Connecting to NERSC
1. Stand up, stretch, breathe!
2. Options for connecting
3. Password resets and login failures (NIM)
4. NX
5. SSH and MFA
First exercise: NIM

https://nim.nersc.gov

Please sign in
NERSC Username: 
NIM Password: 

Reset your NIM password. Forgot your username? | Sign in as Staff


NERSC recommends using Multi-Factor Authentication (MFA) to increase your account security. Read instructions here. Click here to enable MFA and select 'enabled', then 'Save All Rows'.

Reset your NIM password using the link above. If you have problems resetting your password, contact Account Support at the number below.

NERSC Account Support: 1-800-66-NERSC (menu option #2) or 510-486-8612.
NERSC Consultants: 1-800-66-NERSC (menu option #3) or 510-486-8611,
consult@nersc.gov

Browser Requirements | NOTICE TO USERS | All connections are logged.
Please DO NOT BOOKMARK this page. Bookmark http://nim.nersc.gov/
Next exercise: MyNERSC

https://my.nersc.gov
Reasons for NX (aka NoMachine)

• **Slow Speeds:** X-Windows is slow over network. Remote windows from emacs can take minutes to open

• **Solution:** NX Buffers/Compresses X messages, giving much better X experience
Reasons for NX

- **Long Lasting Desktop:**
  NX gives you a desktop, so you can connect to NERSC resources (such as Edison) and start your GUI applications.
• **Lost Connections:** If I lose internet connection, I might lose all running processes.

• **Solution:** NX provides sessions. You can suspend the session without terminating the running processes.
  – And get back to the same point when reconnected, *even from a different location or computer.*
What you need for NX

• Any desktop/laptop
  – Windows/Linux/Mac
• NX Client software (free)
  http://www.nersc.gov/users/connecting-to-nersc/using-nx/download-tested-nx-player/
  http://www.nersc.gov/users/connecting-to-nersc/using-nx/nxconfig-2/
• Search for "NX" on www.nersc.gov
SSH and MFA

• All NERSC computational systems are accessible via `ssh`
• **First**: you need a terminal program on your desktop/laptop
  – Mac: "terminal" (built-in) or "iTerm2"
    ([https://www.iterm2.com/](https://www.iterm2.com/))
  – Windows: PuTTY
  – Linux: Your own favorite :)
• **If you will use X-forwarding (coming up) (Note: NX is better!)**
  then you also need an X server
  – Mac: XQuartz ([https://www.xquartz.org/](https://www.xquartz.org/))
  – Linux: built in
• **Multi-Factor Authentication**
  – NIM password + OTP ("One-Time Password")
  – OTP obtained via Google Authenticator on your smartphone
    
  
  – Much harder for someone to hack your account

• **Opt-in via NIM**
localhost:~elvis> ssh -l <NIM username> cori.nersc.gov

**************************************************************
*                                                          *
*                      NOTICE TO USERS                      *
*                                                          *
*  Lawrence Berkeley National Laboratory operates this      *
*  computer system under contract to the U.S. Department of *
*  Energy. This computer system is the property of the United *
*  States Government and is for authorized use only. *Users  *
*  (authorized or unauthorized) have no explicit or implicit *
*  expectation of privacy.*                                 *
*                                                          *
*  Any or all uses of this system and all files on this system*
*  may be intercepted, monitored, recorded, copied, audited, *
(etc)                                                *
*  penalties. _By continuing to use this system you indicate  *
*  your awareness of and consent to these terms and conditions *
*  of use. LOG OFF IMMEDIATELY if you do not agree to the *
*  conditions stated in this warning._*                    *
*                                                          *
**************************************************************
Password: <enter your NIM password here>
NERSC Message of the Day

• After you type the password and logged in to a system, you will see NERSC MOTD before your session prompt appears

Last login: Wed Feb 22 16:07:29 2017 from 198.128.212.1
----------------------------------------------- Contact Information -----------------------------------------------
NERSC Contacts http://www.nersc.gov/about/contact-us/
NERSC Status http://www.nersc.gov/users/live-status/
NERSC: 800-66-NERSC (USA)  510-486-8600 (outside continental USA)
----------------------------------------------- Current Status as of 2017-02-22 14:35 PST -----------------------------------------------

Compute Resources:
Cori: Available.
Edison: Available.
Genepool: Available.
PDSF: Available.

Global Filesystems:
DNA: Available.
Global Common: Available.
Global Homes: Available.
Project: Available.
ProjectA: Available.
ProjectB: Available.

Mass Storage Systems:
HPSS Backup: Available.
HPSS User: Available.

----------------------------------------------- Service Status as of 2017-02-22 14:35 PST -----------------------------------------------
All services are available.

----------------------------------------------- Planned Outages -----------------------------------------------
Cori: 02/28/17 6:00-03/01/17 6:00 PST, Scheduled maintenance.
Cori will be degraded due to cabinet additions. Data warp nodes will be reduced during this time.

Cori: 03/01/17 6:00-03/03/17 17:00 PST, Scheduled maintenance.
Cori will be down for adding cabinets and HSN (high-speed network) maintenance. Logins will not be available.

Data Transfer Nodes: 03/01/17 9:00-12:00 PST, Scheduled maintenance.

----------------------------------------------- Past Outages -----------------------------------------------
Cori: 02/21/17 8:00-21:15 PST, Scheduled maintenance.
Cori will be unavailable while updates are applied. Logins will be available, however no jobs will run.

Cori: 02/21/17 21:15-22:15 PST, System in degraded mode.
The majority of the system's compute nodes are currently unavailable. Engineers are investigating the issue

For past outages, see: http://my.nersc.gov/outagelog-cs.php

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Example with X-forwarding

- Allows you to access Visualization programs remotely at NERSC

Example:

```bash
localhost% ssh -l elvis -Y cori.nersc.gov
```

... 

e/elvis> module load matlab 

e/elvis> matlab 

<MATLAB starts up>

NERSC Recommends using NX instead of X-forwarding (faster, more reliable)
Example with MFA

- Detailed help:
  - [http://www.nersc.gov/users/connecting-to-nersc/mfa/](http://www.nersc.gov/users/connecting-to-nersc/mfa/)

1. Install Google Authenticator (on phone)

2. Enable in NIM
Example with MFA

1. Install Google Authenticator (on phone)
2. Enable in NIM

3. Enrol OTP Token
   - from MFA Opt-in/out page in NIM
   - Give it a name, hit "Submit" then scan the QR code with Google Authenticator

4. Login
   - Use your NIM password followed by the numbers provided by Google Authenticator

```
$ ssh corsi.nersc.gov
............................................................
... NOTICE TO USERS ...
Password + OTP:
```
MFA Advanced setup

- You can set "ControlMaster" in your `.ssh/config` file to multiplex SSH connections, saving you from re-typing your password+OTP

  - See [http://www.nersc.gov/users/connecting-to-nersc/mfa/#toc-anchor-5](http://www.nersc.gov/users/connecting-to-nersc/mfa/#toc-anchor-5)
SSH Keys

- If you are not using MFA, you can reduce the number of times you type a password by creating an SSH key pair, and saving the public key in NIM
  
  Note: please always set a passphrase on your SSH key! (No unencrypted keys)
SSH Keys

- Instructions for SSH-agent and SSH keys:

http://www.nersc.gov/users/connecting-to-nersc/connecting-with-ssh/

(Note that most of this happens on your workstation!)
Connecting to NERSC

- denovo.nersc.gov
genepool.nersc.gov
pdfs.nersc.gov

cori.nersc.gov

Edison login nodes
edison01
edison02...

Cori login nodes
cori01
cori02...

Data Transfer Nodes
dtn01.nersc.gov
dtn02.nersc.gov
dtn03.nersc.gov
dtn04.nersc.gov

$SCRATCH (Lustre)

$SCRATCH (Lustre)

$HOME

/project

$SCSCRATCH

NGF (GPFS)

globus online

Jupyter

My NERSC

NIM

EXPERIMENTAL
Thank you.