

# XCS224U - Tunneling on Azure VM for Jupyter

## [Option 1: SSH Tunneling \(No extra utility required\)](#)

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## [Option 2: SSH Tunneling \(Using ngrok\)](#)

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## 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.azure.com -L 8080:localhost:8888
xcs224u_student@m1-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].

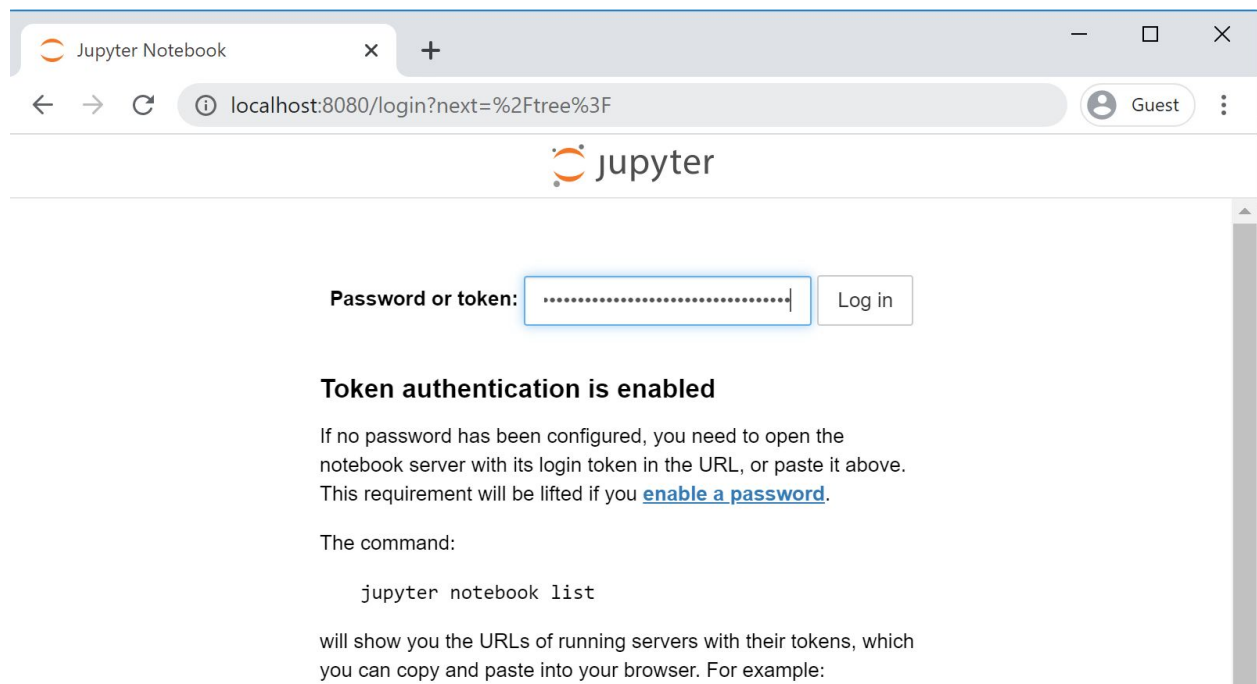
```
xcs224u_student@ML-EnvVm-00047:~/Desktop/cs224u$ jupyter notebook --no-browser --ip='0.0.0.0'
--port=8888
```

```
[I 08:51:55.080 NotebookApp] JupyterLab extension loaded from
/data/anaconda/envs/py35/lib/python3.5/site-packages/jupyterlab
[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=990b86c0ee61f2ba4f3808baa24bc6696c1b407c5da63cba
[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`



The screenshot shows a web browser window with the title "Jupyter Notebook". The address bar displays "localhost:8080/login?next=%2Ftree%3F". The page features the Jupyter logo at the top. Below the logo, there is a login section with the label "Password or token:" followed by a text input field containing a series of dots and a "Log in" button. A message states "Token authentication is enabled" and explains that if no password is configured, the user must provide a login token in the URL or paste it into the input field. It also includes a link to "enable a password". At the bottom, it shows the command "jupyter notebook list" and explains that it will display the URLs of running servers with their tokens, which can be copied and pasted into the browser.

Home x +

localhost:8080/tree? Guest

jupyter Quit Logout

Files Running Clusters

Select items to perform actions on them. Upload New ↕

0 / Name ↓ Last Modified File size

<input type="checkbox"/>	data	a year ago	
<input type="checkbox"/>	fig	10 days ago	
<input type="checkbox"/>	test	10 days ago	
<input type="checkbox"/>	colors_overview.ipynb	10 days ago	48.7 kB
<input type="checkbox"/>	contextualreps.ipynb	10 days ago	26.6 kB
<input type="checkbox"/>	evaluation_methods.ipynb	10 days ago	74.8 kB
<input type="checkbox"/>	evaluation_metrics.ipynb	10 days ago	138 kB
<input type="checkbox"/>	hw_colors.ipynb	10 days ago	29.9 kB
<input type="checkbox"/>	hw_rel_ext.ipynb	10 days ago	27.1 kB

## 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/jupyter
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)*

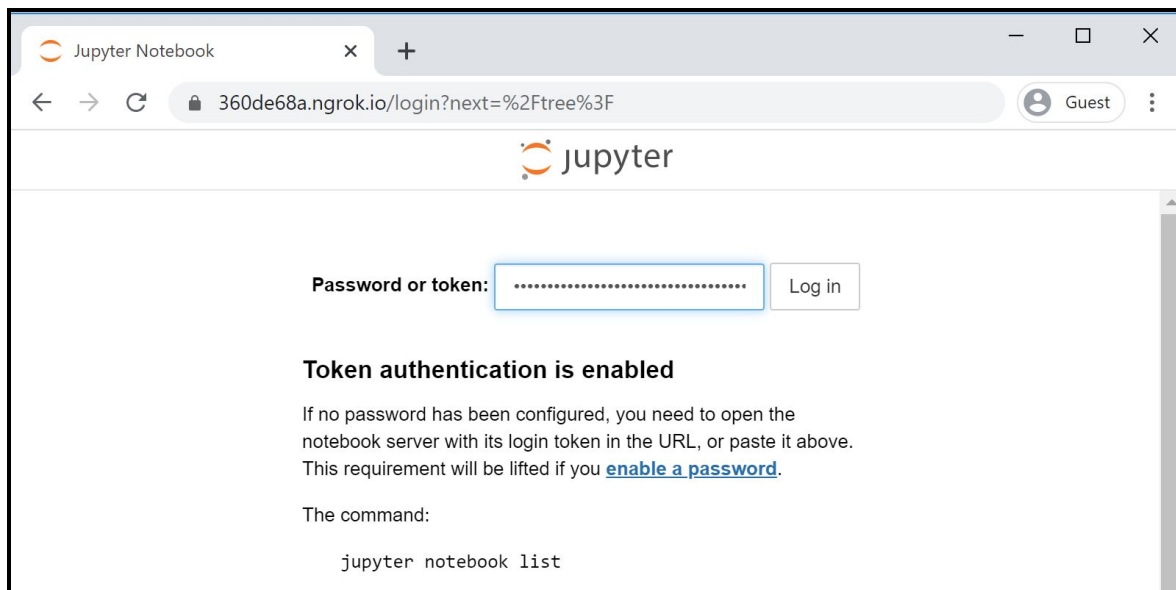
<https://dashboard.ngrok.com/get-started>

```
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**



Home Page - Select or create a notebook x +

360de68a.ngrok.io/tree? Guest

jupyter Quit Logout

Files Running Clusters Conda

Select items to perform actions on them. Upload New ↕ ↻

0 / Name ↓ Last Modified File size

<input type="checkbox"/>	data	a year ago	
<input type="checkbox"/>	fig	10 days ago	
<input type="checkbox"/>	test	10 days ago	
<input type="checkbox"/>	colors_overview.ipynb	10 days ago	48.7 kB
<input type="checkbox"/>	contextualreps.ipynb	10 days ago	26.6 kB
<input type="checkbox"/>	evaluation_methods.ipynb	10 days ago	74.8 kB
<input type="checkbox"/>	evaluation_metrics.ipynb	10 days ago	138 kB
<input type="checkbox"/>	hw_colors.ipynb	10 days ago	29.9 kB

## Step 5: Enjoy :)

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