Guide: How to use NCSU ARC Cluster

Activate your account

You should have received an email from root@archl.localdomain by now. It contains a link for you to activate your ARC Cluster account. In that webpage, you should see a text box where you can paste a public key.

You will need to generate an SSH key for your ARC account.
And since you need to connect to ARC Cluster within the NCSU network, we suggest you first connect to `remote.eos.ncsu.edu`, and follow the steps for Linux below.

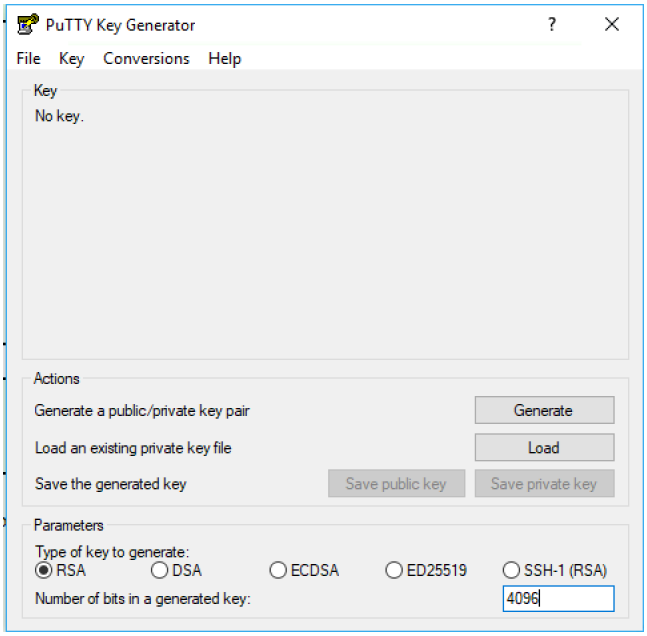
- For Linux and Mac, you may generate an SSH key from the Terminal:

  ```
  ssh-keygen -t rsa -b 4096 -C "your_email@ncsu.edu"
  ```

  and copy the content of the generated `.pub` file into the webpage text box.

- For Windows users, if you are on campus and would like to connect to ARC Cluster directly, you may use PuTTYgen from your PuTTY installation.

  1. Open PuTTYgen
  2. Select RSA for "Type of key to generate". Change the "Number of bits in a generated key" to 4096



  3. Click "Generate". Move mouse inside window until the bar is filled.

4. Set a passphrase, and save them.
5. Copy the text inside the "Public key for pasting", and paste them in the webpage.
6. Open PuTTY, in the "Connection -> SSH -> Auth", select the private key you just saved.

Connect to the ARC Cluster

After you have the public key configured, simply issue the following command in the terminal:

```
ssh arc.csc.ncsu.edu
```

Or use your favorite ssh client under Windows from within the campus network.

Using the ARC Cluster

Here we show you the steps you needed to start working on Program 2. Please refer to the ARC Cluster homepage for full documentation.

- You will be at a login node when you just log into ARC. Your prompt will look like this:

  ```
  [unityID@login ~]$
  ```

  You are not able to compile or run your code in the login node.

- You need to obtain a compute node:
  `srun -p c2050 --pty /bin/bash`
  This will give you an interactive bash shell with a TESLA C2050 GPU. Your prompt will now look like this:

  ```
  [unityID@c8 ~]$
  ```

  The node number here is 8. You may confirm your GPU type by refering to the "Hardware" section in the ARC Cluster homepage, or using the following command:

  ```
  lspci|grep VGA
  ```

  The login node and compute nodes share the same file system. Once you are on the compute node, you may start working on the program. You may use `scp` or `rsync` to copy the Program 2 files in and out of the ARC Cluster.

  – *Note: We found our reference solution was having problems running on GTX480 nodes. We suggest you use one of the c2050 or c2070*

nodes. They are verified to work. If you are also able to make it work on GTX480 nodes, please let us know.

- You should now able to compile and test your CUDA code.

Logging out

When you're ready to log out, you may need to log out from several levels. From a compute node, you can type exit to fall back to the login node. Typing exit from there will drop you back to whatever machine you connected from (probably remote-linux). One more exit should get you out.

Once the class is over, all the data in the temp accounts will be purged. The accounts are not valid past the end of the assignment. In case, you wish to continue to work on ARC, you may follow the steps under "Obtaining an Account" in the ARC Cluster homepage.