/stichmc/npss-server

3. Paste the NPSS and EMI package version you wish to use for the server into the NPSS-Server directory



4. Right click setup-npss.bat and select the “Edit” option



5. Inside the setup-npss.bat script, change “YOUR_VERSION_HERE” with the name of your NPSS and EMI package directories

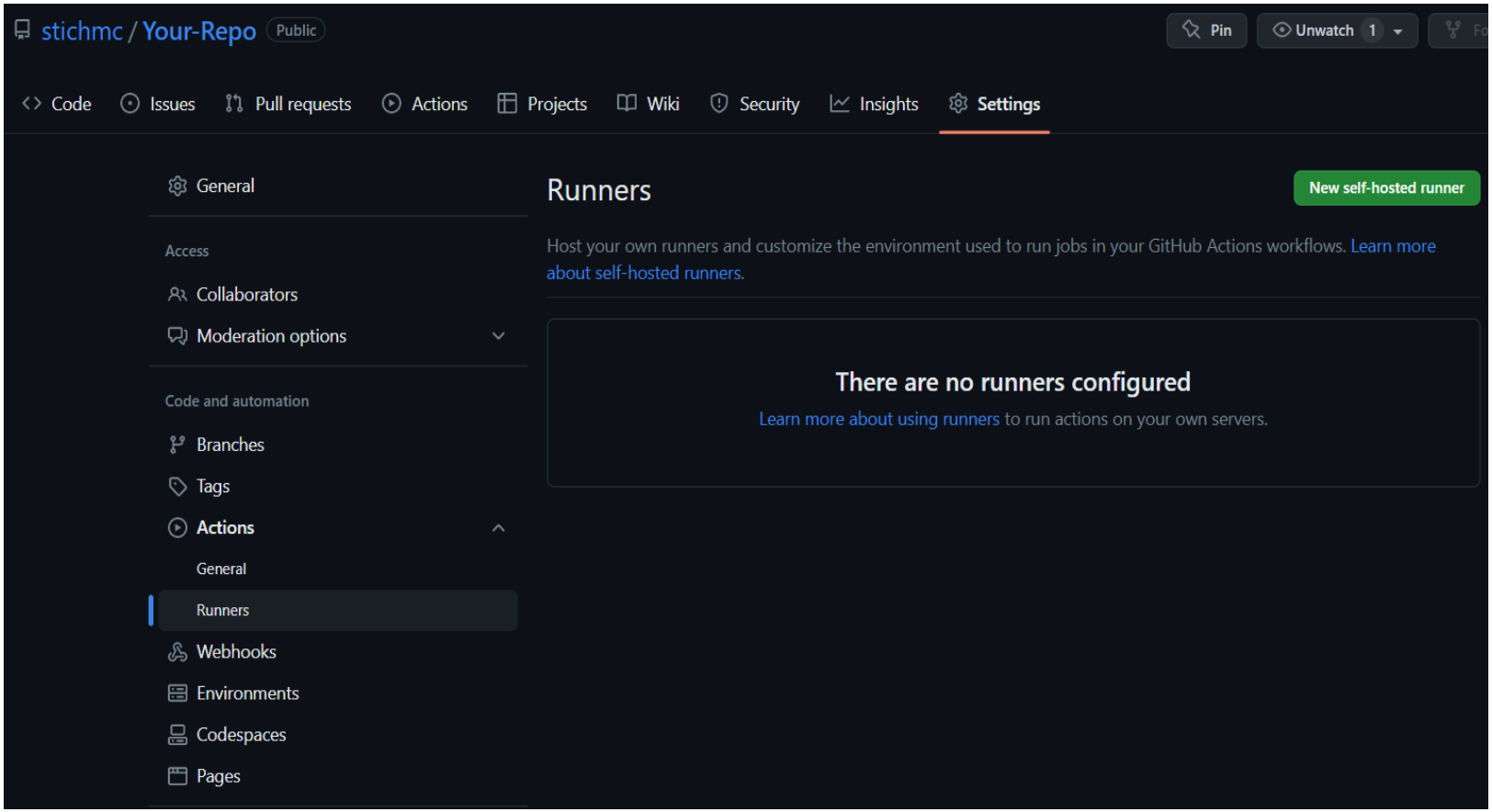
*setup-npss.bat - Notepad

File Edit Format View Help

```
@echo off
@SET _calldir=%CD%
@SET EMI_TOP=..\..\..\..\NPSS.EMI.YOUR_VERSION_HERE
@SET EMI_TOP=%EMI_TOP:"=%
set NPSS_CONFIG=nt
set NPSS_TOP=..\..\..\..\NPSS.nt.YOUR_VERSION_HERE
set NPSS_DEV_TOP=%NPSS_TOP%\DLMdevkit
set NPSS_TEST_TOP=%NPSS_TOP%\Test
set MICODIR=%NPSS_TOP%
set DCLOD_PATH=%NPSS_TOP%\DLMComponents\nt
set PATH=%PATH%;%NPSS_TOP%\bin;%NPSS_TOP%\scripts
@SET PATH=%EMI_TOP%\scripts\nt;%EMI_TOP%\scripts\AutoDoc;%PATH%
@cd %_calldir%
@SET _calldir=
```

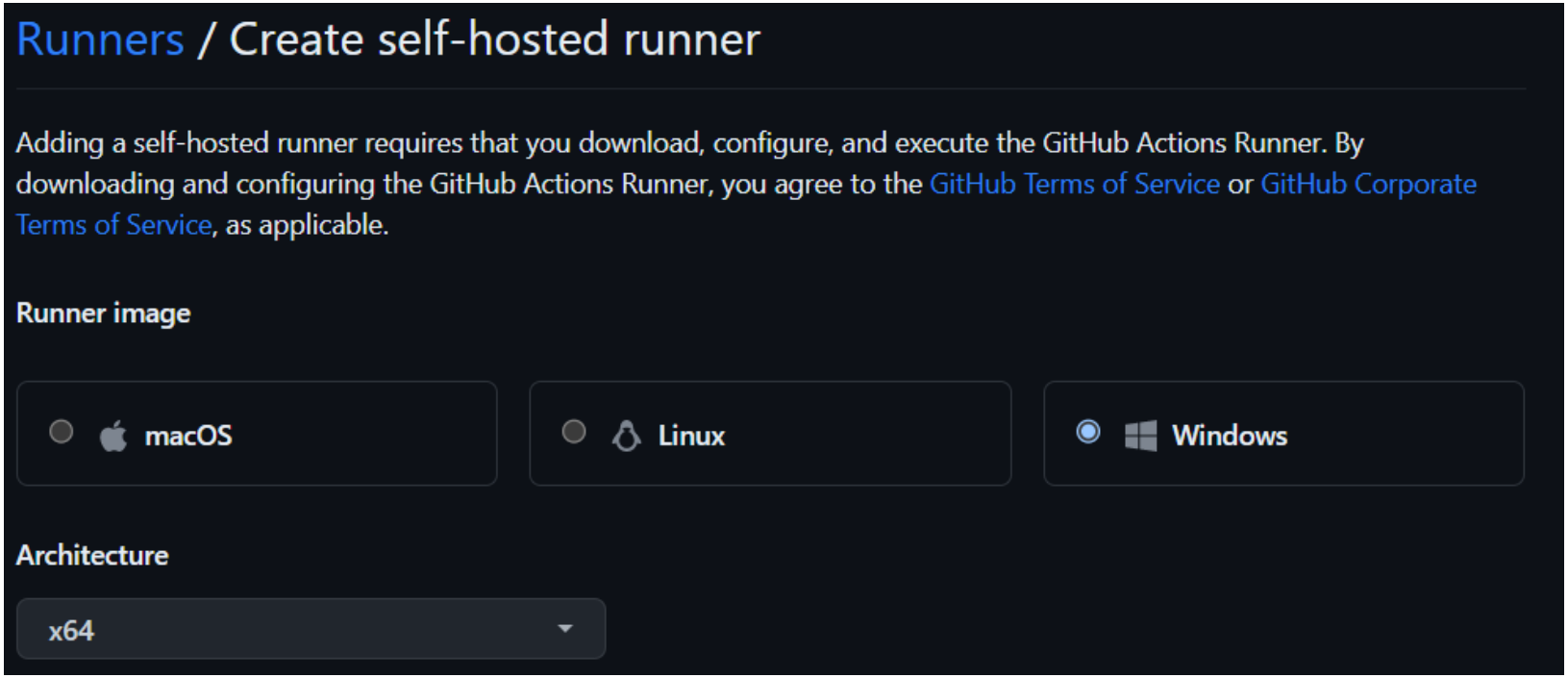
6. Navigate to your target GitHub Repository then:

Open settings > Open Actions Dropdown > Open Runners

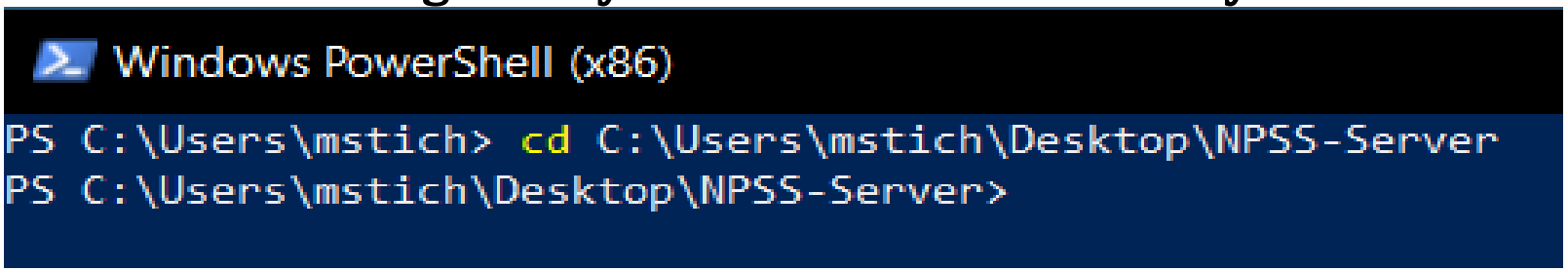


7. Click the “New self-hosted runner” button

8. Select “Windows” and “x64”



9. Without closing GitHub, open a new PowerShell X86 32-bit instance and navigate to your NPSS-Server directory



10. Input the following instructions, (that you should see on GitHub), in order into your machine's PowerShell console:

```
# Create a folder under the drive root
$ mkdir actions-runner; cd actions-runner

# Download the latest runner package
$ Invoke-WebRequest -Uri https://github.com/actions/runner/releases/download/v2.303.0/actions-runner-win-x64-2.303.0.zip -OutFile actions-runner-win-x64-2.303.0.zip

# Optional: Validate the hash
$ if((Get-FileHash -Path actions-runner-win-x64-2.303.0.zip -Algorithm SHA256).Hash.ToUpper() -ne '2368cd782c5b0dba1af8f90e1cc1c294cce2d165ed24f026577304b66440b31e'.ToUpper()){ throw 'Computed checksum did not match' }

# Extract the installer
$ Add-Type -AssemblyName System.IO.Compression.FileSystem ;
[System.IO.Compression.ZipFile]::ExtractToDirectory("$PWD/actions-runner-win-x64-2.303.0.zip", "$PWD")
```

Configure

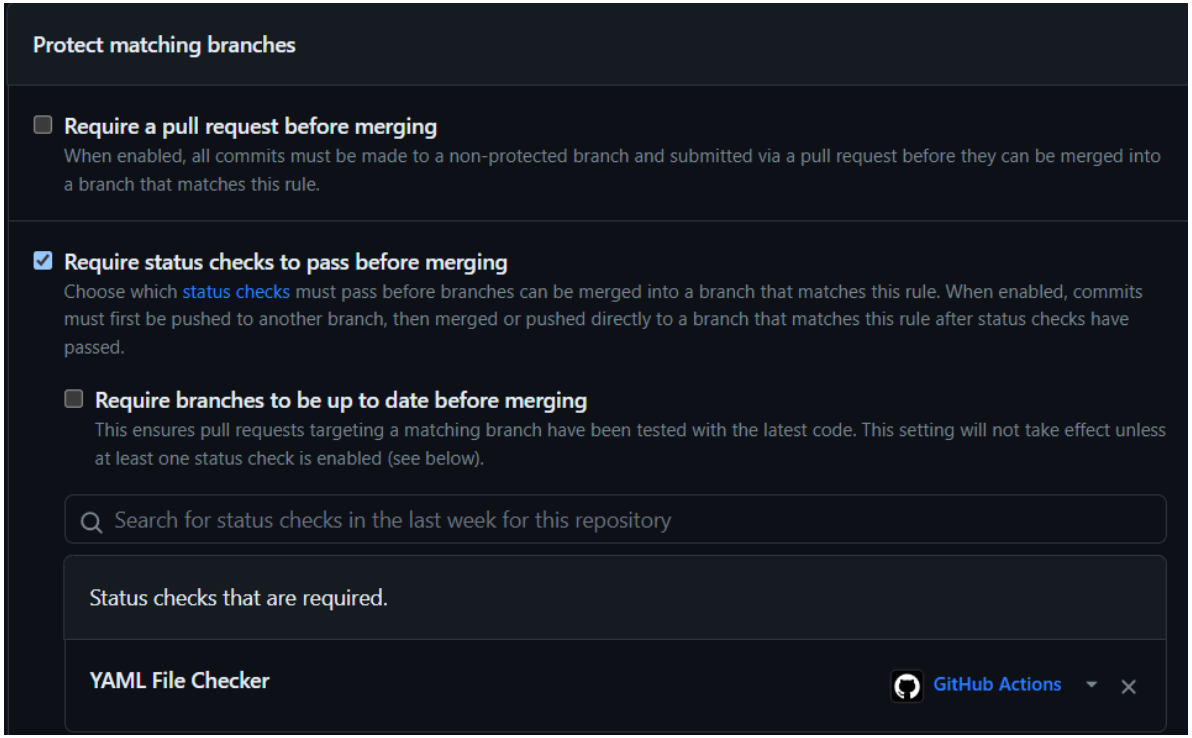
```
# Create the runner and start the configuration experience
$ ./config.cmd --url https://github.com/stichmc/fitgpt --token AXMFAAMSW5P7QYM3GOLSDGDEEW3XK
```

If you run the validate hash command and nothing prints to the console, the correct files have been installed.

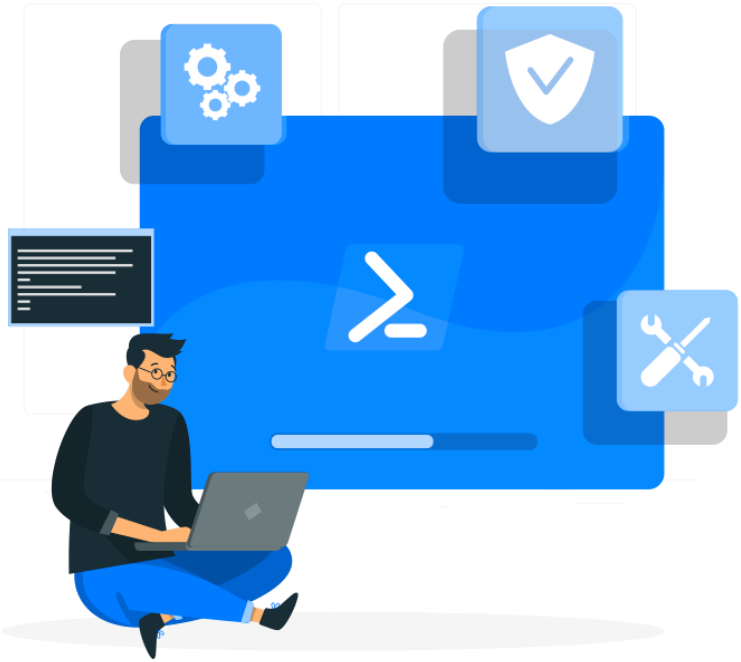
12. Copy and upload the files in this repository to your GitHub repository:

https://github.com/stichmc/NPSS-Power-System-Library/tree/npss_runner_and_tests

13. Go to your repository's Settings tab -> Branches. Under branch protection rules, add this rule for the branch/branches you will be working on.



Server Operation Guide

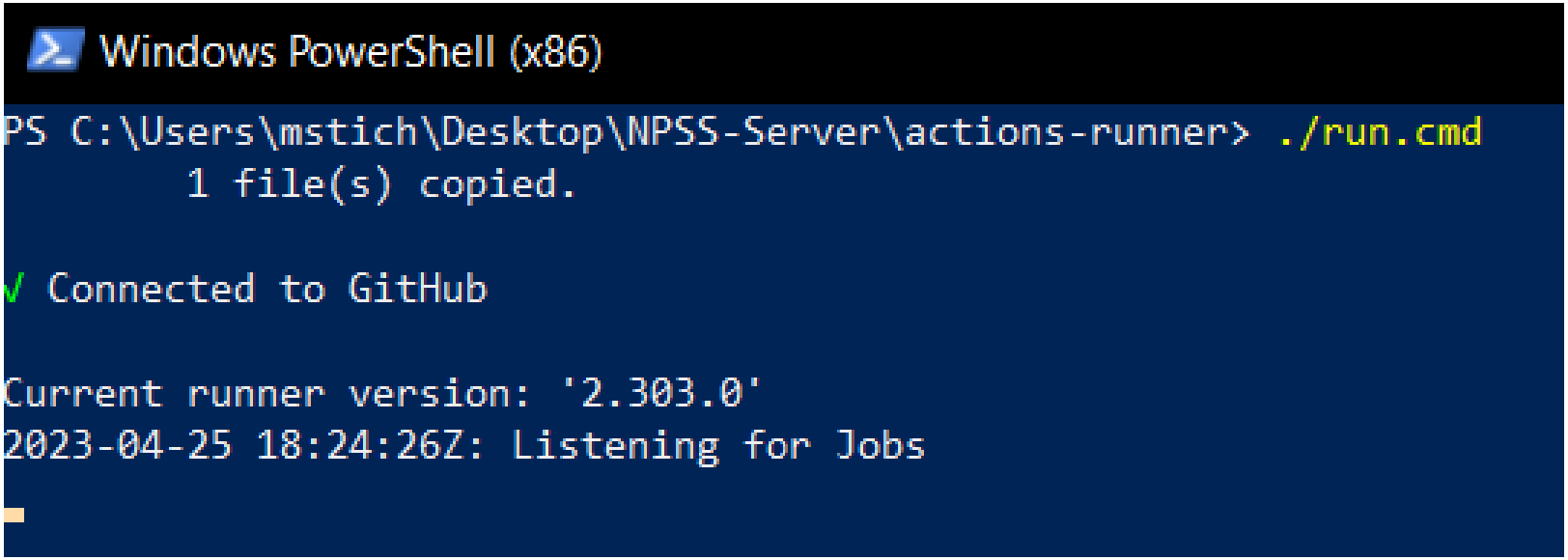


By Michael Stich

Starting The Runner

To startup your runner:

- Type ./run.cmd into your PowerShell X86 32-bit console inside the actions-runner directory
- After a few moments, you should see this output to your console window:

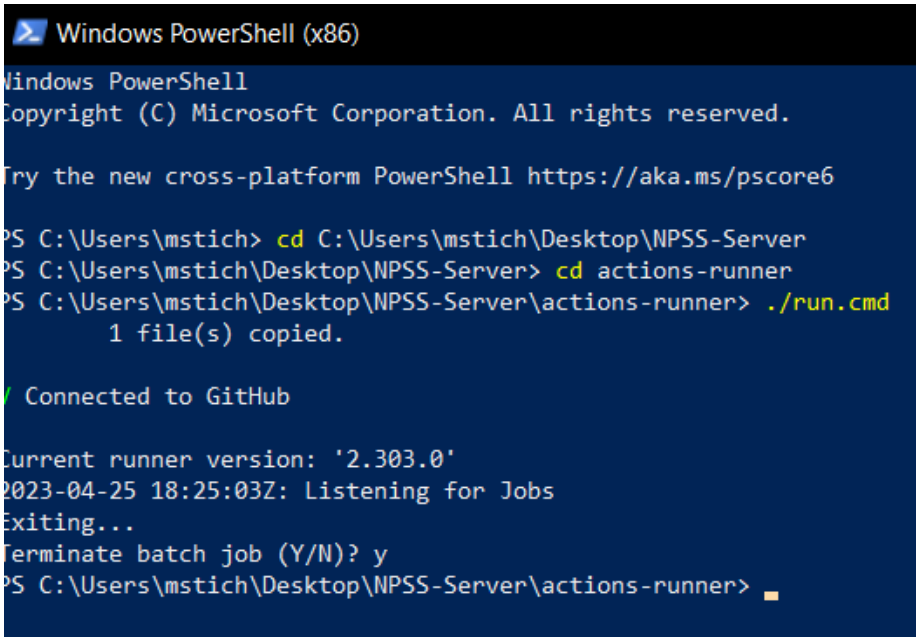


Shutting Down The Runner

To shut down your runner:

- Navigate to your PowerShell X86 32-bit console running the runner
- Left click inside the console and press ENTER followed by CTRL-C and input “Y”

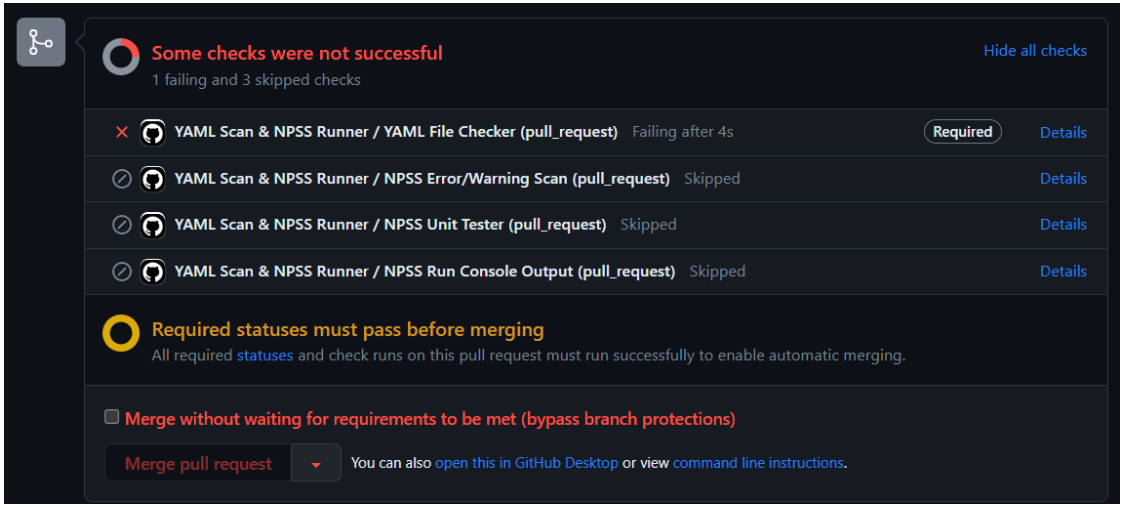
Do not shut the runner down any other way or you will need to reinstall your runner



Security Implications

Here are some security implications with the NPSS Server that would allow bad actors to take advantage of the system the runner is operating on.

1. YAML file modifications could potentially grant root access to the windows PowerShell kernel on the machine the runner is operating on. The included YAML file combats alterations to itself every time an NPSS run is requested. So it is IMPERATIVE whoever you allow direct commit access is trustworthy. If you receive a pull request and see the following error message:

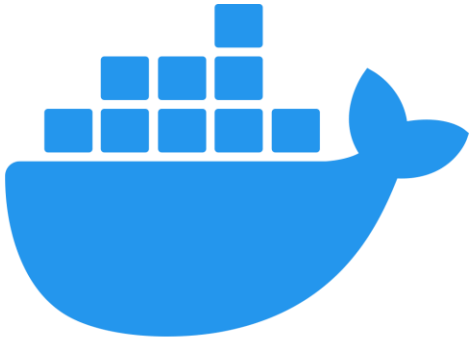


DO NOT accept the pull request. The incoming code could potentially contain malicious YAML code.

2. The NPSS code being sent to the runner could be potentially malicious. There are operations in NPSS that could potentially interact maliciously with the computer hosting the runner. To circumvent these vulnerability, I recommend the use of a virtualization. VM's can add a layer of virtualization that would prevent any potential bad actors from using the NPSS code to connect to other computers on the network the host OS is on.

I recommend:

ORACLE VM VirtualBox



docker