XCS224U - Tunneling on Azure VM for Jupyter

Option 1: SSH Tunneling (No extra utility required)

(Thanks Luis Valerio Hernandez for your contribution!)

Step 1: Setup SSH Tunnel

Access your remote machine with a regular ssh command with an additional part that establishes a tunnel between a `local port` and `target port` as exemplified below.

```
PS C:\Users\Admin> ssh -p 63616 xcs224u_student@***********.southcentralus.cloudapp.azu
re.com -L 8080:localhost:8888
xcs224u_student@ml-lab-d96b8b7c-aabd-428a-874a-c14ab55dff7a.southcentralus.cloudapp.azure.com'
s password:

(Some welcome messages here)

Last login: Wed Mar 11 08:43:55 2020 from 73.158.65.76
xcs224u_student@ML-EnvVm-00047:~$
```

Step 2: Run Jupyter

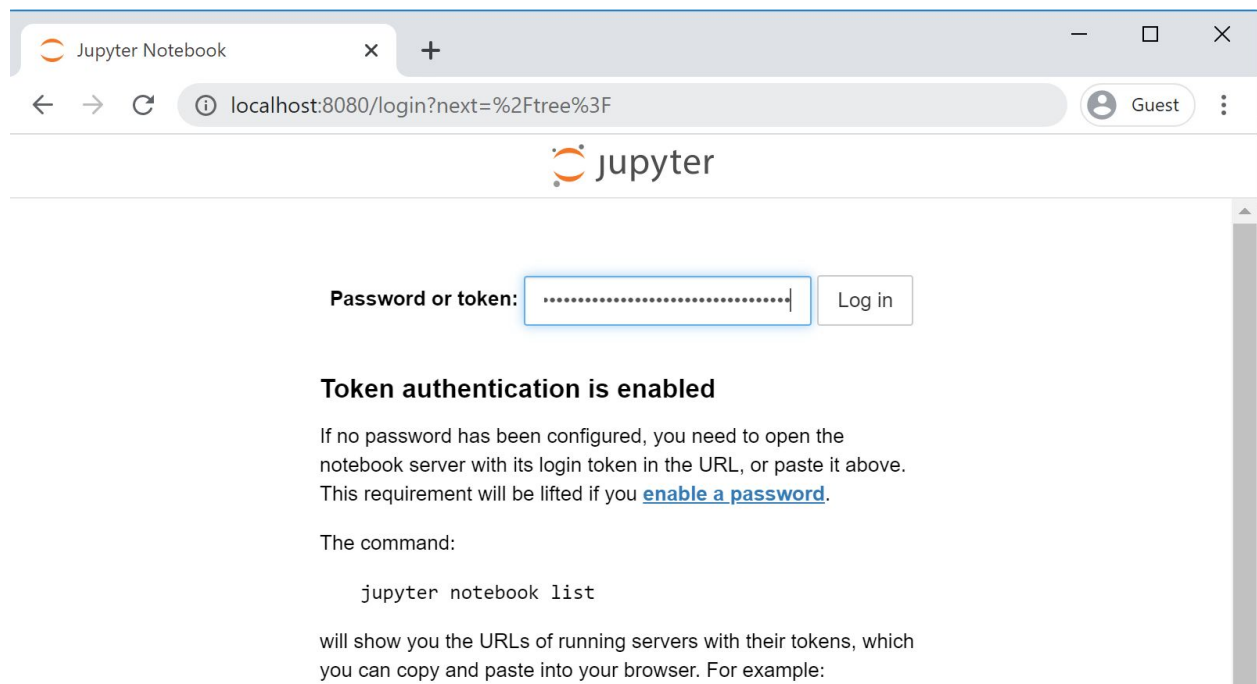Simply run the jupyter as usual with an ip parameter [and an optional --port=`####` parameter].

```
xcs224u_student@ML-EnvVm-00047:~/Desktop/cs224u$ jupyter notebook --no-browser --ip='0.0.0.0'
--port=8888
```

```
[I 08:51:55.080 NotebookApp] JupyterLab extension loaded from
/data/anaconda/envs/py35/lib/python3.5/site-packages/jupy
terlab
[I 08:51:55.080 NotebookApp] JupyterLab application directory is
/data/anaconda/envs/py35/share/jupyter/lab
[I 08:51:56.273 NotebookApp] sparkmagic extension enabled!
[I 08:51:56.273 NotebookApp] Serving notebooks from local directory:
/data/home/xcs224u_student/Desktop/cs224u
[I 08:51:56.273 NotebookApp] The Jupyter Notebook is running at:
[I 08:51:56.273 NotebookApp] http://(ML-EnvVm-00047 or
127.0.0.1):8888/?token=990b86c0ee61f2ba4f3808baa24bc6696c1b407c5
da63cba
[I 08:51:56.273 NotebookApp] Use Control-C to stop this server and shut down all kernels
(twice to skip confirmation).
[C 08:51:56.274 NotebookApp]

    Copy/paste this URL into your browser when you connect for the first time,
    to login with a token:
        http://(ML-EnvVm-00047 or
127.0.0.1):8888/?token=990b86c0ee61f2ba4f3808baa24bc6696c1b407c5da63cba
```

Step 3: Access Jupyter

Go to the link `http://localhost:8080` in the browser of your local machine and enter the `token`

Step 4: Enjoy :)

This is the most important step! Enjoy experimenting with Jupyter on Azure VM :)

Option 2: SSH Tunneling (Using ngrok)

Step 1: Setup ngrok (Required once)

Follow the list of steps from 1 to 3 in the following page (Sign up & Login required)
https://dashboard.ngrok.com/get-started

```
xcs224u_student@ML-EnvVm-00047:~/Desktop/cs224u$ curl -O
https://bin.equinox.io/c/4VmDzA7iaHb/ngrok-stable-linux-amd64.
zip
 % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 13.1M  100 13.1M    0     0  22.4M      0 --:--:-- --:--:-- --:--:-- 22.4M
xcs224u_student@ML-EnvVm-00047:~/Desktop/cs224u$ unzip ngrok-stable-linux-amd64.zip
Archive:  ngrok-stable-linux-amd64.zip
 inflating: ngrok
xcs224u_student@ML-EnvVm-00047:~/Desktop/cs224u$ ./ngrok authtoken
64rXTH1UeTuWi************
Authtoken saved to configuration file: /home/xcs224u_student/.ngrok2/ngrok.yml
```

Step 2: Run Jupyter

Simply run the jupyter as usual with an ip parameter [and an optional --port=`####` parameter].

```
(nlu) xcs224u_student@ML-EnvVm-00047:~/Desktop/cs224u$ jupyter notebook --no-browser
--ip='0.0.0.0' --port=8888
[I 08:44:44.807 NotebookApp] [nb_conda_kernels] enabled, 3 kernels found
[I 08:44:45.243 NotebookApp] JupyterLab extension loaded from
/data/anaconda/envs/nlu/lib/python3.7/site-packages/jupyt
erlab
[I 08:44:45.244 NotebookApp] JupyterLab application directory is
/data/anaconda/envs/nlu/share/jupyter/lab
[I 08:44:45.595 NotebookApp] [nb_conda] enabled
[I 08:44:45.953 NotebookApp] sparkmagic extension enabled!
[I 08:44:45.953 NotebookApp] Serving notebooks from local directory:
/data/home/xcs224u_student/Desktop/cs224u
[I 08:44:45.953 NotebookApp] The Jupyter Notebook is running at:
[I 08:44:45.953 NotebookApp]
http://ML-EnvVm-00047:8888/?token=e7385e784facf2f08a236fcb642a0b695f82bdbbfe9d8e8c
[I 08:44:45.953 NotebookApp]  or
http://127.0.0.1:8888/?token=e7385e784facf2f08a236fcb642a0b695f82bdbbfe9d8e8c
[I 08:44:45.953 NotebookApp] Use Control-C to stop this server and shut down all kernels
(twice to skip confirmation).
[C 08:44:45.956 NotebookApp]
   To access the notebook, open this file in a browser:
      file:///data/home/xcs224u_student/.local/share/jupyter/runtime/nbserver-12065-open.html
   Or copy and paste one of these URLs:
      http://ML-EnvVm-00047:8888/?token=e7385e784facf2f08a236fcb642a0b695f82bdbbfe9d8e8c
    or http://127.0.0.1:8888/?token=e7385e784facf2f08a236fcb642a0b695f82bdbbfe9d8e8c
```

Step 3: Fire Ngrok

Complete the final step in the following link. *(This is the main difference between the Option 1 and Option 2. Ngrok will allow you to fire up whichever port you want with no requirement to establish a tunneling SSH connection upfront)*
https://dashboard.ngrok.com/get-started

```
xcs224u_student@ML-EnvVm-00047:~/Desktop/cs224u$ ./ngrok http 8888
Session Status                online
Account                       Emrah B (Plan: Free)
Version                       2.3.35
Region                        United States (us)
Web Interface                 http://127.0.0.1:4040
Forwarding                    http://360de68a.ngrok.io -> http://localhost:8888
Forwarding                    https://360de68a.ngrok.io -> http://localhost:8888

Connections                   ttl     opn     rt1     rt5     p50     p90
                              0       0       0.00    0.00    0.00    0.00
```
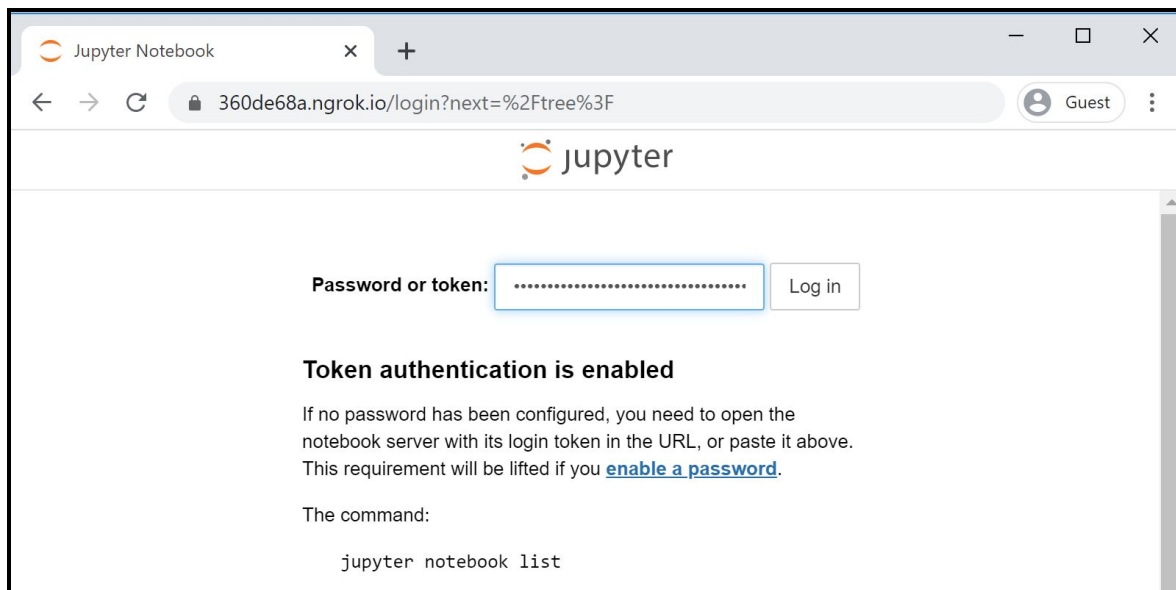
Step 4: Access Jupyter

Go to the `link` in your browser and enter the `token`

Step 5: Enjoy :)

This is the most important step! Enjoy experimenting with Jupyter on Azure VM :)