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:

- 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 adminstrator. 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@autodeploy:~$ curl https://raw.githubusercontent.com/jupyterhub/the-littlest-jupyterhub/master/bootstrap/bootstrap.py | sudo -E python3 - --admin ubuntu
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  3557  100  3557    0     0   3934      0 --:--:-- --:--:-- --:--:--  3930
Checking if TLJH is already installed...
Setting up hub environment
Installed python3 & virtual environment
Set up hub virtual environment
Setting up TLJH installer...
Setup tljh package
Starting TLJH installer...
Setting up admin users
Granting passwordless sudo to JupyterHub admins...
Setting up user environment...
Downloading & setting up user environment...
Setting up JupyterHub...
Downloading traefik 1.7.5...
Node v10.15.3

> /usr/bin/npm 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
>=0.19.1 <0.20.0    >=1.0.0-alpha.6 <2.0.0@jupyterlab/application
>=0.19.1 <0.20.0    >=1.0.0-alpha.6 <2.0.0@jupyterlab/apputils

Found compatible version: 0.12.0
> /usr/bin/npm pack @jupyterlab/hub-extension@0.12.0
Node v10.15.3

> /usr/bin/npm pack @jupyter-widgets/jupyterlab-manager
Incompatible extension:

"@jupyter-widgets/jupyterlab-manager@0.40.0" is not compatible with the current JupyterLab
Conflicting Dependencies:
JupyterLab          Extension       Package
>=0.19.1 <0.20.0    1.0.0-alpha.6   @jupyterlab/application
>=0.19.2 <0.20.0    1.0.0-alpha.7   @jupyterlab/notebook
>=0.19.1 <0.20.0    1.0.0-alpha.6   @jupyterlab/rendermime

Found compatible version: 0.38.1
> /usr/bin/npm pack @jupyter-widgets/jupyterlab-manager@0.38.1
Node v10.15.3

> node /opt/tljh/user/lib/python3.6/site-packages/jupyterlab/staging/yarn.js install
> node /opt/tljh/user/lib/python3.6/site-packages/jupyterlab/staging/yarn.js 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 JupyterHub to come up (1/20 tries)
Waiting for JupyterHub to come up (2/20 tries)
Waiting for JupyterHub to come up (3/20 tries)
Waiting for JupyterHub to come up (4/20 tries)
Done!
```
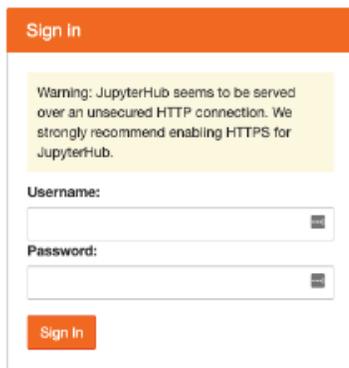
4. You can then access the jupyterhub from the public IP associated with your instance, for eg. http ://146.118.66.157, and you should see the sign-in page shown below. Note we will resolve the security warning next. If you fail to connect to the jupyterhub check that the security group created in the 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:
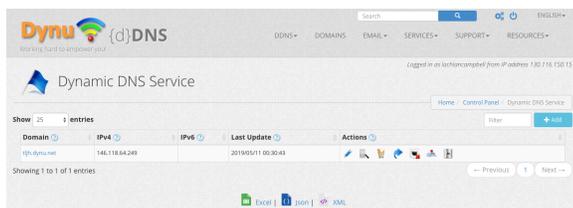
Once you have a domain name configured, set it in TLJH:

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.