Getting Started on the Neuromorphic Research Cloud

Welcome to the Neuromorphic Research Cloud. Below are some tips to get you started.

Setting up SSH Public Key Auth and SSH Proxies

Please set up SSH jump host support and/or ssh public key auth. It is assumed that you are on a machine you control.

Make two ssh keys, change the paths to match yours. Empty passphrases are fine.

username@yourowncomputer ~ % ssh-keygen Generating public/private
rsa key pair.
Enter file in which to save the key (/home/username/.ssh/id_rsa):
/home/username/.ssh/vlab_gateway_rsa Enter passphrase
(empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/username/.ssh/vlab_gateway_rsa.
Your public key has been saved in /home/username/.ssh/vlab_gateway_rsa.pub.
The key fingerprint is:
REDACTED
The key's randomart image is:
REDACTED username@yourowncomputer ~
% ssh-keygen Generating public/private rsa
key pair.
Enter file in which to save the key (/home/username/.ssh/id_rsa):
/home/username/.ssh/vlab_ext_rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/username/.ssh/vlab_ext_rsa.
Your public key has been saved in /home/username/.ssh/vlab_ext_rsa.pub. The key
fingerprint is:
REDACTED
The key's randomart image is: REDACTED

Then you'll want to make your ~/.ssh/config look like this, again changing the paths and username to match yours.

Host ssh.intel-research.net
User=username
IdentityFile /home/username/.ssh/vlab_gateway_rsa
Host *.research.intel-research.net
HostName %h
User=username
ProxyCommand= ssh -W %h:%p ssh.intel-research.net
IdentityFile /home/username/.ssh/vlab_ext_rsa

For users connecting from Windows and using PowerShell or OpenSSH, the "ProxyCommand ssh" line needs a full path to the ssh command:

- `ProxyCommand= C:\Windows\System32\OpenSSH\ssh.exe -W %h:%p ssh.intel-research.net`

Next, send your public keys to nrc_support@intel-research.net and we will add them for you.

That's it. You should be able to ssh directly into ncl-YOURORG.research.intel-research.net (full FQDN is important!!).

Note that once you send us the public SSH keys we will provide you with the hostname of your VM, to replace "YOURORG."

Setting up Your Environment

Set the environment variables by editing your ~/.bashrc file. If there is no .bashrc file in your home directory, please create one. In your ~/.bashrc file, add this line: **source /nfs/ncl/.bashrc**

Note, there are variants of the shells available, here we use .bashrc as an example.

Source your ~/.bashrc file to load the changes with this command: **source ~/.bashrc**

Now test to see that you did it correctly. Here's some typical output when running **sinfo** command:

```
username@THE_NRC_VM ~ % sinfo
PARTITION AVAIL TIMELIMIT NODES STATE NODELIST normal* up
infinite 3 idle ncl-mh-[02,04-05] socketed up infinite 1 idle ncl-mh-01     test
up infinite 1 idle ncl-slurm-db
```

Installation Details

1. The installation files are located at /nfs/ncl/releases. SSH into the INRC Cloud and determine which version you want to install. It is recommended that the latest version be installed.
    a. ssh user@yourvm.research.intel-research.net
    b. cd /nfs/ncl/releases
2. There are two packages within the <latest_version> sub directory:
    a. A pip installable tarball to install NxSDK
        i. nxsdk-<latest_version>.tar.gz
    b. A tarball for tutorials, modules, and documentation:
        i. nxsdk-apps-<latest_version>.tar.gz
3. Create a virtual environment in your home directory:
    a. cd ~
    b. python3 -m venv python3_venv
    c. source python3_venv/bin/activate

4. Complete all following steps within the virtual environment
5. Copy Release artifacts:
    a. cp /nfs/ncl/releases/<latest_version>/*.
        i. Note the “dot” at the end of this command is necessary
6. Install NxSDK:
    a. python -m pip install nxsdk-<latest_version>.tar.gz. Ignore the “Failed building wheel for nxsdk” and the associated “Failed to build nxsdk.” This is a known error and pip will retry with setup.py.
7. Unzip Tutorials, Docs, and Modules in your home directory:
    a. mkdir nxsdk-apps && tar xzf nxsdk-apps-<latest_version>.tar.gz -C nxsdk-apps –stripcomponents 1
8. Refer to the 0.7 release notes for additional details, e.g. running tutorials
    a. cd nxsdc-apps/docs
    b. Refer to README.html
9. When complete, deactivate the virtual environment
    a. deactivate