Nexus Cluster

CMSC470

CLIP Cluster

- **CLIP Cluster is part of the broader cluster provided and maintained by UMIACS**
- **UMIACS manages SLURM to manage the cluster.**

Resources:

UMIACS Staff: staff@umiacs.umd.edu

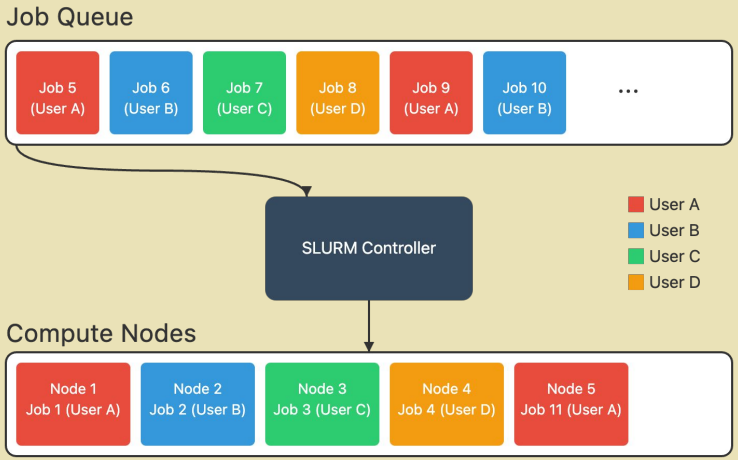
UMIACS Wiki: https://wiki.umiacs.umd.edu/umiacs/index.php/Main_Page

SLURM Docs: https://wiki.umiacs.umd.edu/umiacs/index.php/ClassAccounts#Overview

SLURM: What is it?

Simple Linux Utility for Resource Management

An open-source workload manager designed for Linux clusters of all sizes.

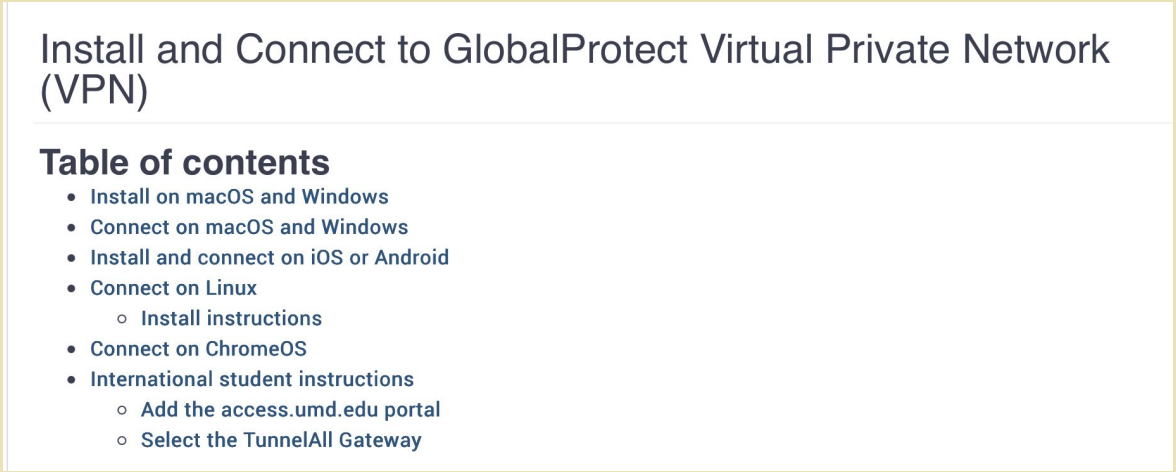


Key Functions of SLURM:

1. **Resource Allocation**
   - Allocates access to computer nodes
   - Can be exclusive or non-exclusive access
   - Allocations are time-limited
2. **Job Management Framework**
   - Starts, and executes, and monitors jobs
   - Typically handles parallel jobs
   - Handle dependent jobs.
3. **Resource Contention Management**
   - Decides which jobs run first when the cluster is busy
   - Manages a queue of pending jobs

How to Use Compute

Step 1:
Download Umiacs Virtual Private Network at
https://itsupport.umd.edu/itsupport?id=kb_article_view&sysparm_article=KB0016076



Install and Connect to GlobalProtect Virtual Private Network (VPN)

Table of contents

- Install on macOS and Windows
- Connect on macOS and Windows
- Install and connect on iOS or Android
- Connect on Linux
  - Install instructions
- Connect on ChromeOS
- International student instructions
  - Add the access.umd.edu portal
  - Select the TunnelAll Gateway

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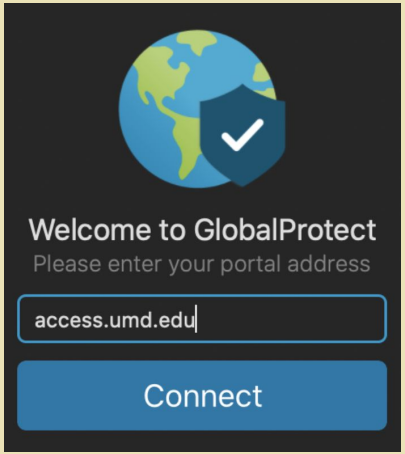
Step 2:
Connect to VPN and authenticate



How to Use Compute

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Step 2:
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Step 3:
Using your account- ssh login your account

Your assigned account:
{Your_directory_ID}@nexusclass00.umiacs.umd.edu
{Your_directory_ID}@nexusclass01.umiacs.umd.edu

Accessing the Cluster: Login Nodes

SSH-ing to the Submission / Login Nodes:

>{Your_directory_ID}@nexusclass00.umiacs.umd.edu
>{{Your_directory_ID}@nexusclass01.umiacs.umd.edu

Configure your login info in ~/.ssh/config
Follow the following steps

1. **nano ~/.ssh/config**
2. **Edit nano file and add your account information to the file**

```
Host nexusclass00.umiacs.umd.edu
HostName nexusclass00.umiacs.umd.edu
User {Your_Directory_ID}
```

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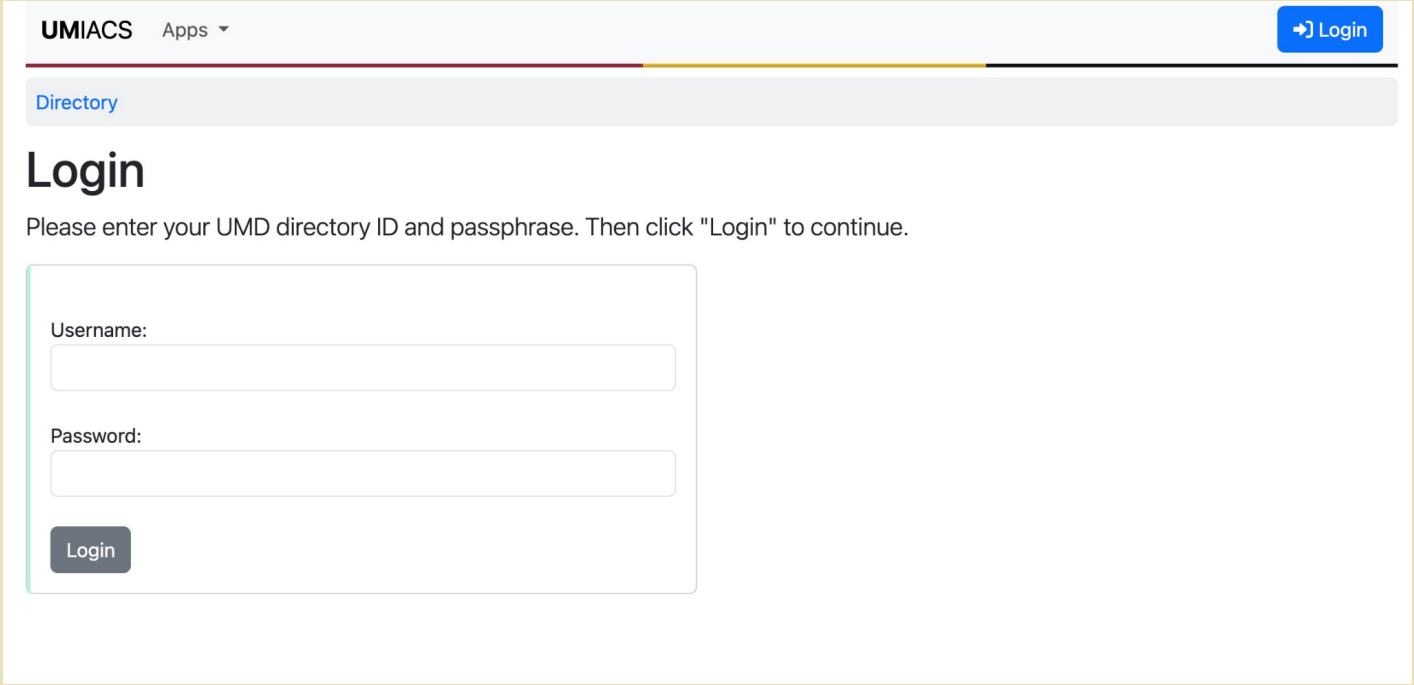
```
Host nexusclass00.umiacs.umd.edu
HostName nexusclass00.umiacs.umd.edu
User {Your_Directory_ID}
```

3. **Login through vscode or terminal**

Check your resource access

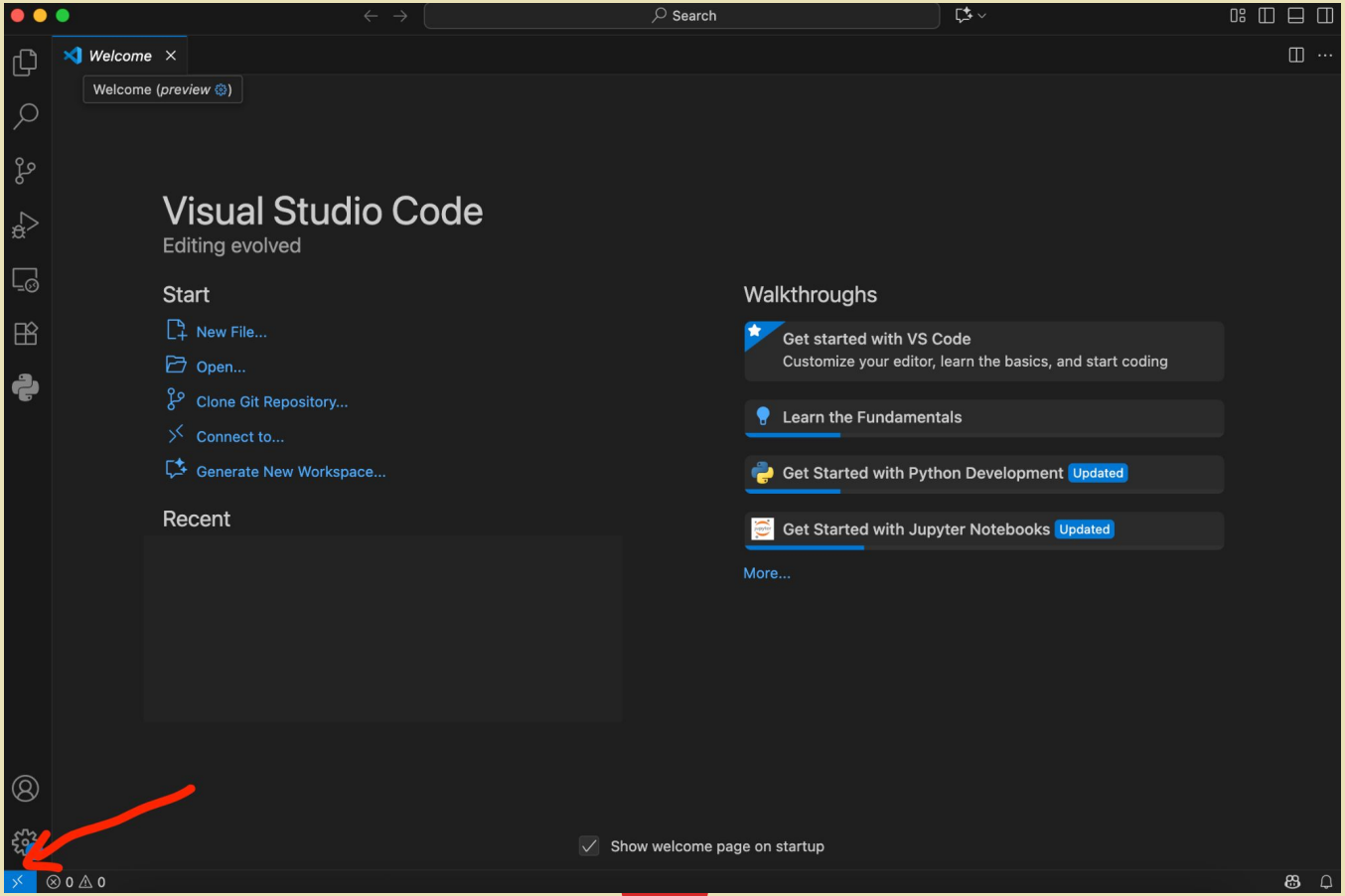
Login at https://intranet.umiacs.umd.edu/directory/auth/login/?next=/directory/cr/



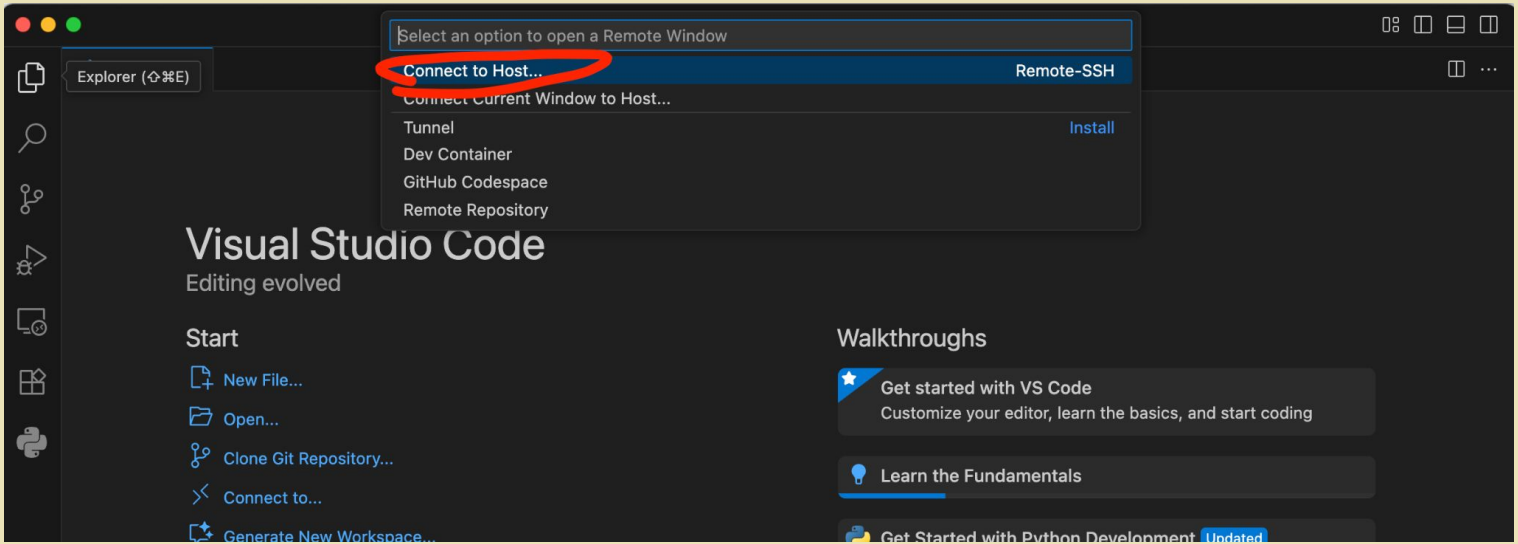
Login Through Terminal

1. Open Terminal
2. ssh {Your_Directory_ID}@nexusclass00.umiacs.umd.edu
3. Enter your password
4. Access resource and code at terminal

Login through VS code



Login through VS code



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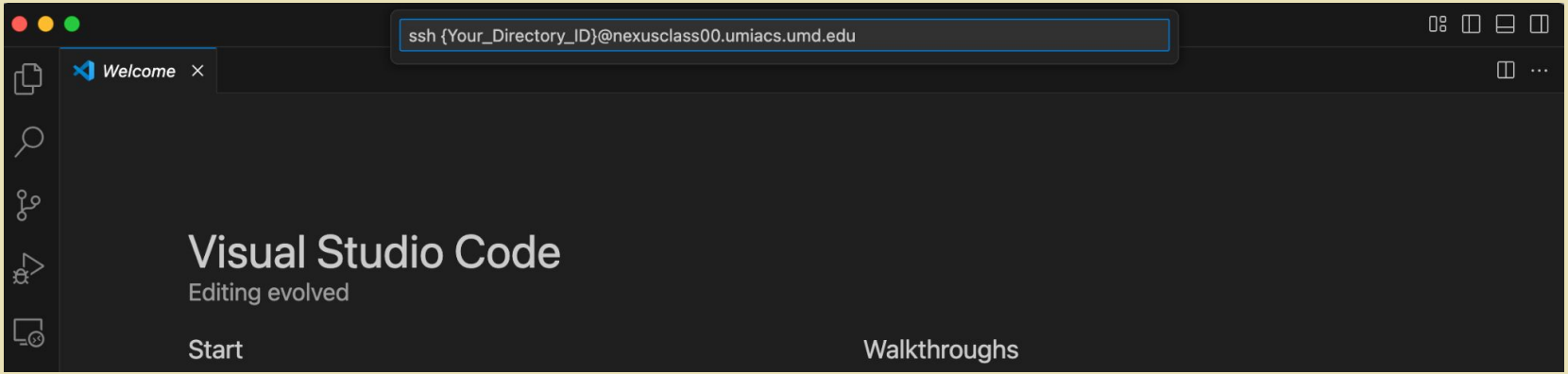
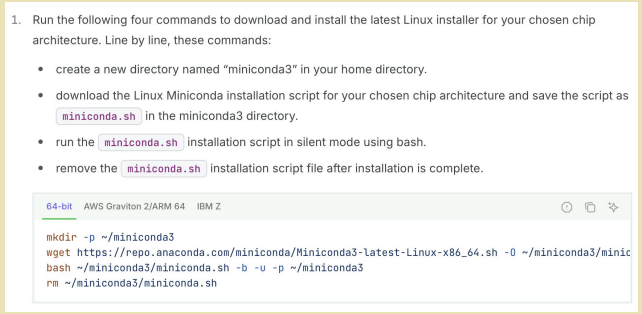


After Loggin In

1. Install Conda and environment
   https://www.anaconda.com/docs/getting-started/miniconda/install#quickstart-install-instructions



1. Run the following four commands to download and install the latest Linux installer for your chosen chip architecture. Line by line, these commands:
   - create a new directory named “miniconda3” in your home directory.
   - download the Linux Miniconda installation script for your chosen chip architecture and save the script as `miniconda.sh` in the miniconda3 directory.
   - run the `miniconda.sh` installation script in silent mode using bash.
   - remove the `miniconda.sh` installation script file after installation is complete.

64-bit | AWS Graviton 2/ARM 64 | IBM Z

```
mkdir -p ~/miniconda3
wget https://repo.anaconda.com/miniconda/Miniconda3-latest-Linux-x86_64.sh -O ~/miniconda3/minic
bash ~/miniconda3/miniconda.sh -b -u -p ~/miniconda3
rm ~/miniconda3/miniconda.sh
```

2. Activate conda

source miniconda/bin/activate

3. Create conda environment

conda create -n environment_name python=3.11

Personal Storage

cd /fs/classhome/{Your_Directory_ID}

Personal Storage

Your home directory has a quota of 30GB and is located at:

```
/fs/classhomes/<username>
```

You can request up to another 100GB of personal storage if you would like by **having your TA or instructor contact staff**. This storage will be located at

```
/fs/class-projects/<semester><year>/<coursecode>/<username>
```

where `<semester>` is either "spring", "summer", "fall", or "winter", `<year>` is the current year e.g., "2025", <coursecode> is the class' course code as listed in UMD's Schedule of Classes in all lowercase e.g., "cmsc999z", and `<username>` is your username.

Requesting for GPU to run a bash script

On terminal, do

```
srun --qos=default --partition=class --account=class --time=2:00:00 --gres=gpu:1
bash YOUR_SCRIPT.sh
```

Example bash script:

```
python run_eval.py
```

Requesting Interactive GPU Session

srun --qos=default --partition=class --account=class --time=2:00:00 --gres=gpu:1

Checking your GPU

nvidia-smi