Connecting to NERSC

New User Training
June 16, 2020

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NERSC User Engagement Group

This Session

- Connecting to NERSC Services
  a. https://iris.nersc.gov for managing your account and project
  b. https://help.nersc.gov/ to contact NERSC support
  c. 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 notebooks and terminals in your browser
  c. NoMachine (https://docs.nersc.gov/connect/nx/) for GUI apps

Now

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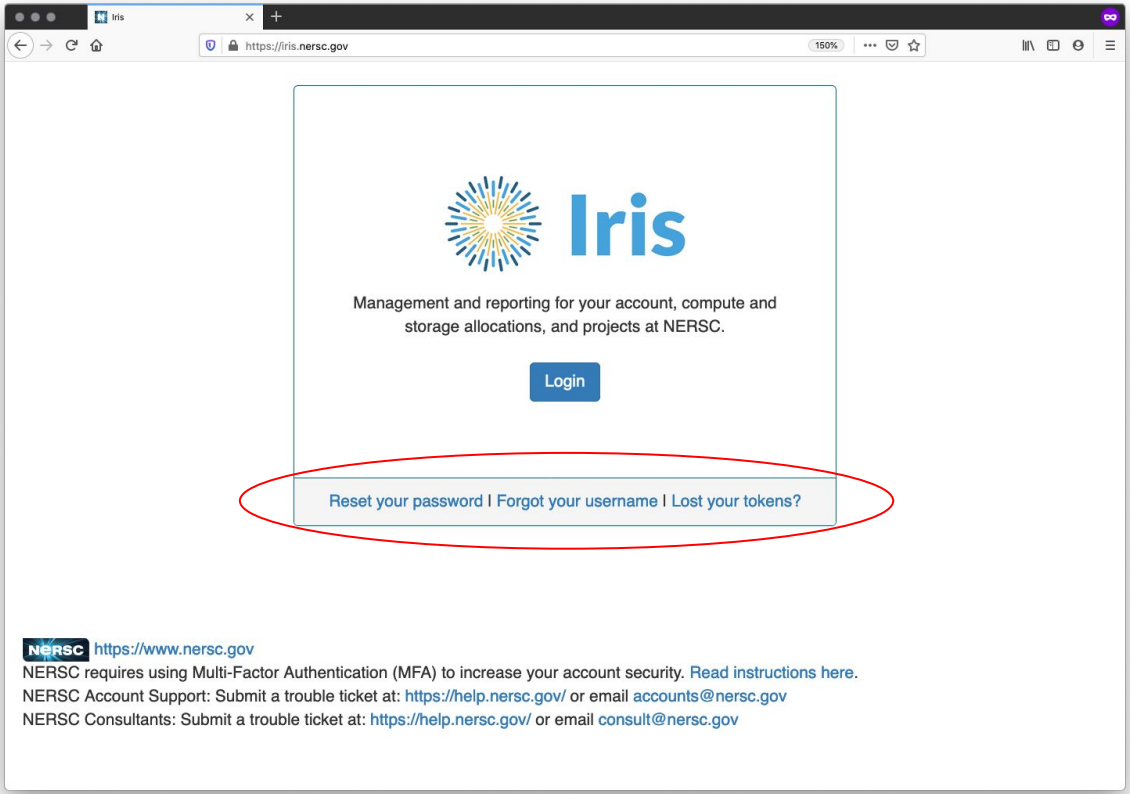
Iris (https://iris.nersc.gov) for Your Account



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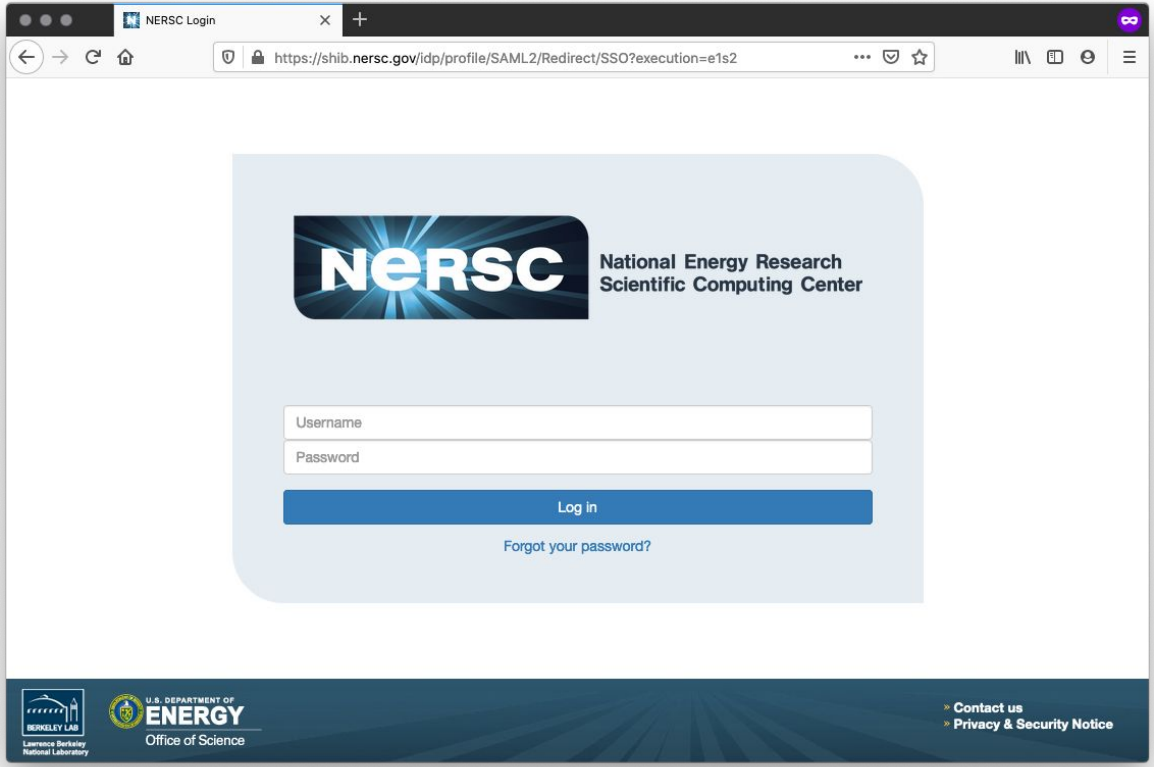
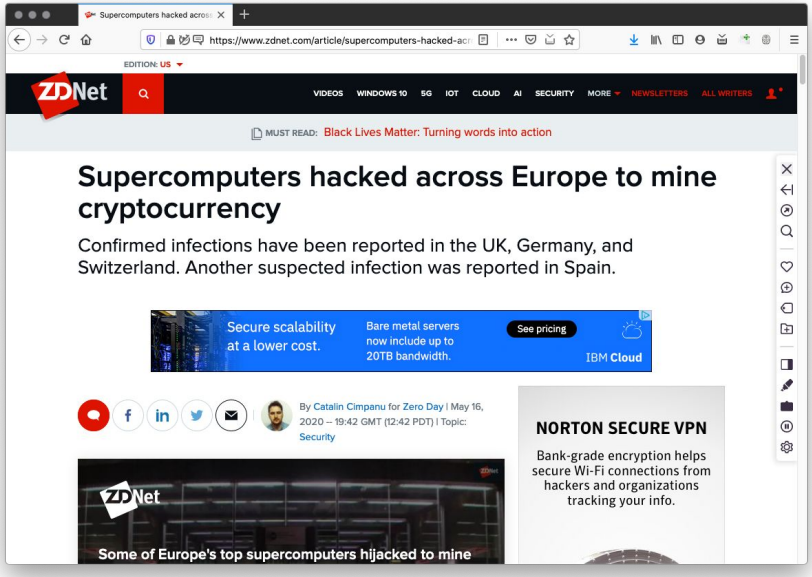


Multi-Factor Authentication (MFA)

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**



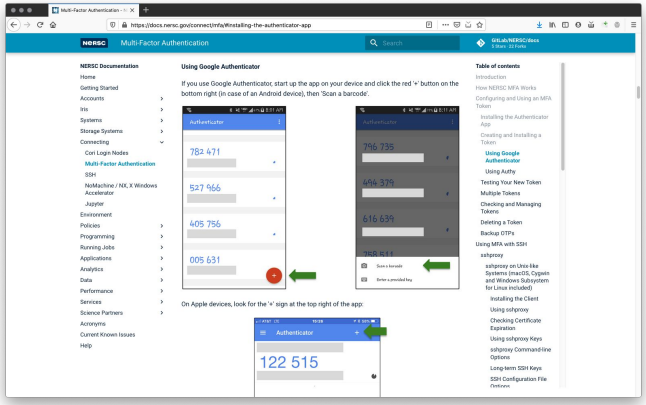
Setting Up MFA in Iris

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

  https://play.google.com/store/apps/details?id=com.google.android.apps.authenticator2&hl=en
  https://itunes.apple.com/us/app/google-authenticator/id388497605?mt=8

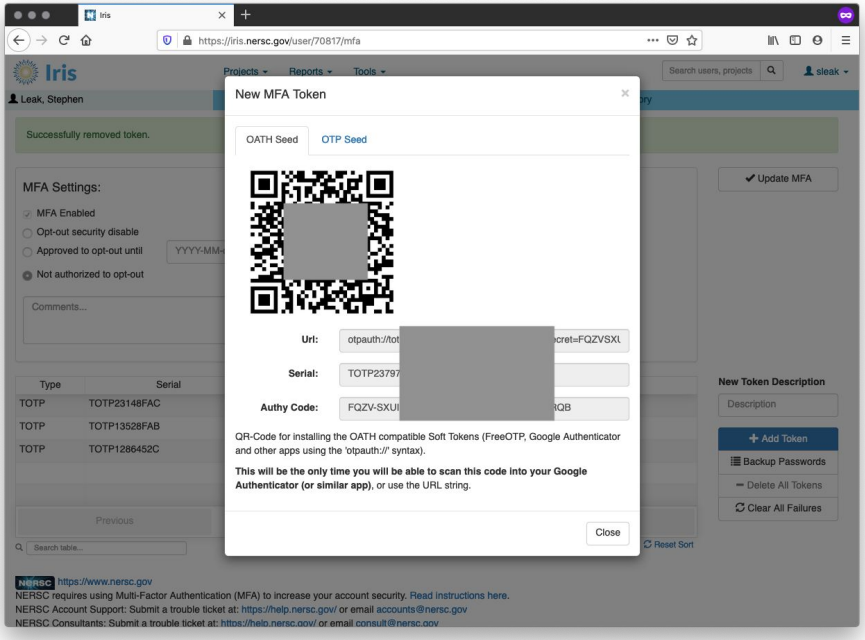
  https://authy.com

Search "MFA" at
https://docs.nersc.gov



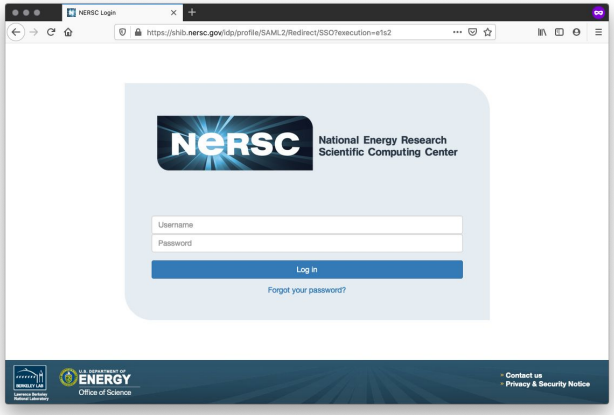
Setting Up MFA in Iris

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



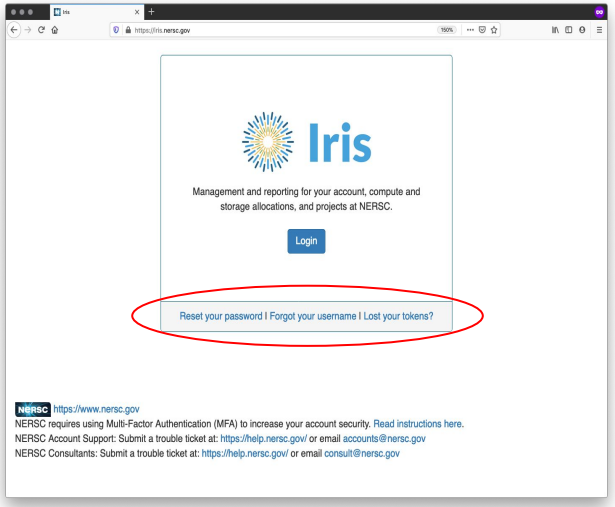
Logging in with MFA

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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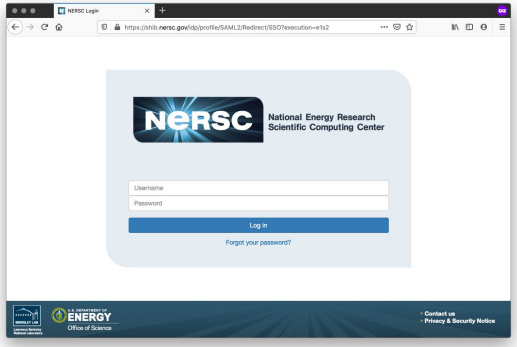
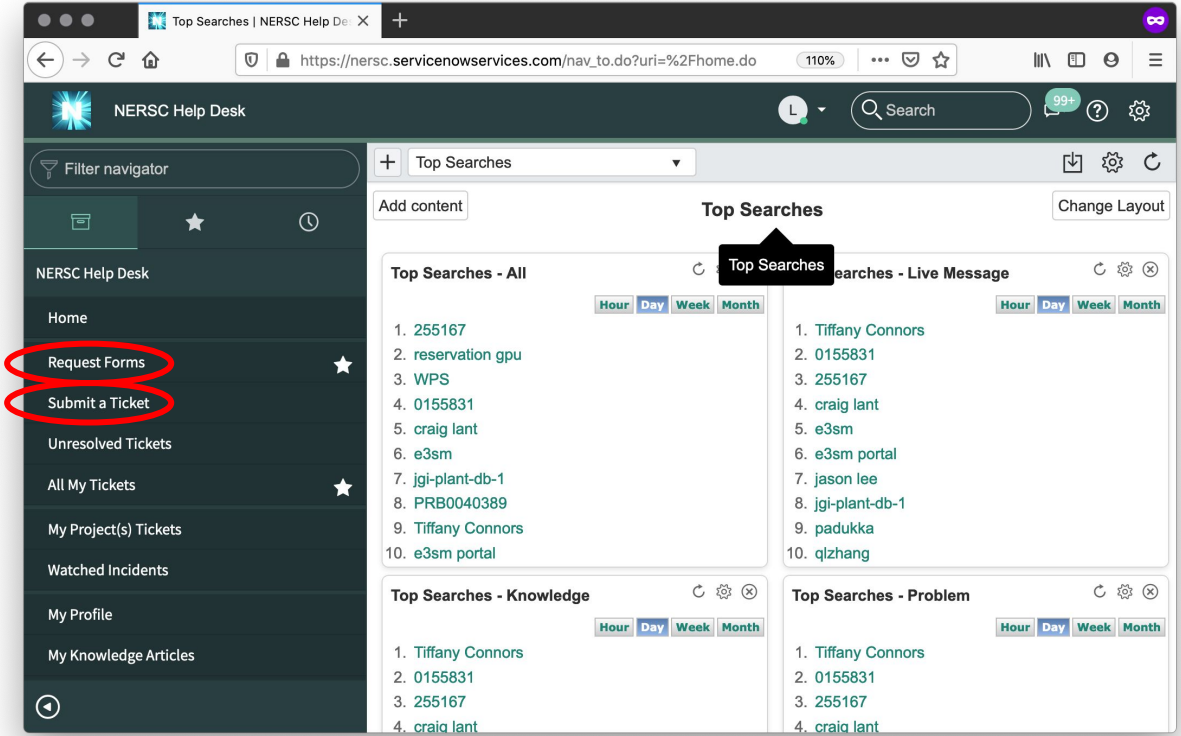
Help: https://help.nersc.gov/





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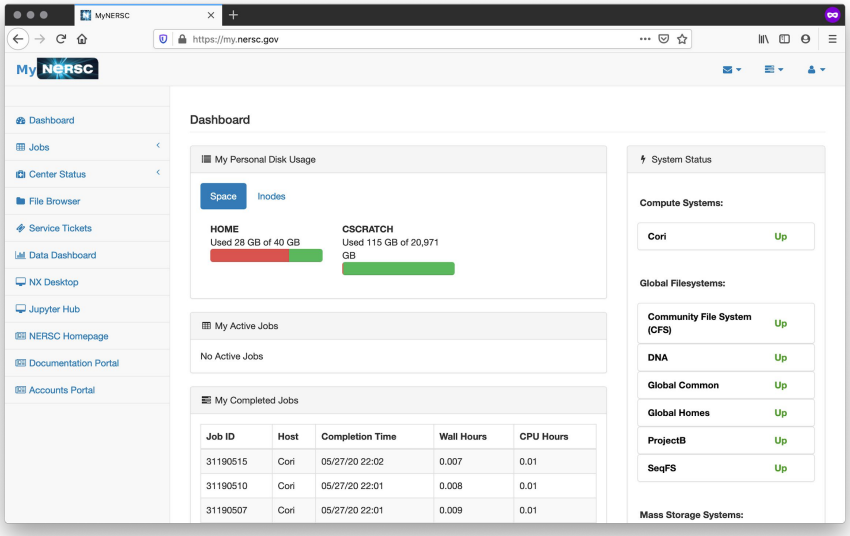
https://my.nersc.gov

If you only remember **one** URL, https://my.nersc.gov will get you everywhere NERSC



https://my.nersc.gov

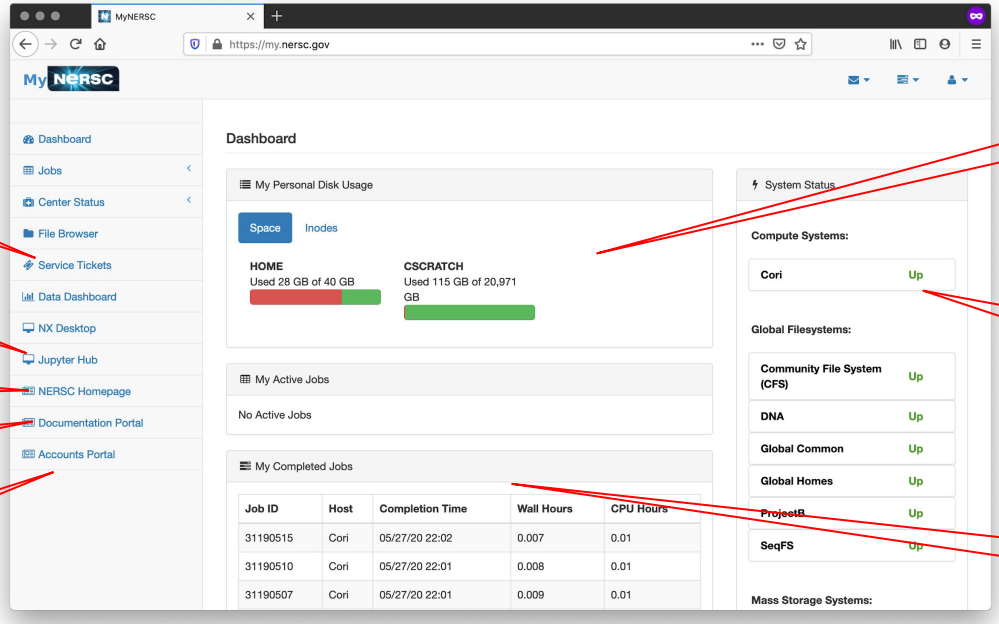
help.nersc.gov

jupyter.nersc.gov

www.nersc.gov

docs.nersc.gov

iris.nersc.gov



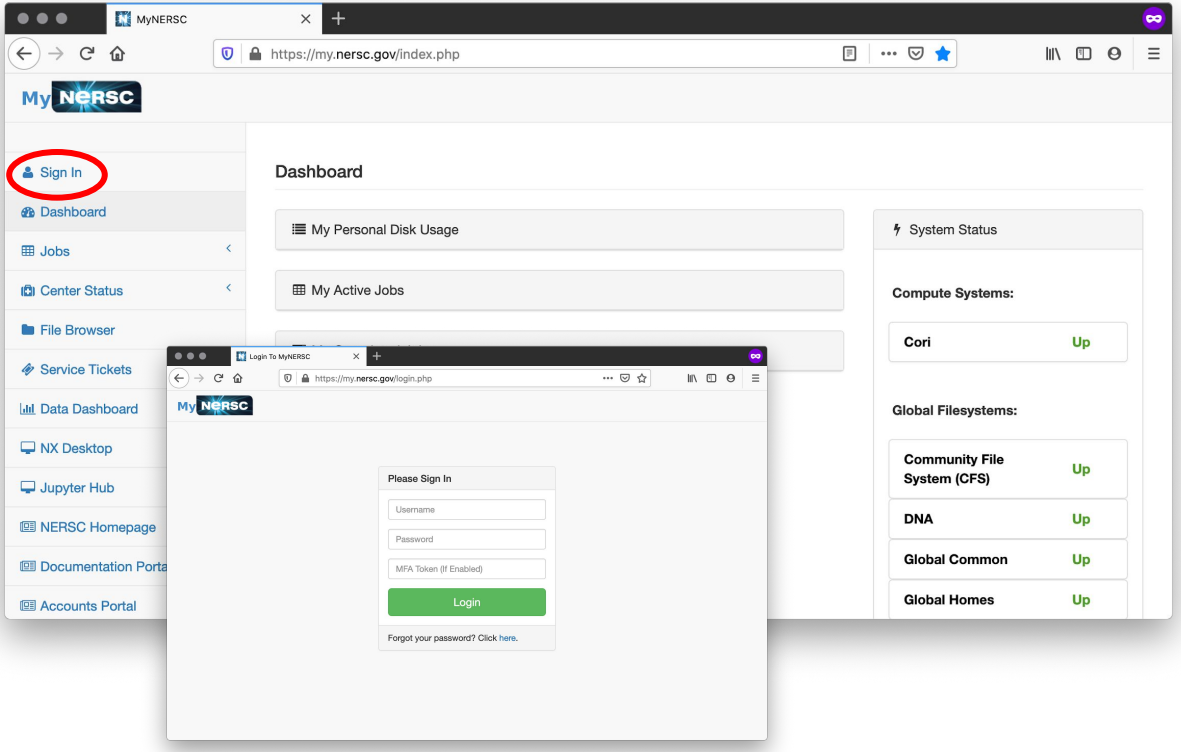
my disk quota

is cori up?

my jobs

https://my.nersc.gov

Most things require login (also MFA)



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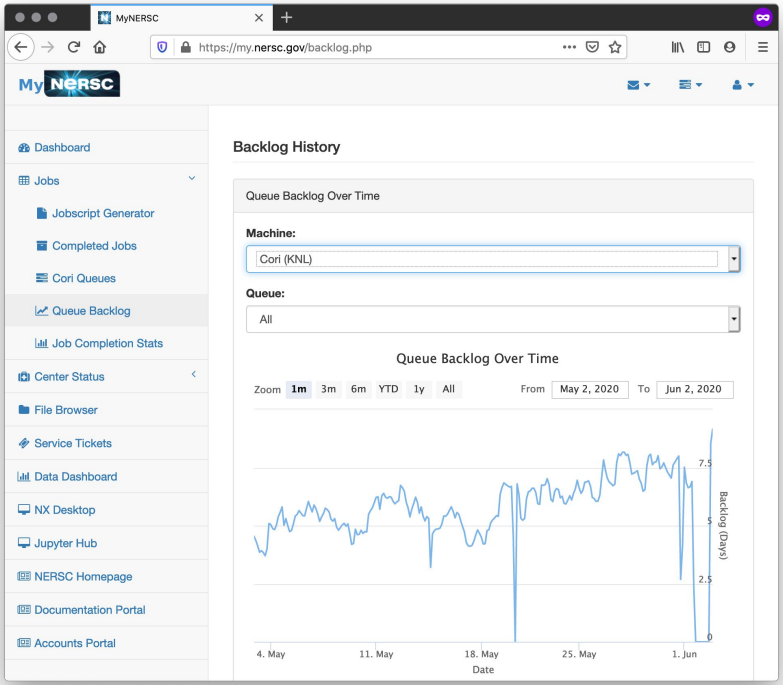

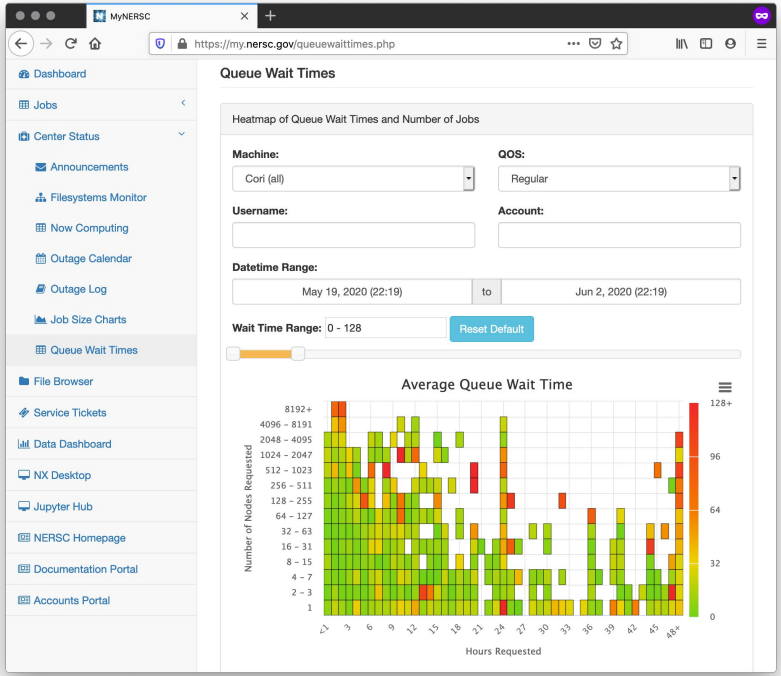

Recap: 3 Ways to Access NERSC Services

- Connecting to NERSC Services
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  c. **https://my.nersc.gov** for center status and a portal to everything

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Next

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Connecting with SSH

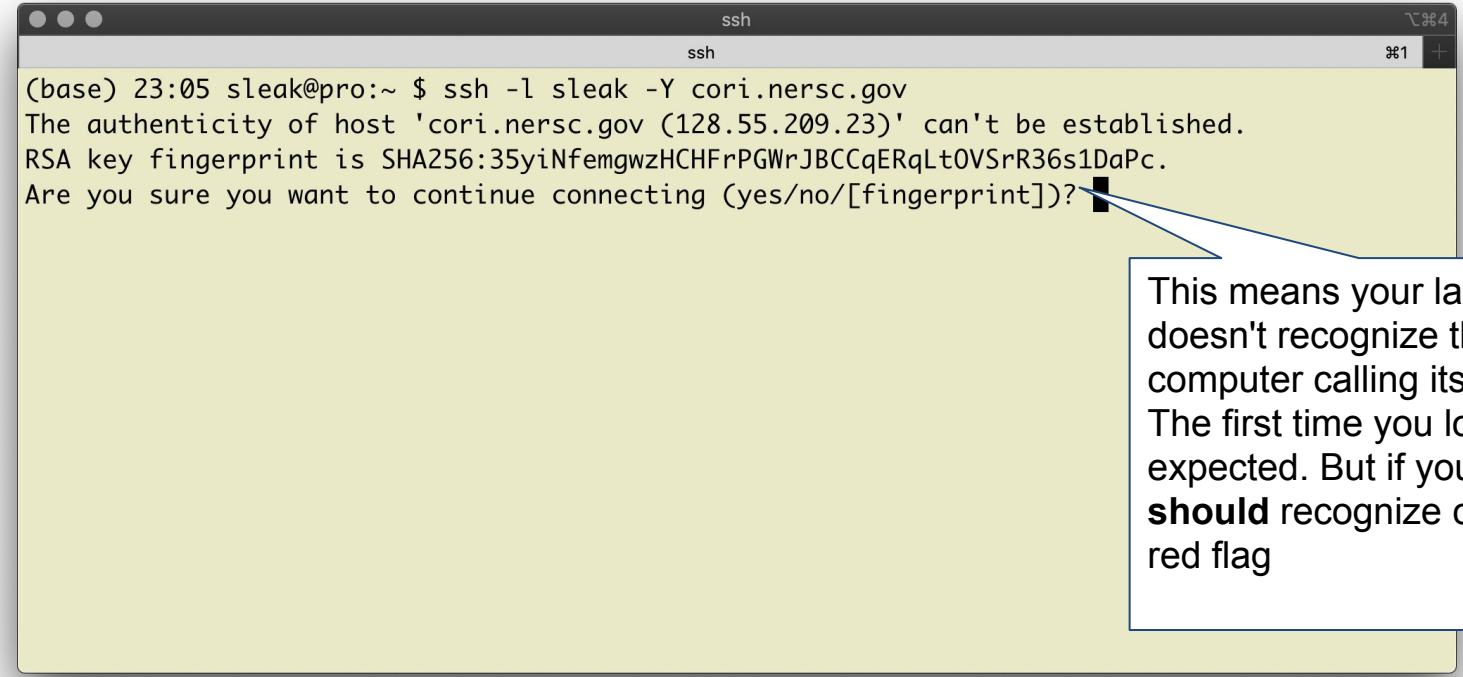
"The traditional method"

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

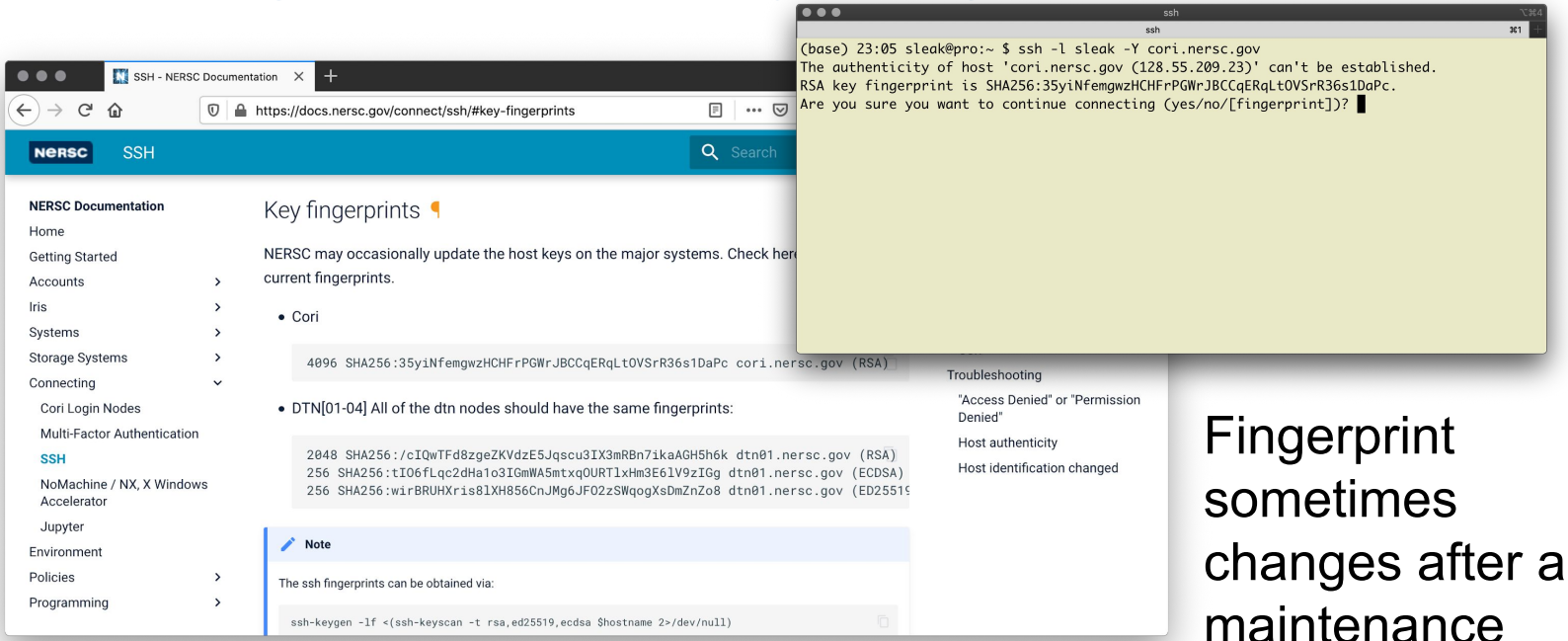
You will need a terminal program!

- 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

Connecting with SSH



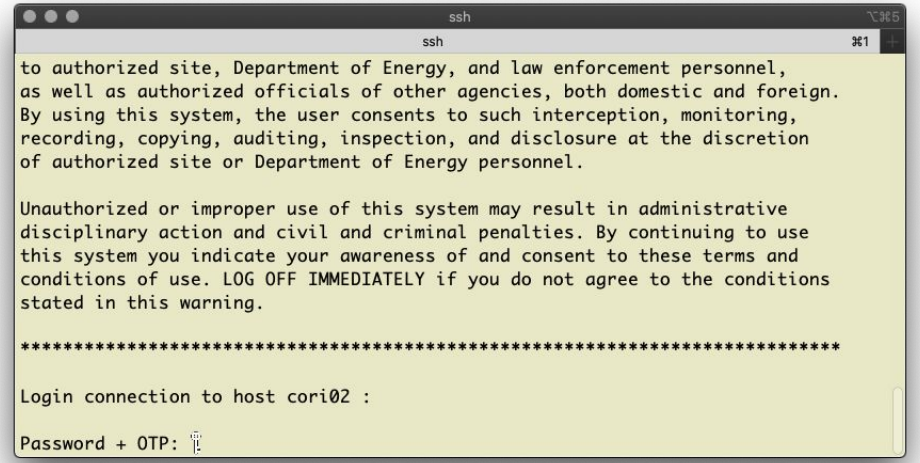
Checking the SSH Key Fingerprint



Fingerprint sometimes changes after a maintenance

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

Connecting with SSH

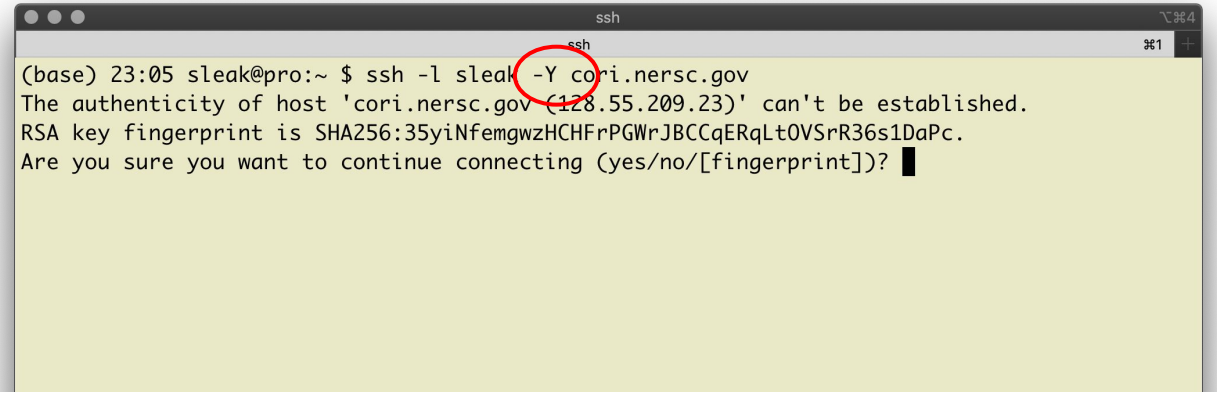


When you ssh in, you'll see a prompt like:
Password + OTP:

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

SSH Options



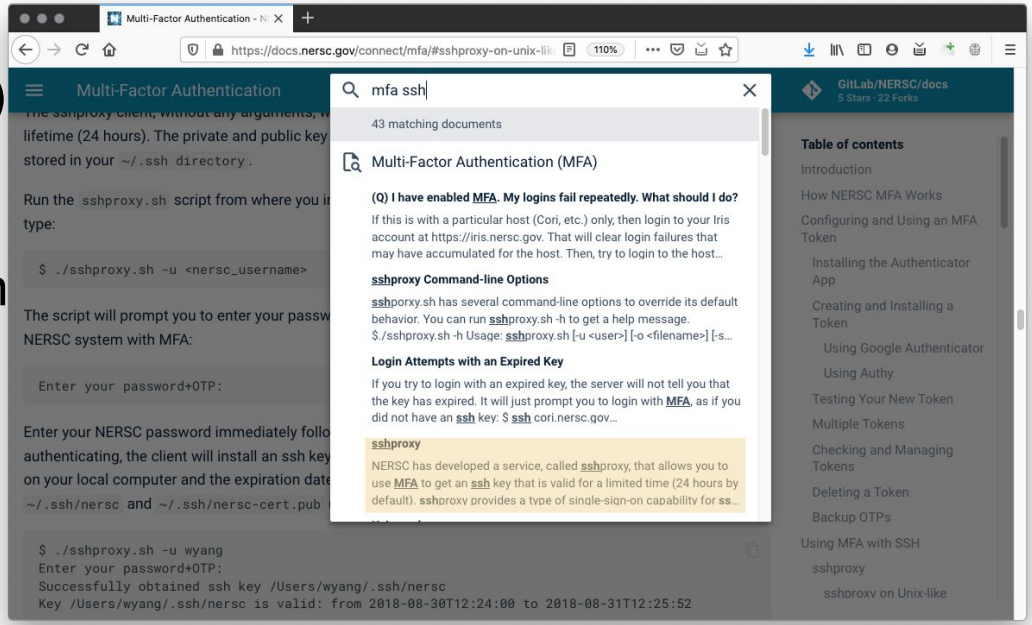
Wait, what was that "-Y" ?

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

- You need an X-server (https://www.xquartz.org/ for Mac or http://x.cygwin.com/ for Windows)
- 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

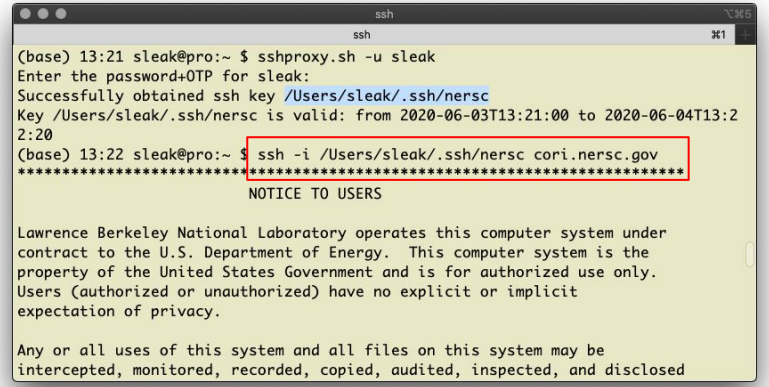
sshproxy

Mac/Linux (**`sshproxy.sh`**)

```
sshproxy.sh -u elvis
```

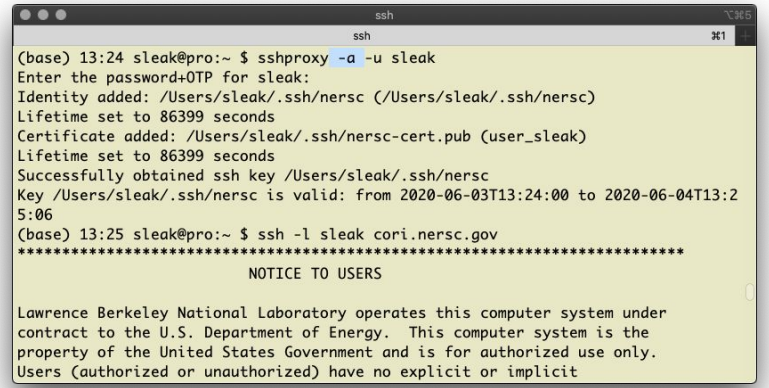
Then login using the key:

```
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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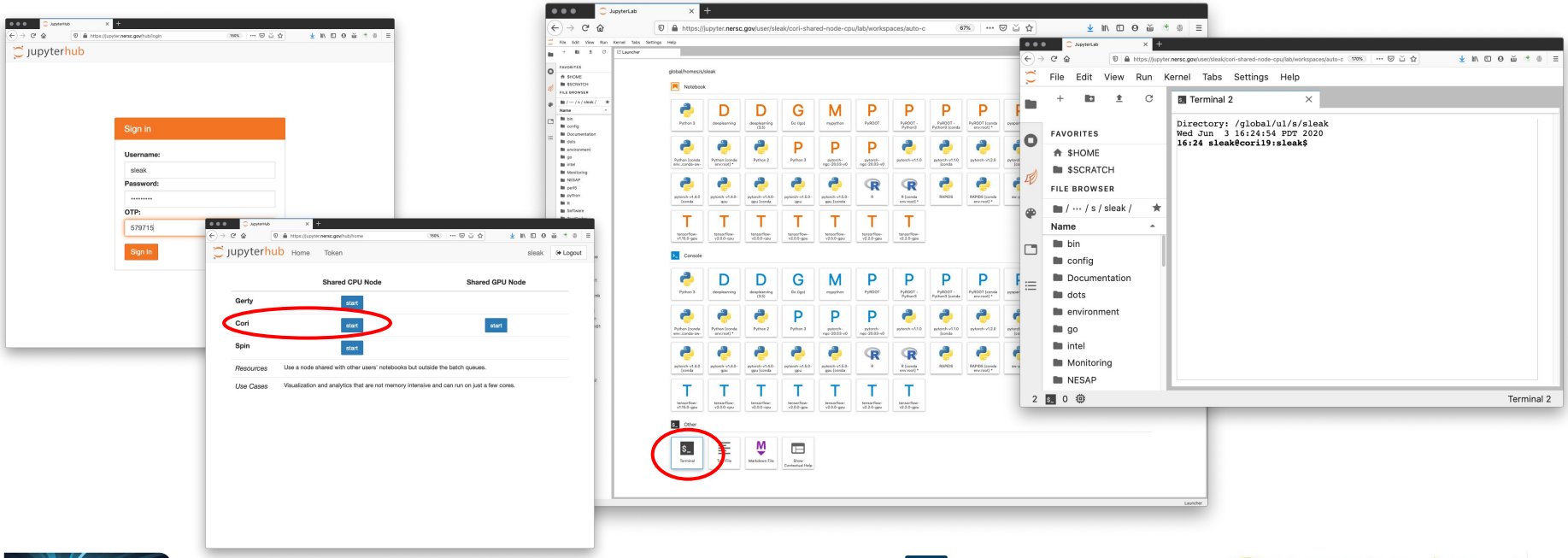
Jupyter

You can access Cori from any web browser, via https://jupyter.nersc.gov



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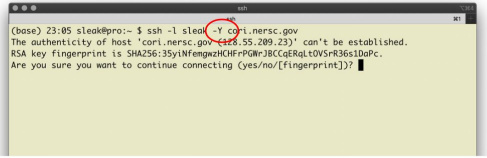
Running GUI Apps on Cori

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

Why is this, and how can we fix it?

SSH Options



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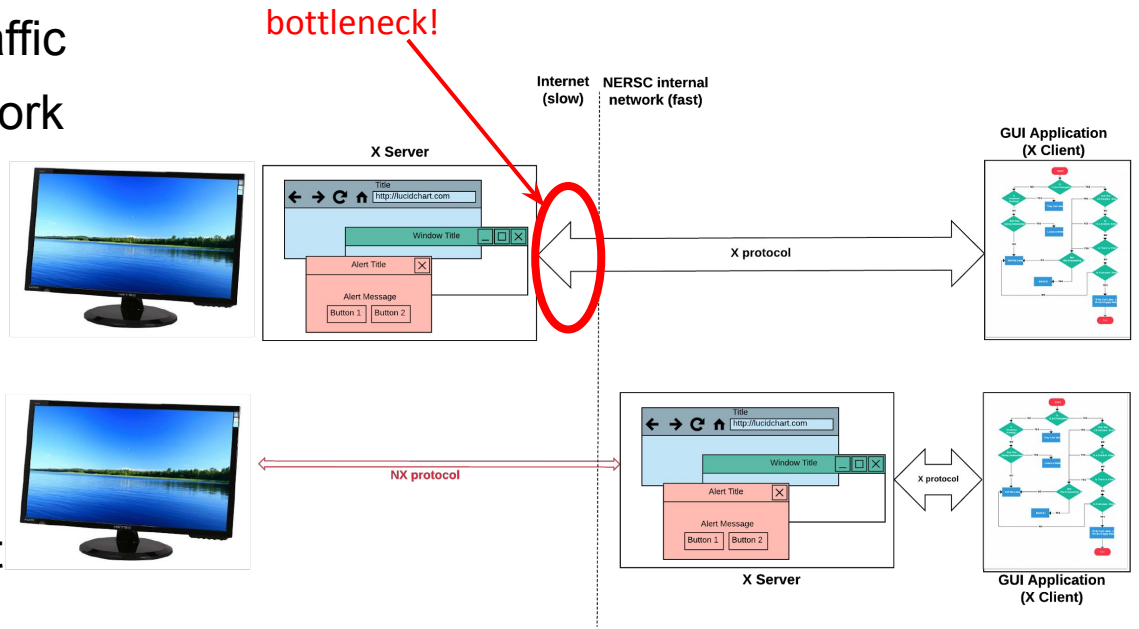
NoMachine: Accelerated X

X protocol makes a lot of traffic

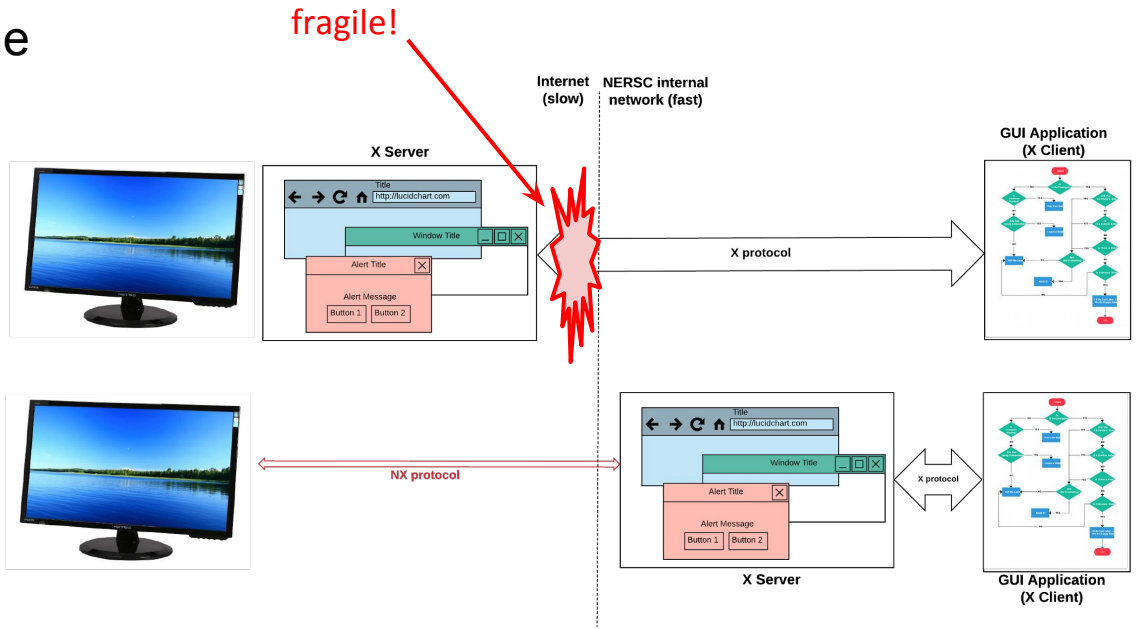
- OK over the (fast) network internal to NERSC
- Not OK over the (slow) internet

NoMachine runs **inside** NERSC, and sends less data over the (slow) internet



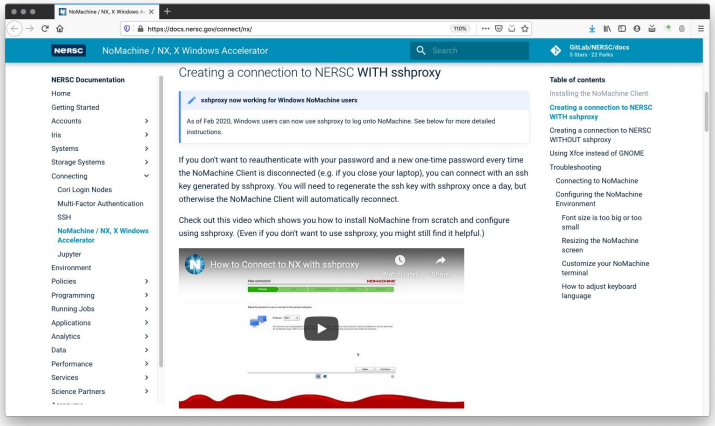
NoMachine: Accelerated X

NoMachine also removes the weakest link, so broken connections don't kill your application

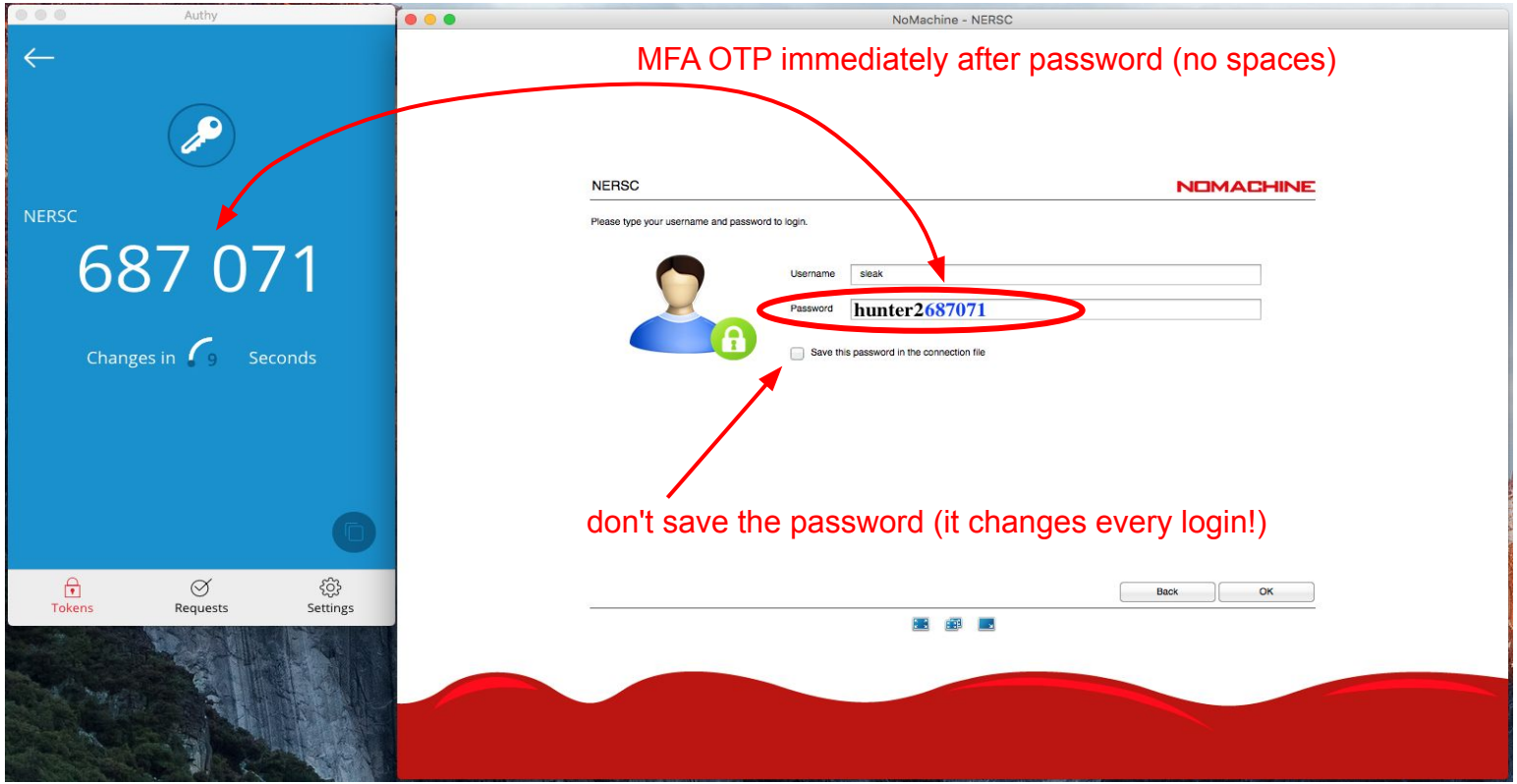


How to Set It Up

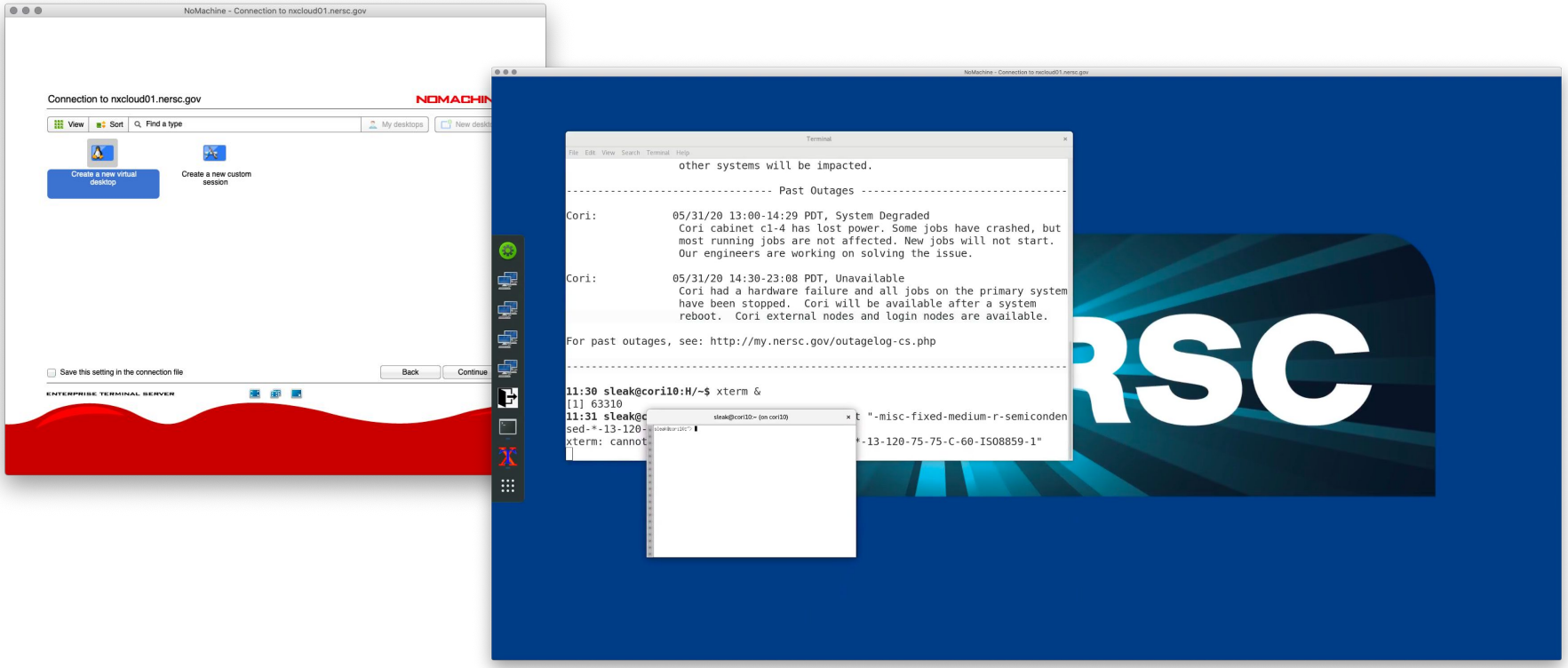
- https://docs.nersc.gov/connect/nx/ has detailed instructions
  - Download the client (https://www.nomachine.com/download-enterprise#NoMachine-Enterprise-Client) (Make sure to get the **client**, not the server or workstation)
  - Setup a connection (can optionally use the key you generated with `sshproxy.sh`)



NoMachine without sshproxy



NoMachine


NoMachine - Connection to nxcloud01.nersc.gov
Connection to nxcloud01.nersc.gov
View
Sort
Find a type
Create a new virtual desktop
Create a new custom session
Save this setting in the connection file
Back
Continue
ENTERPRISE TERMINAL SERVER
other systems will be impacted.
Past Outages
Cori: 05/31/20 13:00-14:29 PDT, System Degraded
Cori cabinet c1-4 has lost power. Some jobs have crashed, but most running jobs are not affected. New jobs will not start. Our engineers are working on solving the issue.
Cori: 05/31/20 14:30-23:08 PDT, Unavailable
Cori had a hardware failure and all jobs on the primary system have been stopped. Cori will be available after a system reboot. Cori external nodes and login nodes are available.
For past outages, see: http://my.nersc.gov/outagelog-cs.php
11:30 sleak@cori10:H/~$ xterm &
[1] 63310
xterm: cannot
RSC

What We've Covered

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Thank You and
Welcome to
NERSC!
NERSC