

VT ARC - Quick Setup Guide

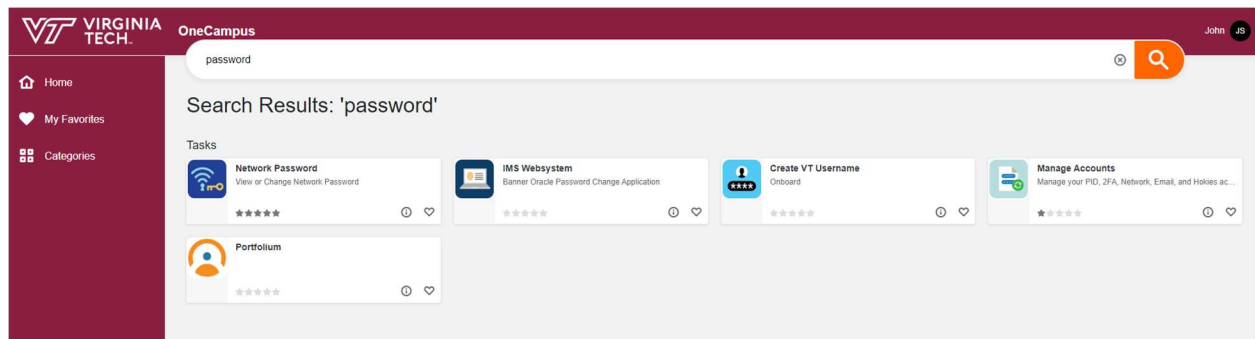
Transcribed by John Smutny for ARC on 03/23/2023 for ECE6524 Deep Learning

Contents

| | | |
|----|--|----|
| 1. | <i>Find your VT VPN Username and Password</i> | 2 |
| 2. | Connect to the VT VPN..... | 3 |
| 3. | Connect to the ARC (must be connected to the VT VPN) | 5 |
| 4. | Create your custom environment | 6 |
| 5. | Create your own ARC instance | 8 |
| 6. | Access your JupyterNotebook instance | 10 |

1. Find your VT VPN Username and Password

- a. Original Instructions:
 - i. View, Change, or Reset Network Password section here:
https://4help.vt.edu/sp?id=kb_article_view&sysparm_article=KB0010084&sys_kb_id=a88e3dd11b1da5100aac64ea234bcb7e&spa=1#networkchange
- b. Go to OneCampus: <https://onecampus.vt.edu/>
 - i. Search for 'password' and choose *Network Account*
 - ii. Record your Username and 16-character password



ACCOUNT MANAGER

Network Password

[To homepage](#)

Log into the eduroam wireless network with the username

Jon.smith @vt.edu

and the password

aaaa-bbbb-cccc-dddd

Your password is made up of lowercase letters and hyphens; the three hyphens are part of the password.

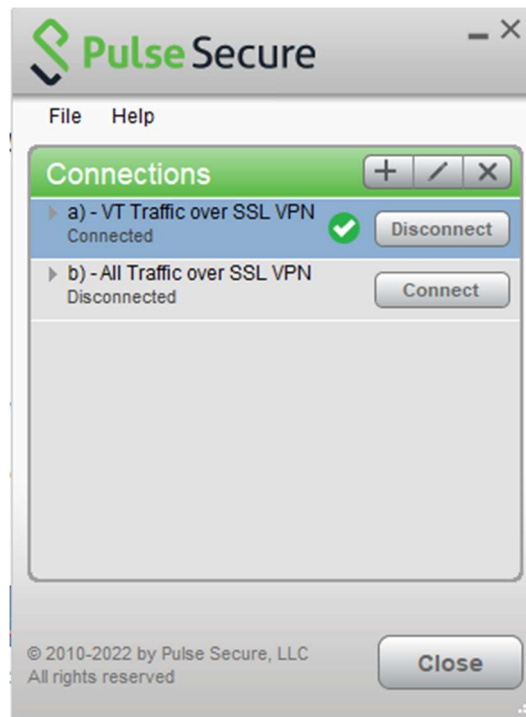
You can usually copy your password to the clipboard and then paste it into the password field.

Generate new password

Copy to clipboard

2. Connect to the VT VPN

- a. Original Instructions:
 - i. https://4help.vt.edu/sp?id=kb_article&sysparm_article=KB0012678&sys_kb_id=7948d9731b4755d0098aea04604bcbe7&spa=1#2factorAuthentication
- b. Install the *Pulse Secure* program
 - i. Follow the provided instructions for your Operating System:
 1. Linux:
https://4help.vt.edu/sp?id=kb_article&sysparm_article=KB0012678&sys_kb_id=7948d9731b4755d0098aea04604bcbe7&spa=1#2factorAuthentication
 2. Windows:
https://4help.vt.edu/sp?id=kb_article_view&sysparm_article=KB0010740&sys_kb_id=0f0ddb391b99ad100aac64ea234bcbe3&spa=1
 3. MAC:
https://4help.vt.edu/sp?id=kb_article&sysparm_article=KB0012672&sys_kb_id=1265117b1b0755d0098aea04604bcb3a&spa=1
- c. Open the *Pulse Secure* program
 - i. Connect to either VPN
 1. **VT Traffic over SSL VPN** - only VT related computer traffic is set through VT's VPN
 2. **All Traffic over SSL VPN** - configures your computer to send ALL web traffic through VT's VPN
 - ii. Complete dual authentication



The first time you do this, you have to enter the password from OneCampus/NetworkAccount. If you check the checkbox to *Save Settings* it will remember your Username and password.



The image shows a Pulse Secure login window. At the top is the Pulse Secure logo. Below it, the text "Connect to: a) - VT Traffic over SSL VPN" is displayed. A message box with a question mark icon says "Provide the following credentials to complete the connection." Below this, there is a "Secondary User Name:" label and a text field containing "smutnyj@vt.edu". Underneath is a label "push,phone,sms1,passcode" and a password field with four dots. A "Save settings" checkbox is located below the password field. At the bottom right are "Connect" and "Cancel" buttons.

Pulse Secure

Connect to: a) - VT Traffic over SSL VPN

Provide the following credentials to complete the connection.

Secondary User Name:

smutnyj@vt.edu

push,phone,sms1,passcode

.....

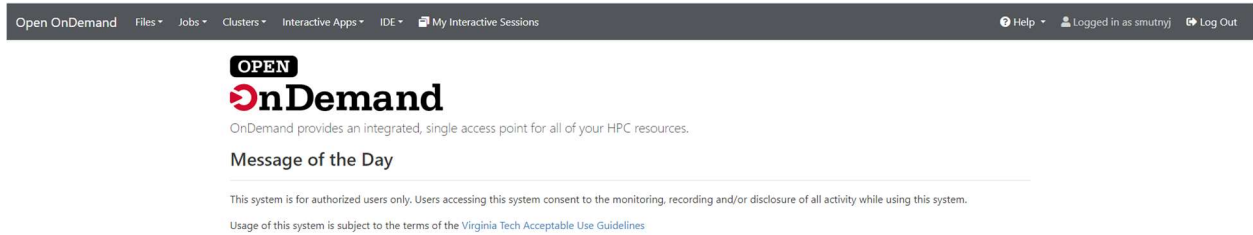
☐ Save settings

Connect Cancel

- iii. Complete the double authentication by entering ONE of the provided options...
1. *Push* = Get a push notification
 2. *Phone* = Get a phone call
 3. *Sms1* = Get a text code
 4. *Passcode* = Provide a passcode from the Duo Mobile app.

3. Connect to the ARC (must be connected to the VT VPN)

- a. Link: <https://ood.arc.vt.edu/pun/sys/dashboard>



****NOTE****

If you only want to use system defaults then continue to step 5. The list of available and default programs are found here:

- <https://www.docs.arc.vt.edu/software/02installed.html>
- Each subsequent link describes software that runs on nodes that you choose when making your ARC instance in Step 5.

4. Create your custom environment

- a. **** NOTE **** This step requires you to enter Linux commands. Provided are the list of commands you HAVE to run and then additional commands to install more software.
- b. From the ARC Dashboard; Go to 'Clusters -> TinkerCliffs Shell Access'

```
Host: tinkerciffs2.arc.vt.edu
Last login: Tue Mar 21 22:36:24 2023 from ood.arc.ipv6.vt.edu
+-----+
| This computer is the property of Virginia Polytechnic Institute and State |
[smutnyj@tinkerciffs2 ~]$
```

- c. Commands you **HAVE TO** run:
 - i. Enter the following commands ONE AT A TIME to create an environment called **mypy3**
 1. If you wish to name it differently, then replace **mypy3** with a name of your choice.
 2. If you wish to have a different python version than python3.8, specify it now.

```
module load Anaconda3/2020.11
conda create -n mypy3 python=3.8 pip
source activate mypy3
conda install ipykernel
pip install plotly kaleido
```

- ii. Enter the following command to connect an **ipykernel** to your environment to be run in a Jupyter Notebook. This lets you switch the Jupyter Notebook to use the packages/software and the versions that YOU want.

```
(tf_py38) [smutnyj@tinkerciffs2 ~]$ python -m ipykernel install --name <your env name> --display-name "Python <your env name>" --user
```

d. Commands that are optional

- i. Use the following to install additional software packages to your environment. A full list of software is shown at the following link or any software that is traditionally supported by Anaconda3:

<https://www.docs.arc.vt.edu/software/02installed.html>

- ii. Commands that the author used...

1. `conda install tensorflow keras numpy pandas graphviz pydot matplotlib`
2. `pip install opencv-python`

**** NOTE ****

If you want to access your created environment again, you must load the Anaconda3 module and activate your environment like so for the `tf_py38` environment

```
Last login: Tue Mar 21 22:36:24 2023 from ood.arc.ipv6.vt.edu
+-----+
| This computer is the property of Virginia Polytechnic Institute and State |
[smutnyj@tinkercliffs2 ~]$ module load Anaconda3/2020.11
[smutnyj@tinkercliffs2 ~]$ source activate tf_py38
(tf_py38) [smutnyj@tinkercliffs2 ~]$
```

**** NOTE ****

Step 5 creates your ARC instance that will allow you to start programming with more advanced resources. The items you input are very important. It is up to you to understand what you can and cannot input based on the *Interactive Session* that you are trying to use.

5. Create your own ARC instance

- (JupyterNotebook – test conda env/module)
- From the ARC dashboard; click *Interactive Apps* -> *Jupyter Notebook – test conda env/module*

Home / My Interactive Sessions / Jupyter Notebook -- test conda env/module

IDE

Code Server

Eclipse

Nvidia-Nsight-Eclipse

PyCharm

Interactive Apps

AMDuProf

Ansys Workbench

DeepLabCut

Desktop

GAMS Studio

IGV

Jupyter Notebook -- test conda env/module

Jupyter Notebook --Container

LS-PrePost

Jupyter Notebook -- test conda env/module

WORK IN PROGRESS

Launch a Jupyter Notebook on TinkerCliffs and optionally activate a Conda environment.

Cluster

tinkercliffs

Select the container to use.

Jupyter version: ood-jupyter-tensorflow_tcamd_1Dec2020.sif

- "These Images are pulled directly from the Jupyter Docker Stacks."
- See here: <https://jupyter-docker-stacks.readthedocs.io/en/latest/using/selecting.html>

Account

ece6524-spring2023

- The allocation you would like to use for SLURM.

Reservation

Partition

a100_dev_q

- To request a GPU enabled queue, preface it with v100_. Example: v100_normal_q

Number of hours (min-1, max-48)

1

c. Enter the following information for your instance.

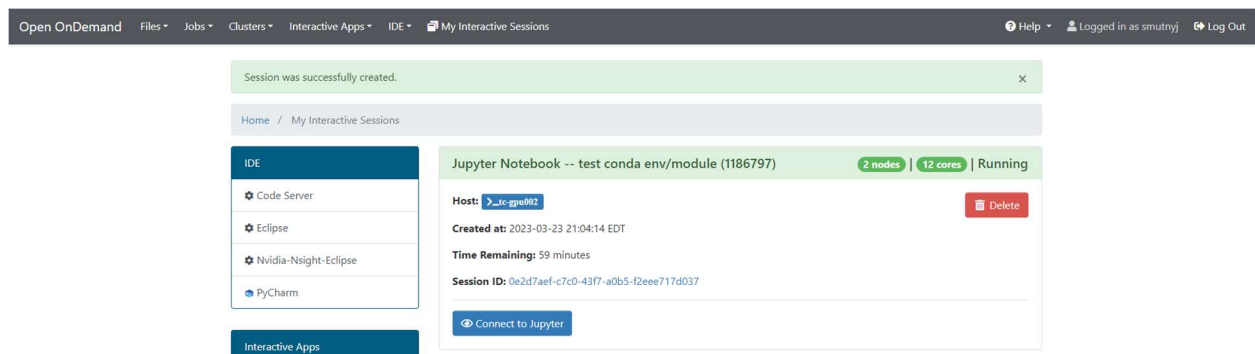
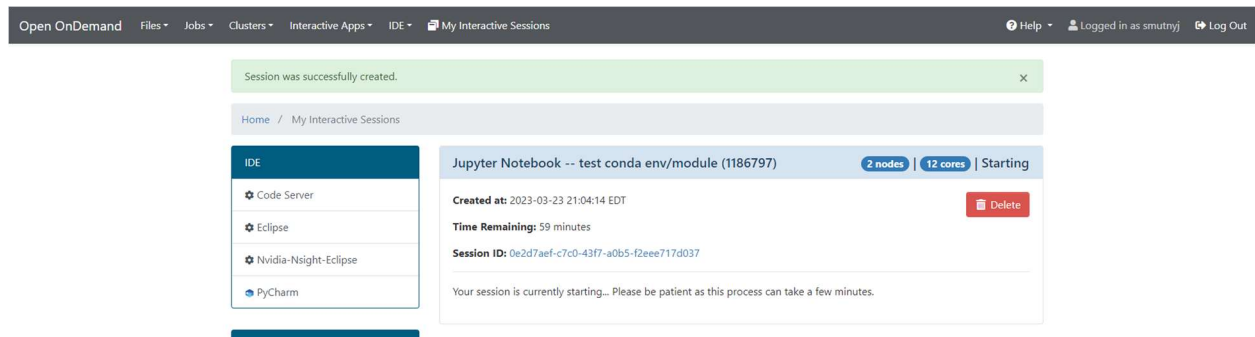
i. Link1: <https://www.docs.arc.vt.edu/resources/compute/00tinkercliffs.html>

| Item | Setting that the author chooses | Comments |
|---|---|--|
| <i>Cluster</i> | <i>Tinkercliffs</i> | <i>choose the one you made your env with in the shell</i> |
| <i>Container</i> | <i>Jupyter version: ood-jupyter-tensorflow_tcamd_1Dec2020.sif</i> | <i>Choose the one that includes the base software package you need (tensorflow, pyTorch, scipy). I cannot guarantee that you can run tensorflow in a pyTorch container even if you install tensorflow in your environment.</i> |
| <i>Account</i> | <i>Ece6524-spring2023</i> | |
| <i>Reservation</i> | | <i>Leave blank unless needed</i> |
| <i>Partition</i> | <i>See link 1</i> | <i>This item is CRITICAL. The partition you select will determine what hardware you can use and how long the instance lasts. Also it decides how long you wait for your ARC instance to be made.</i> |
| <i>Number of hours</i> | <i>#</i> | <i>Depends on your Partition</i> |
| <i>Number of nodes</i> | <i>#</i> | <i>Depends on your Partition. Unless you have computer-to-computer application. You only need one.</i> |
| <i>Number of cores per node</i> | <i>#</i> | <i>Depends on your Partition.</i> |
| <i>Number of GPUs per node</i> | <i>#</i> | <i>Depends on your Partition</i> |
| <i>Default directory to start notebooks</i> | | <i>Leave blank unless needed</i> |
| <i>PYTHONUSERBASE</i> | | <i>Leave blank unless you KNOW WHAT YOU ARE DOING</i> |
| <i>Required Modules</i> | <i>Anaconda3/2020.11</i> | <i>You MUST enter this to run a custom environment.</i> |

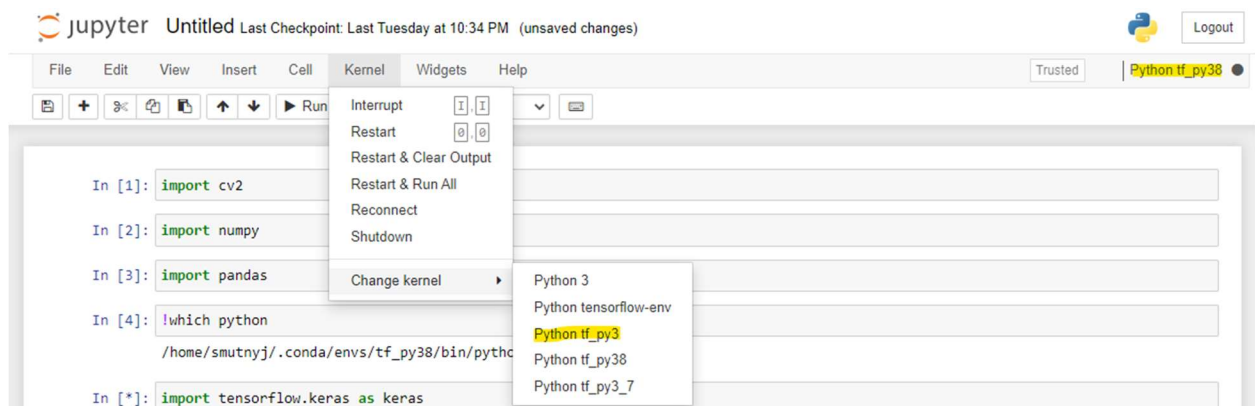
d. Click *Launch*

6. Access your Jupyter Notebook instance

- Wait until your ARC resources are dedicated to the instance (should take ~30 seconds. If it takes more than 2 minutes then your settings in step 5b were incorrect)
- Click *Connect to Jupyter* when its ready.



- In your Jupyter Notebook; switch to your custom environment.
 - Go to *Kernel* -> *Change kernel* -> *Select your environment name*



DONE

Go back to the TinkerCliffs shell to install more packages 😊