

Install Jupyterhub

This guide documents the tasks associated with installing and configuring "The Littlest Jupyterhub" (TLJH) on Nimbus. It is assumed that you have already created an instance and are able to log on to it using ssh. The developer documentation for TLJH is available at <https://the-littlest-jupyterhub.readthedocs.io/en/latest/install/custom-server.html>.

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Set up networking

Jupyterhub will require the standard HTTPS port and we also want to redirect HTTP to HTTPS, so we need to open these ports:

- From your Nimbus dashboard, under the "**Network**" section of the left-hand navigation bar, select "**Security Groups**", then click on "**Create Security Group**" on the right hand side:
 - **Name:** give it a meaningful name (e.g. **jupyterhub**)
 - **Description:** open ports to allow Jupyterhub to communicate

Once created, click on "**Manage Rules**" for that security group, then click on "**Add Rule**" in the top right, click **Rule** and then select **HTTP** from the drop-down menu.

- Repeat for **HTTPS**, then it should look like this:

Direction	Ether Type	IP Protocol	Port Range	Remote IP Prefix	Remote Security Group	Actions
Egress	IPv4	Any	Any	0.0.0.0	-	Delete Rule
Egress	IPv6	Any	Any	:::	-	Delete Rule
Ingress	IPv4	TCP	80 (HTTP)	0.0.0.0	-	Delete Rule
Ingress	IPv4	TCP	443 (HTTPS)	0.0.0.0	-	Delete Rule

- Under the "**Compute**" section of the left-hand bar, select "**Instances**", click the **Actions** menu to the right of your instance, then "**Edit Security Groups**" and add the "**jupyterhub**" security group.

Install TLJH

1. ssh into the instance and check if Python 3, curl, and git are installed using the following command (should be installed by default with latest Ubuntu):

```
apt list python3 git curl
```

2. Download and run the installer using the following code, making sure to replace <admin username> with the username of the account that will act as administrator. If you have yet to create any accounts on the VM simply use "ubuntu". This process will take approximately 25 minutes.

```
curl https://raw.githubusercontent.com/jupyterhub/the-littlest-jupyterhub/master/bootstrap/bootstrap.py | sudo -E python3 --admin <admin username>
```

3. If everything runs as it should you'll see the following output with the final message being "Done!"

```

ubuntu@ubuntu:~$ curl https://raw.githubusercontent.com/jupyterhub/the-latest-jupyterhub/master/bootstrap/bootstrap.py | sudo -E python3 -- --install-ubuntu
% Total % Received % Xferd Average Speed Time Time Current
                                 Dload  Upload   Total     Spent    Left     Speed
100 3557 100 3557  0 0 3934  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Checking if time is already installed...
Setting up hub environment
Installing python & virtual environment
Set up hub virtual environment
Setting up TLJH installer...
Setup TLJH package
Installing TLJH installer...
Setting up admin users
Creating passwordless sudo to Jupyterhub admin...
Setting up user environments...
Downloading & setting up user environment...
Setting up jupyterhub...
Downloading traefik 1.7.5...
Node v8.15.3

> jupyterlab pack #jupyterlab/hub-extension
Incompatible extension:
#jupyterlab/hub-extension@1.0.0-alpha.6 is not compatible with the current JupyterLab
Conflicting dependencies:
JupyterLab      Extension  Package
--
--19.1 -0-20.0  1.0.0-alpha.6 #jupyterlab/application
--19.1 -0-20.0  1.0.0-alpha.6 #jupyterlab/plotly

Found compatible version: 0.12.0
> jupyterlab pack #jupyterlab/hub-extension@0.12.0
Node v8.15.3

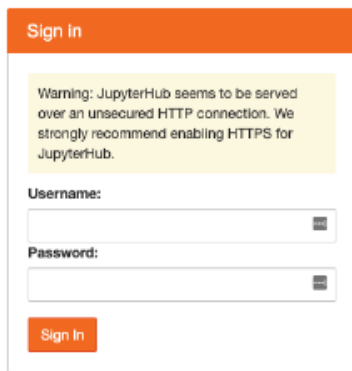
> jupyterlab pack #jupyter-widgets/jupyterlab-manager
Incompatible extension:
#jupyter-widgets/jupyterlab-manager@0.4.0 is not compatible with the current JupyterLab
Conflicting dependencies:
JupyterLab      Extension  Package
--
--19.1 -0-20.0  1.0.0-alpha.6 #jupyterlab/application
--19.2 -0-20.0  1.0.0-alpha.7 #jupyterlab/plotly
--19.1 -0-20.0  1.0.0-alpha.6 #jupyterlab/traefik

Found compatible version: 0.38.1
> jupyterlab pack #jupyter-widgets/jupyterlab-manager@0.38.1
Node v8.15.3

> mode /opt/jupyterlab/system3/extra-packages/jupyterlab/traefik/traefik.yml install
> mode /opt/jupyterlab/system3/extra-packages/jupyterlab/traefik/traefik.yml run build
Created symlink /etc/systemd/system/multi-user.target.wants/jupyterhub.service → /etc/systemd/system/jupyterhub.service.
Created symlink /etc/systemd/system/multi-user.target.wants/traefik.service → /etc/systemd/system/traefik.service.
Waiting for JupyterLab to come up (15/20 tries)
Waiting for JupyterLab to come up (12/20 tries)
Waiting for JupyterLab to come up (15/20 tries)
Waiting for JupyterLab to come up (12/20 tries)
Done!

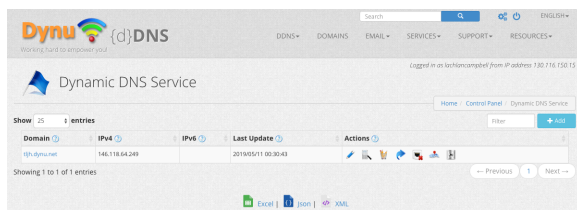
```

4. You can then access the jupyterhub from the public IP associated with your instance, for eg. <http://146.118.66.157>, and you should see the sign-in page shown below. Note we will resolve the security warning next. If you fail to connect to the jupyterhub check that the security group created in the network setup section has been added to your instance.



Enable HTTPS for secure communication

In order to set up HTTPS using TLJH and [Lets encrypt](#) you need a domain name for your hub. You may be able to arrange one with your institution, however if you just want a free and easy solution you can use a DNS service provider. [Dynu](#) is free, has a good selection of features, no pesky reminders to register every month, and great documentation. See below for an example of my DNS control panel:



Once you have a domain name configured, set it in TLJH:

1. Modify the TLJH config:

```

sudo tljh-config set https.enabled true
sudo tljh-config set https.letsencrypt.email you@example.com
sudo tljh-config add-item https.letsencrypt.domains yourhub.
yourdomain.edu

```

replacing `you@example.com` with your email address and `yourhub.yourdomain.edu` with your domain name.

2. You can check your config file with

```
sudo tljh-config show
```

3. Then reload the proxy to load the new configuration

```
sudo tljh-config reload proxy
```

At this point, the proxy should negotiate with Let's Encrypt to set up a trusted HTTPS certificate for you. It may take a moment for the proxy to negotiate with Let's Encrypt to get your certificates, after which you can access your Hub securely at <https://yourhub.yourdomain.edu>.