Connecting to NERSC

New User Training
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This Session

• Connecting to NERSC Services
  a. [https://iris.nersc.gov](https://iris.nersc.gov) for managing your account and project
  b. [https://help.nersc.gov/](https://help.nersc.gov/) to contact NERSC support
  c. [https://my.nersc.gov](https://my.nersc.gov) for center status and a portal to everything

• Connecting to Cori
  a. `ssh -l my_nersc_name cori.nersc.gov` for power users
  b. [https://jupyter.nersc.gov](https://jupyter.nersc.gov) notebooks and terminals in your browser
  c. NoMachine ([https://docs.nersc.gov/connect/nx/](https://docs.nersc.gov/connect/nx/)) for GUI apps
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Iris (https://iris.nersc.gov) for Your Account
Iris ([https://iris.nersc.gov](https://iris.nersc.gov)) for Your Account
Multi-Factor Authentication (MFA)

Tip: you will use this a LOT

- Protects NERSC users from attacks like this →
- Log into NERSC resources with your NERSC password plus a one-time code that is provided by an app
Setting Up MFA in Iris

• First install Google Authenticator on your smartphone (and/or Authy on your computer)

https://authy.com

Search "MFA" at
https://docs.nersc.gov
Setting Up MFA in Iris

- Click the "MFA" tab
- Click the "Add Token" button
- Scan the QR code with the Authenticator app (or, paste the Authy code into Authy)
Logging in with MFA

After single-sign-on page you'll be asked for your one-time password (6 digits from app)
Troubleshooting

- I can't login to Iris
  - New account? It may not be approved yet (can take a few days)
  - Forgot password? Lost MFA tokens?
    Use the links on the Iris login page

- I can login to Iris, but not Cori
  - Are you in a project? Check "Roles" tab
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Help: https://help.nersc.gov/
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https://my.nersc.gov

If you only remember one URL, https://my.nersc.gov will get you everywhere NERSC
Most things require login (also MFA)
Recap: 3 Ways to Access NERSC Services

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Connecting with SSH

"The traditional method"

- For those comfortable working in a terminal, ssh from your local terminal to cori is the most flexible and powerful working environment.

You will need a terminal program!

- Mac: terminal (built-in) or "iTerm2" (https://www.iterm2.com/)
- Windows: PuTTY (or XWin32 or Git BASH) (https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html)
- Linux: Your own favorite :)
- Chromebook: crosh (developer mode) or Crostini (Linux-in-a-container) or SSH App
This means your laptop doesn't recognize the computer calling itself cori. The first time you log in, this is expected. But if your laptop **should** recognize cori, it's a red flag.
Checking the SSH Key Fingerprint

You can check the fingerprint at https://docs.nersc.gov/connect/ssh/#key-fingerprints

Fingerprint sometimes changes after a maintenance
Connecting with SSH

When you ssh in, you'll see a prompt like:
Password + OTP:

Enter your (iris) password, then the 6 digits from Authenticator, with no spaces etc between eg qwerty687921

Nothing will appear at prompt as you type! (this is normal)
If you only get "Password: (no "+ OTP"), your account may not be ready yet
Wait, what was that "-Y"?

"ssh -Y" (or "ssh -X") allow X (ie, GUI) programs on Cori to display on your local monitor.

- Can be very slow - alternatives coming up!
sshproxy

- Tired of repeatedly typing password + OTP?
  - sshproxy.sh creates a short-term (24 hours) certificate
  - Run sshproxy.sh once, then you can ssh to NERSC systems for the next 24 hours before being asked for password+OTP again

- Search "MFA SSH" at https://docs.nersc.gov
sshproxy

Mac/Linux (*sshproxy.sh*)

*sshproxy.sh* -u elvis

Then login using the key:

*sshproxy.sh* -i /path/to/key cori.nersc.gov

Or: add it to your keychain

*sshproxy.sh* -a -u elvis

ssh -l elvis cori.nersc.gov
sshproxy

Windows (sshproxy.exe)

- Start a Command prompt ("CMD" in search box)

  sshproxy.exe -u elvis
  pageant nersckey.ppk
  putty -agent elvis@cori.nersc.gov

Search "windows sshproxy" at https://docs.nersc.gov
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You can access Cori from any web browser, via https://jupyter.nersc.gov
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Running GUI Apps on Cori

GUI apps eg Matlab, DDT (debugging), VTune (performance) can be painfully slow over a network

Why is this, and how can we fix it?
NoMachine: Accelerated X

X protocol makes a lot of traffic
• OK over the (fast) network internal to NERSC
• Not OK over the (slow) internet

NoMachine runs inside NERSC, and sends less data over the (slow) internet.
NoMachine: Accelerated X

NoMachine also removes the weakest link, so broken connections don't kill your application.
How to Set It Up

- [https://docs.nersc.gov/connect/nx/](https://docs.nersc.gov/connect/nx/) has detailed instructions
  - Download the client ([https://www.nomachine.com/download-enterprise#NoMachine-Enterprise-Client](https://www.nomachine.com/download-enterprise#NoMachine-Enterprise-Client)) (Make sure to get the **client**, not the server or workstation)
  - Setup a connection (can optionally use the key you generated with `sshproxy.sh`)
NoMachine without sshproxy

MFA OTP immediately after password (no spaces)

don't save the password (it changes every login!)
NoMachine
What We've Covered

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Thank You and Welcome to NERSC!