Navigating NERSC

New User Training
September 28, 2022

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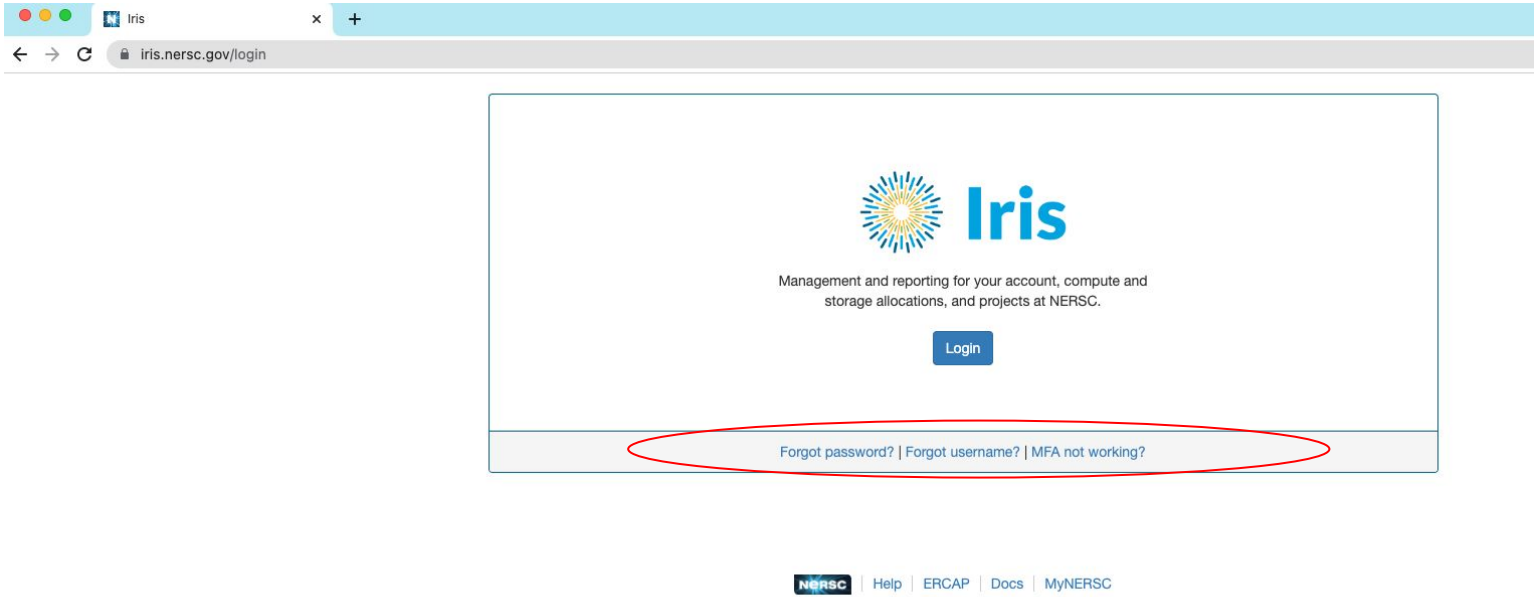
Agenda

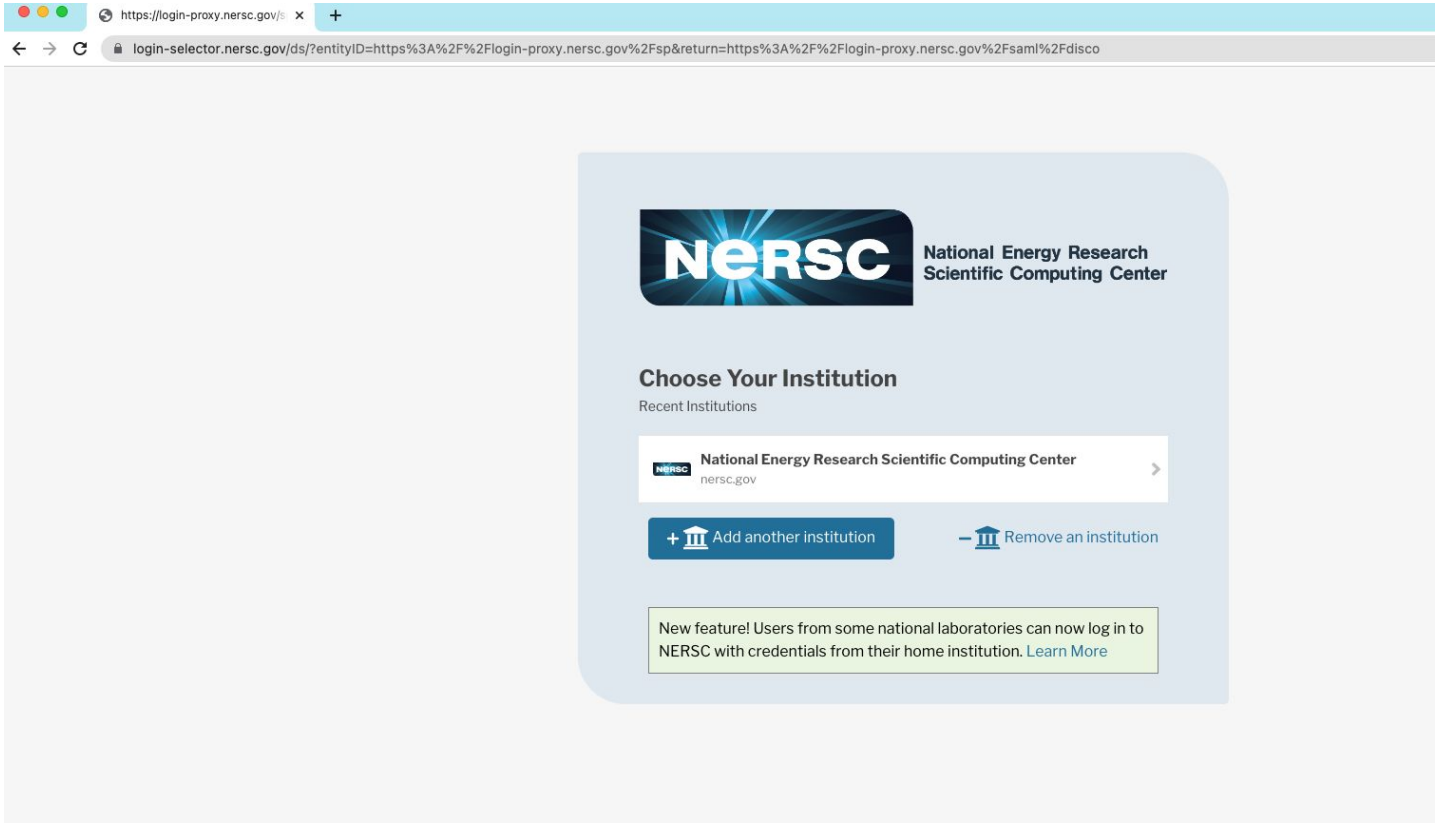
- Navigating Iris (https://iris.nersc.gov)
- Submitting a User Ticket (https://help.nersc.gov)
- MyNERSC (https://my.nersc.gov)
- Connecting to Cori & Perlmutter
  a. Connecting with SSH
  b. https://jupyter.nersc.gov notebooks and terminals in your browser
  c. NoMachine (https://docs.nersc.gov/connect/nx/) for GUI apps
- Navigating NERSC Home Page
- Navigating NERSC Documentation

Navigating Iris

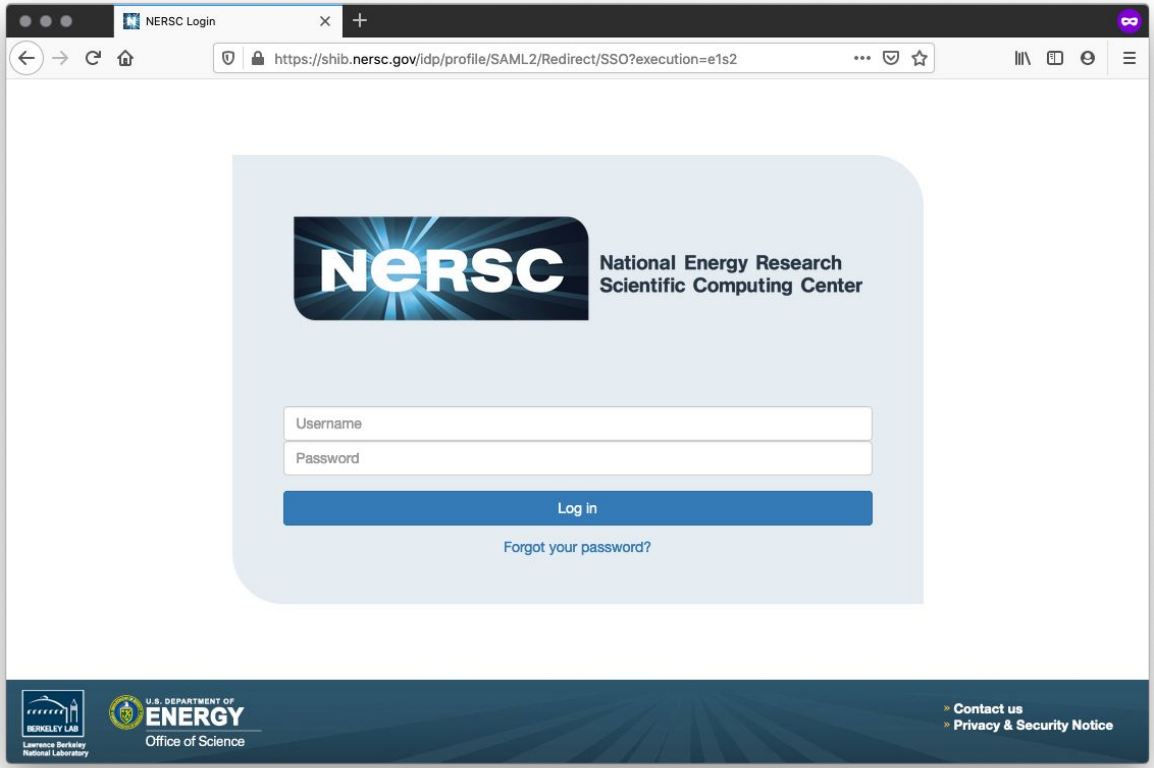
Iris (https://iris.nersc.gov) for Your Account



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



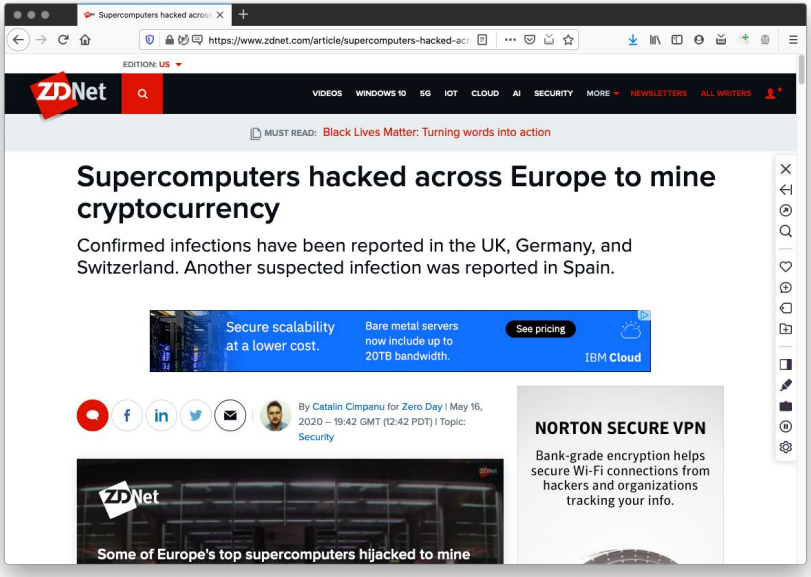
Iris (https://iris.nersc.gov) for Your Account



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**

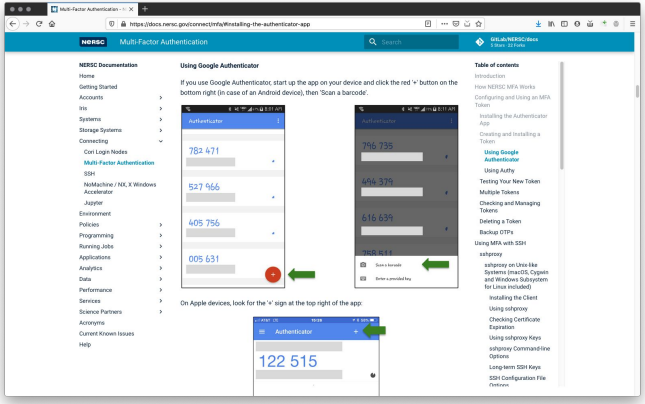


Setting Up MFA in Iris

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

  https://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

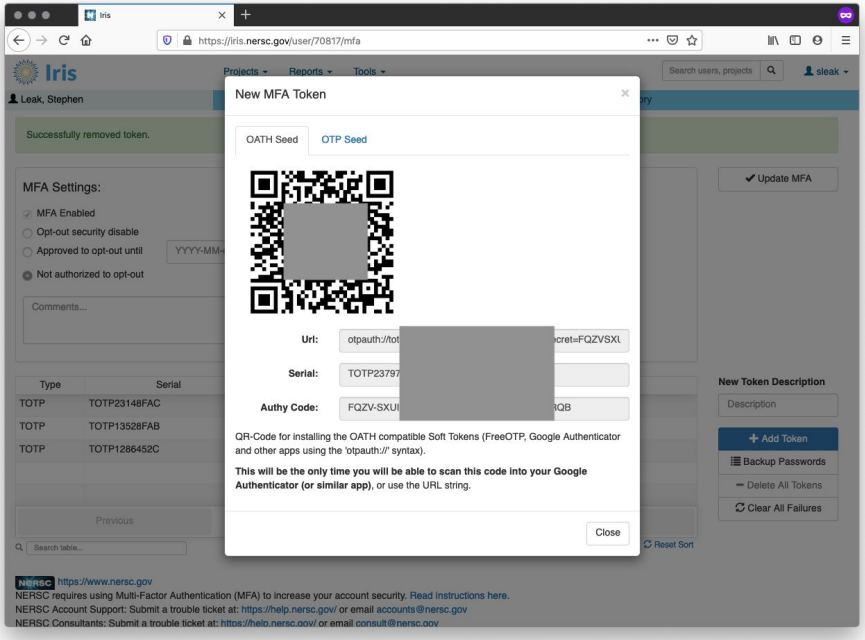
  https://authy.com



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

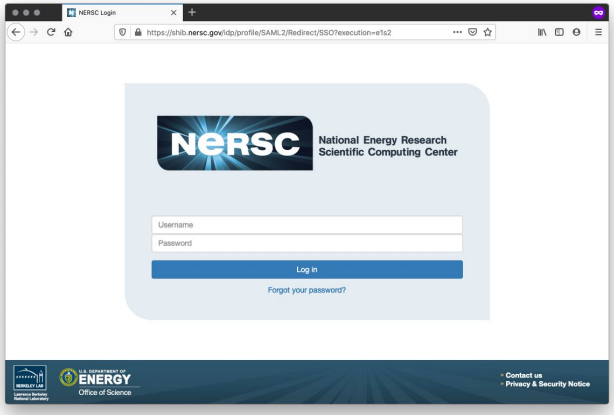
Setting Up MFA in Iris

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



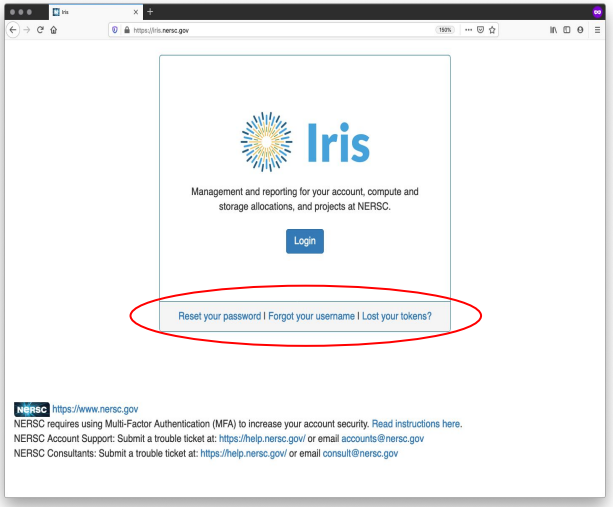
Logging in with MFA

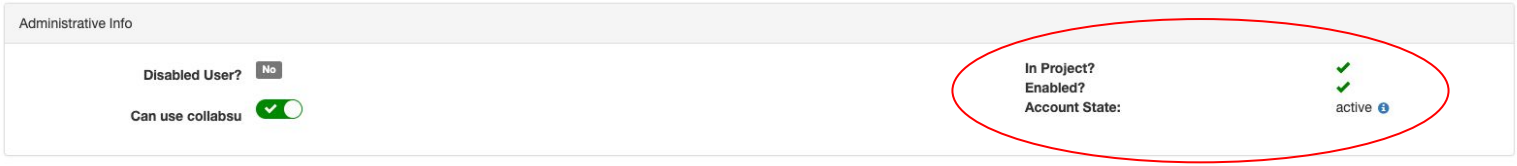
After single-sign-on page you'll be asked for your one-time password (6 digits from app)



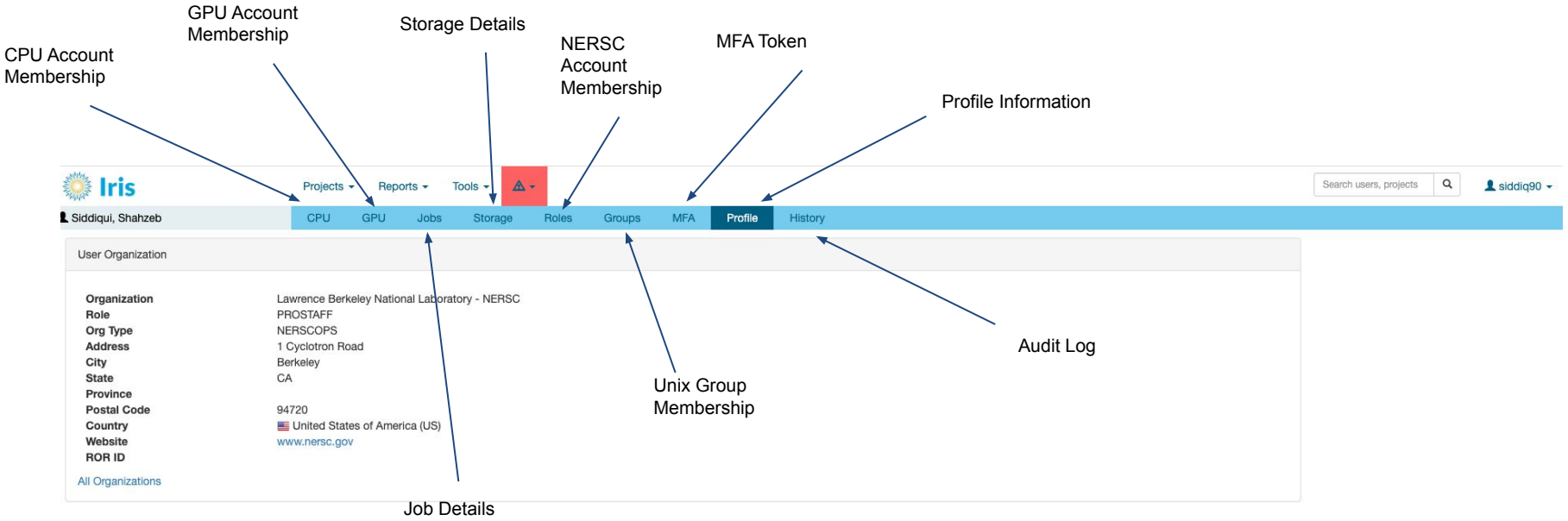
Troubleshooting Account Access

- 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 or Perlmutter
  - Are you in a project? Check "Roles" tab

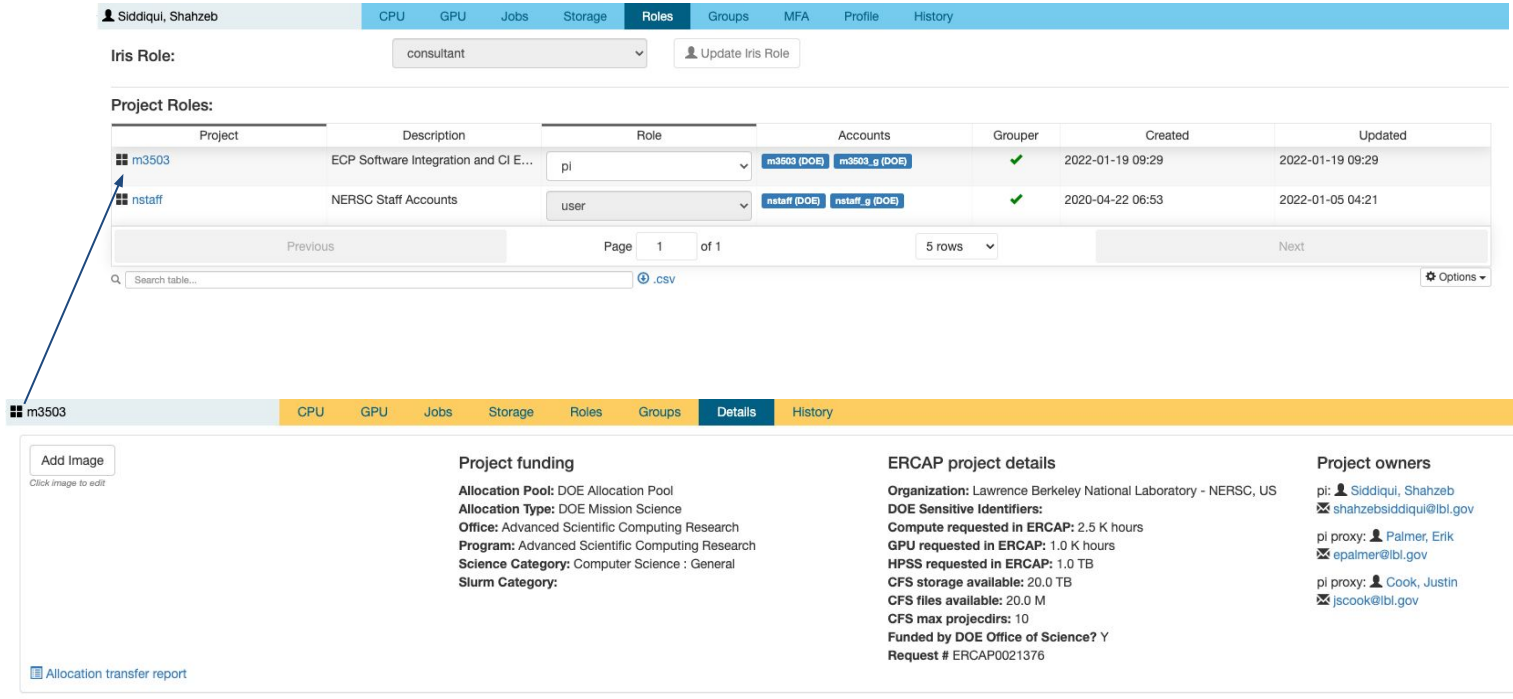




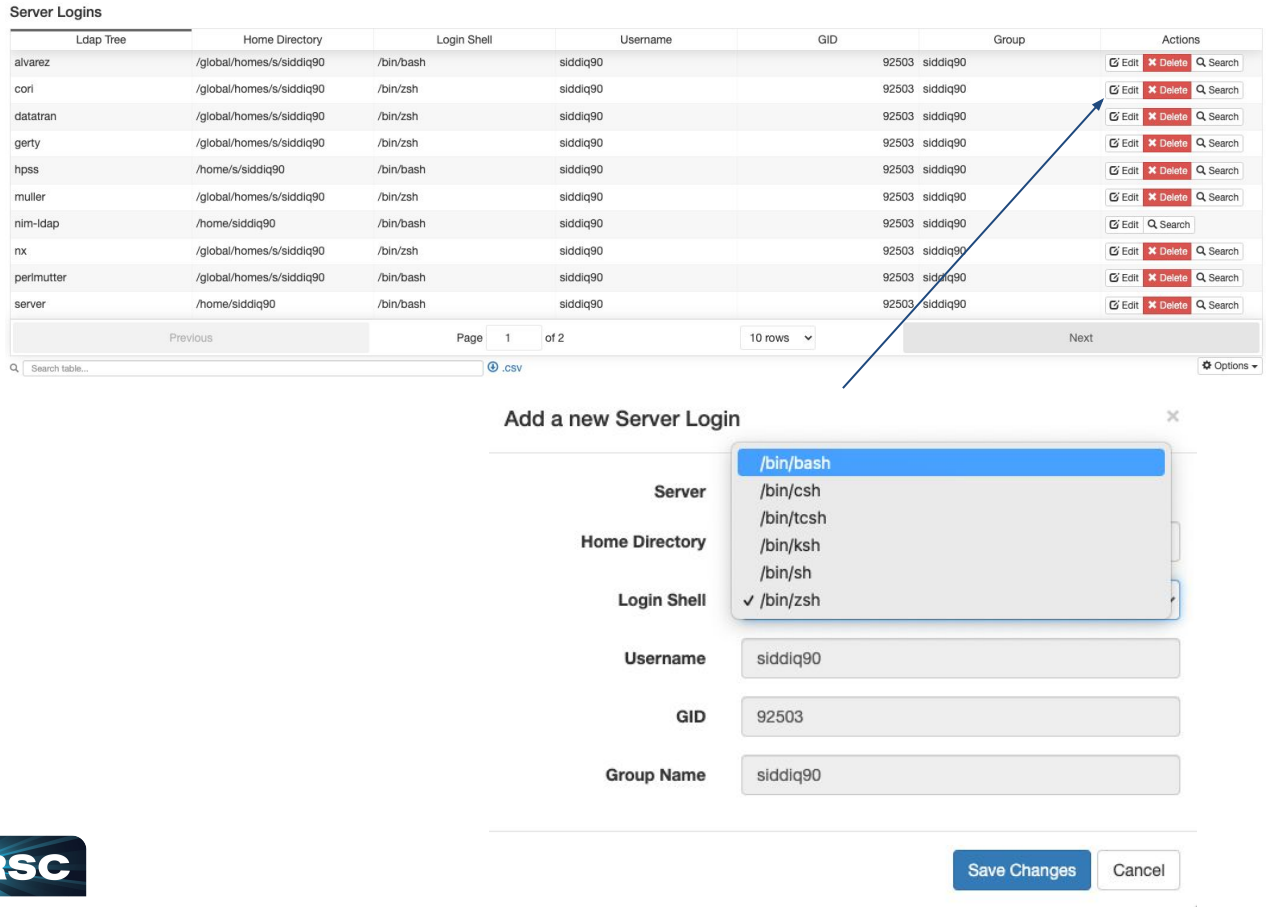
Navigating Iris - Menu Bar



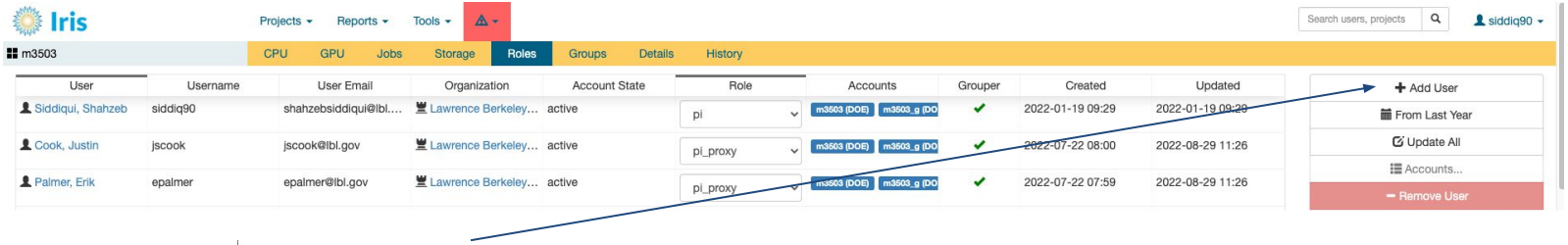
Navigating Iris - Finding Account Details

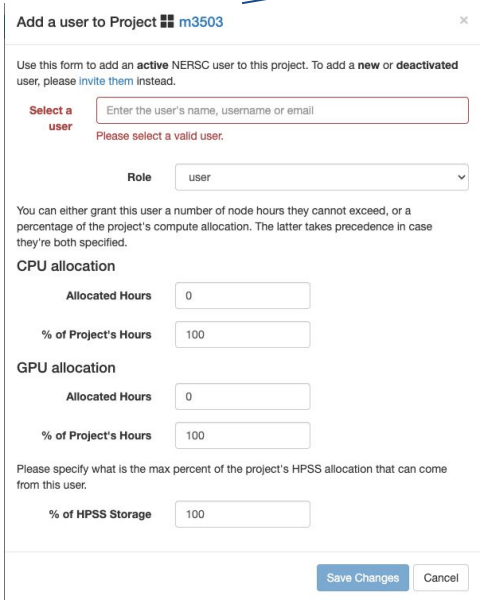


Navigating Iris - Changing User Shell

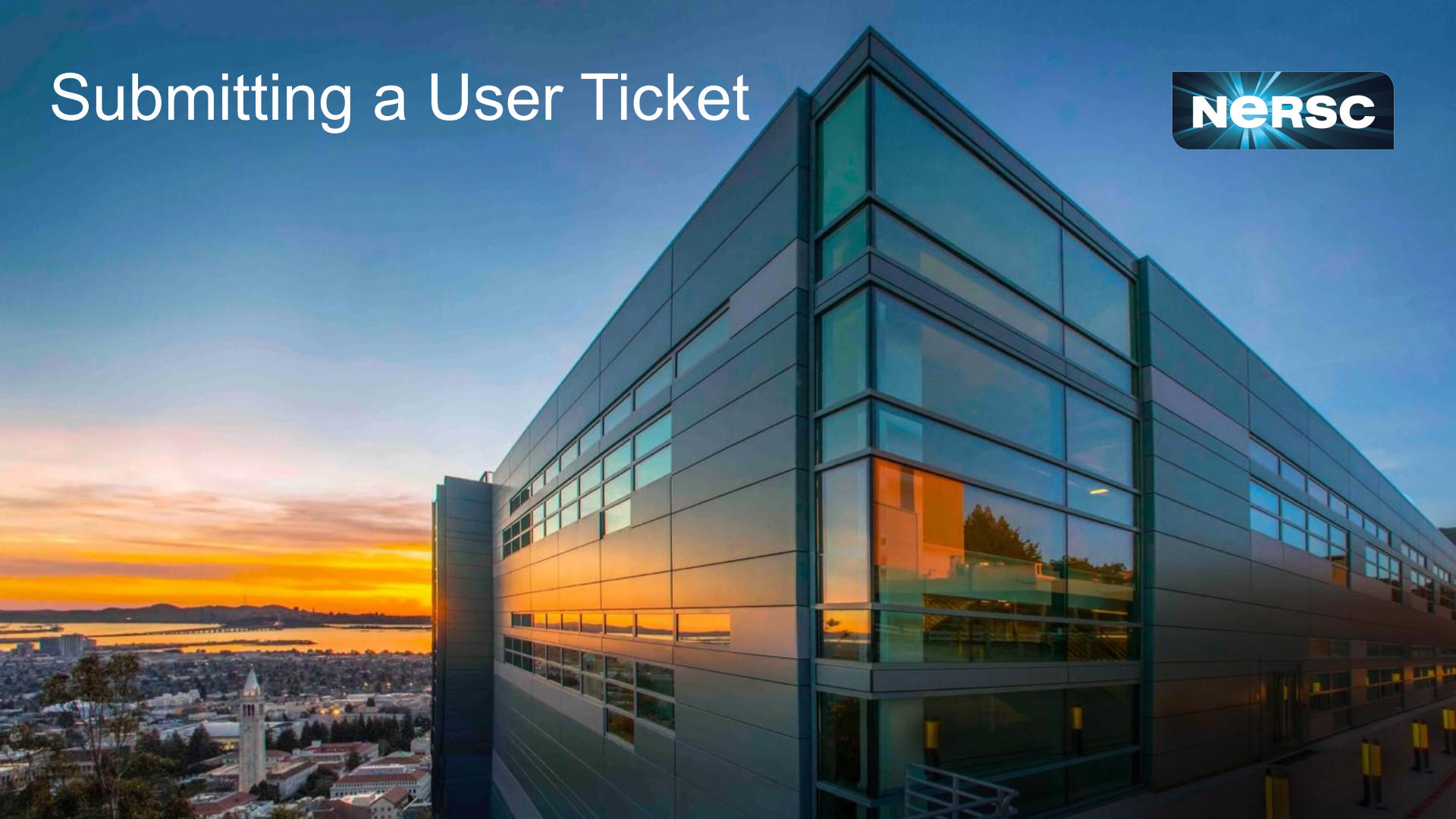


Navigating Iris - Adding User to Account

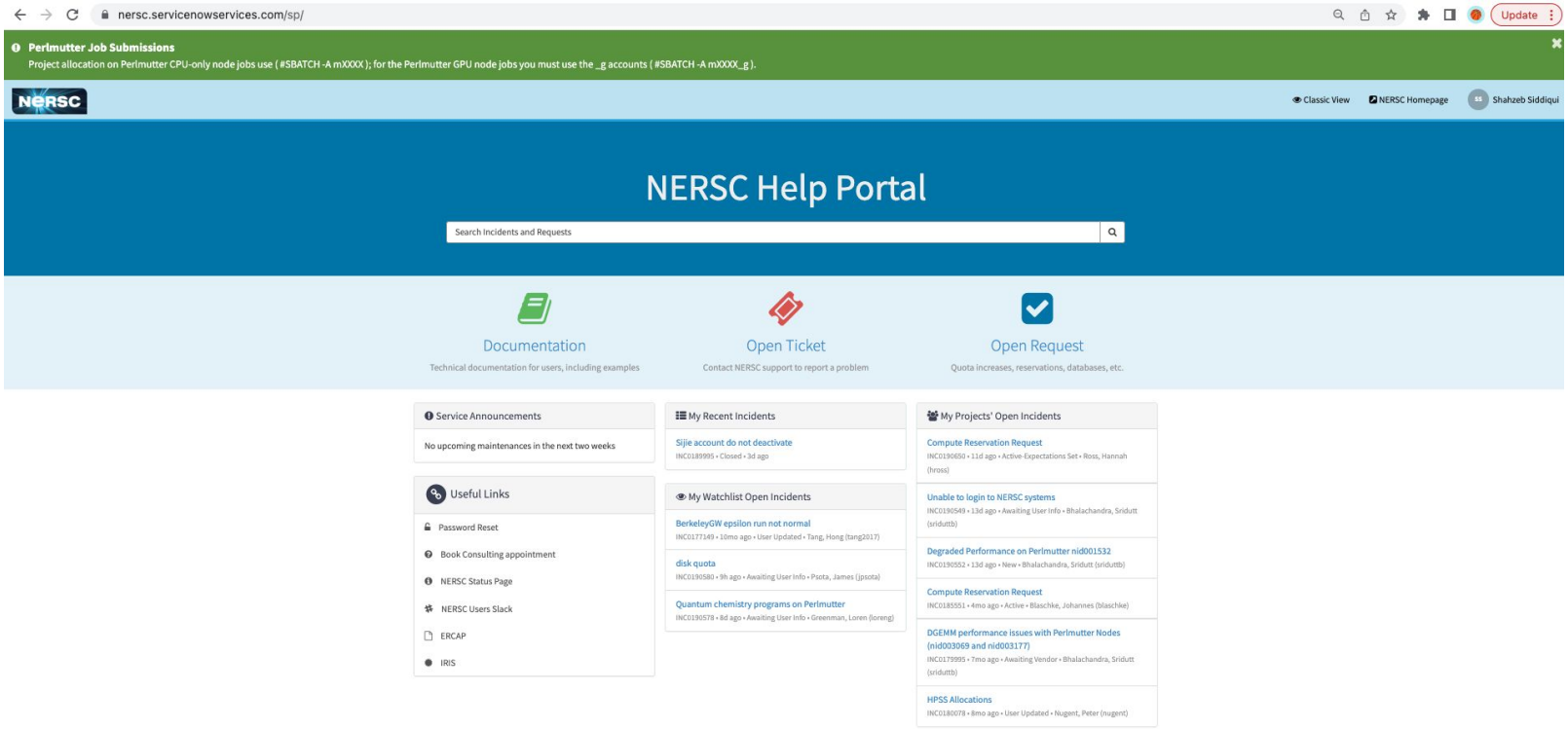




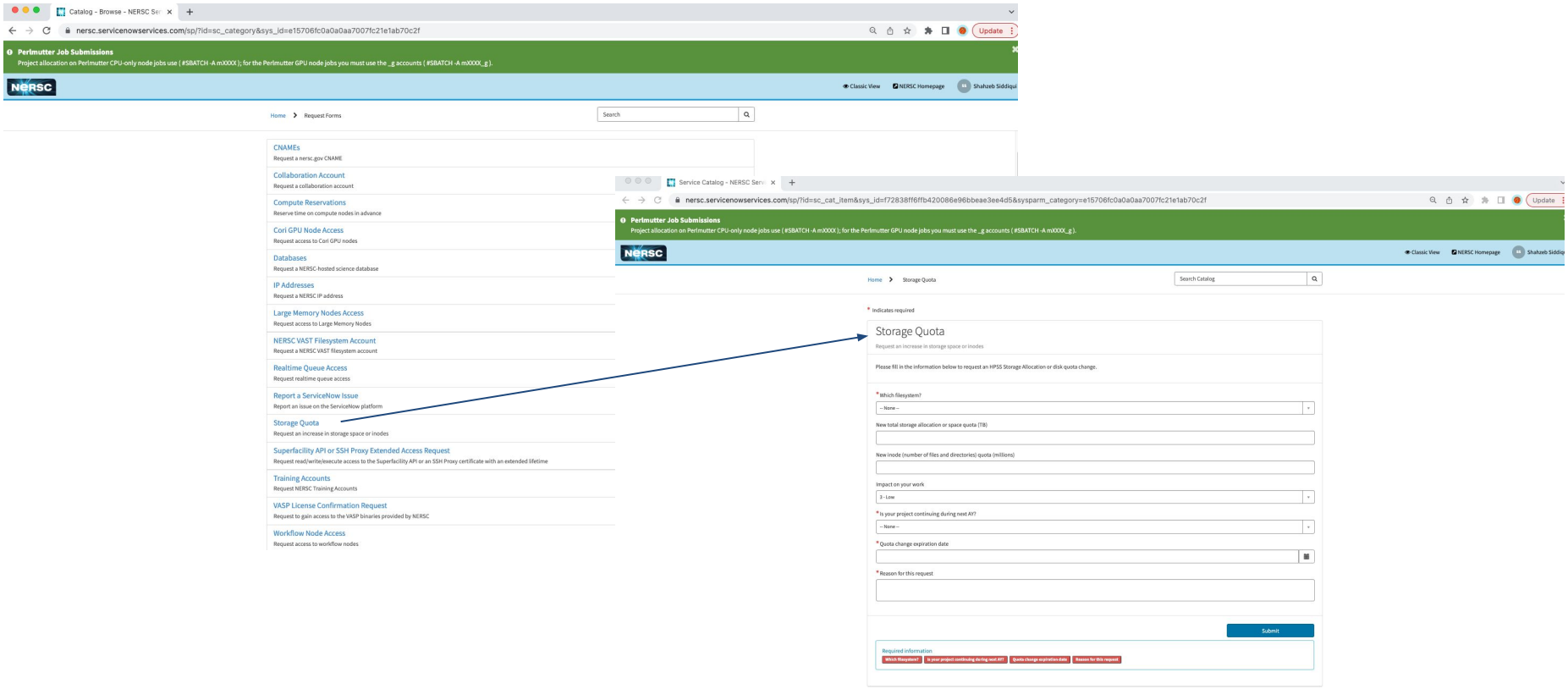
Submitting a User Ticket



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



Request Forms



How to file a Good Ticket

- NERSC receive thousands of user support tickets every year and we strive to resolve tickets in timely manner.
- In order for us to troubleshoot your user request, we need **as much information** in ticket to best understand the problem and find a solution.
- https://docs.nersc.gov/getting-started/#how-to-file-a-good-ticket

How to File a Good Ticket ¶

NERSC Consultants handle thousands of support requests per year. In order to ensure efficient timely resolution of issues include **as much of the following as possible** when making a request

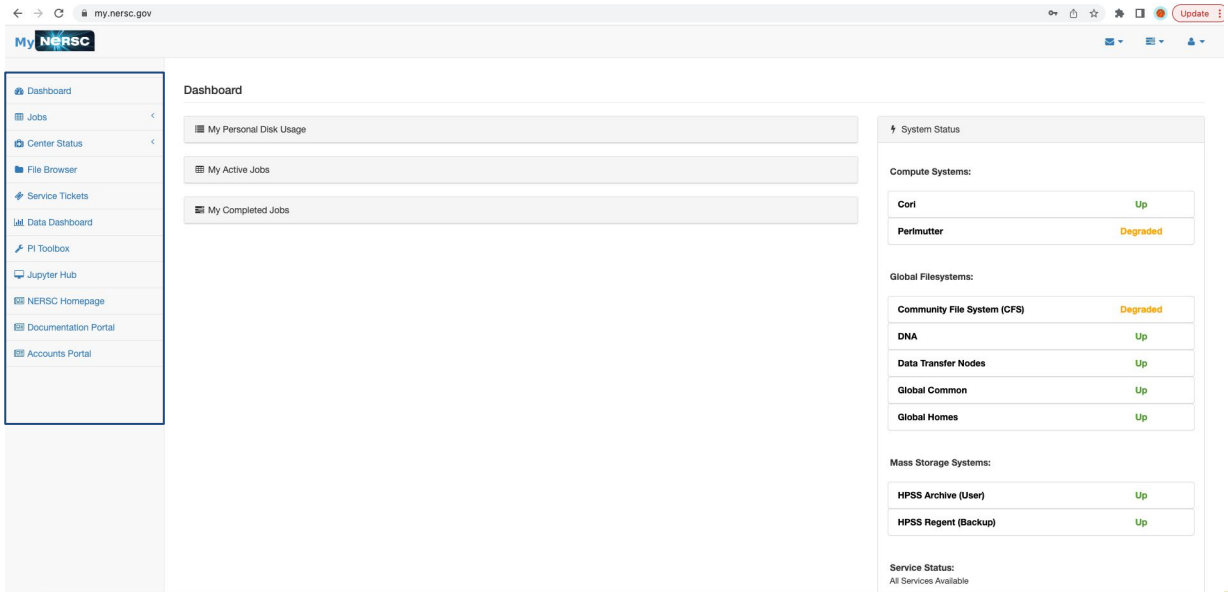
- error messages
- jobids
- location of relevant files
  - input/output
  - job scripts
  - source code
  - executables
- output of `module list`
- any steps you have tried
- steps to reproduce

Please copy and paste any text directly into the ticket and only include screenshots as attachements when the graphical output is the subject of the support request.

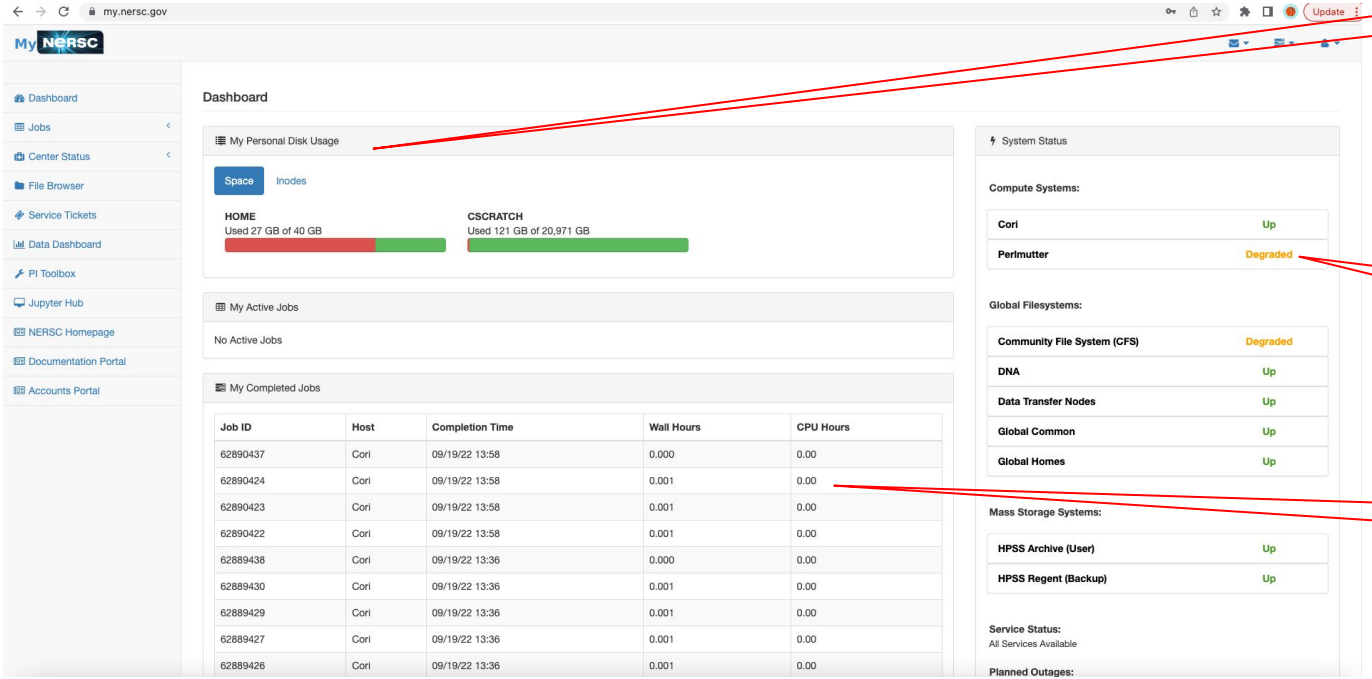
MyNERSC

https://my.nersc.gov

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



https://my.nersc.gov



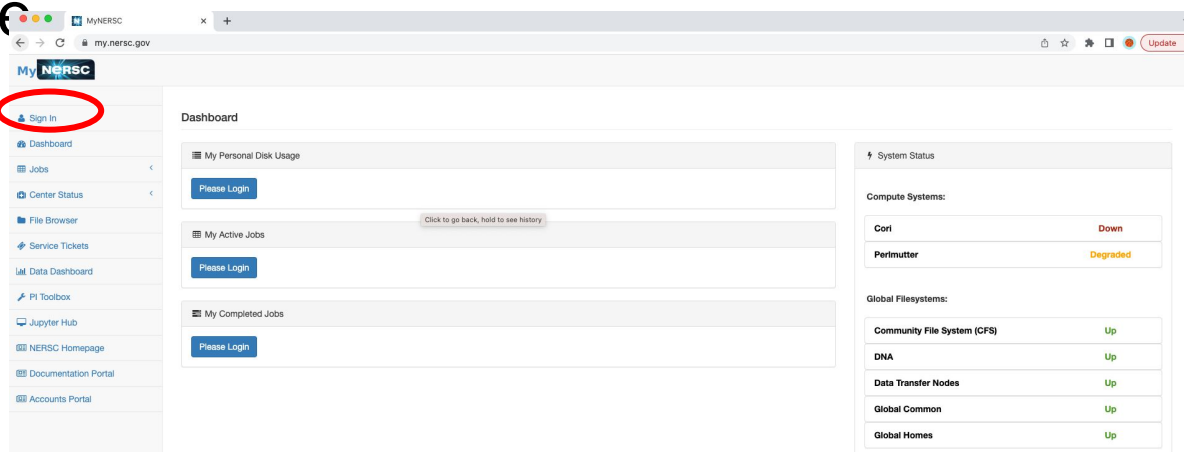
my disk quota

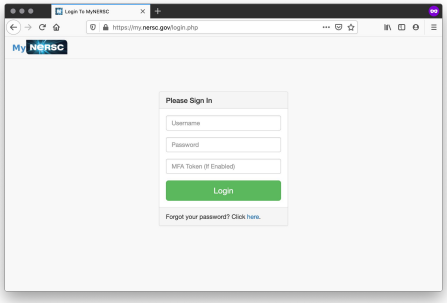
Perlmutter Status

my jobs

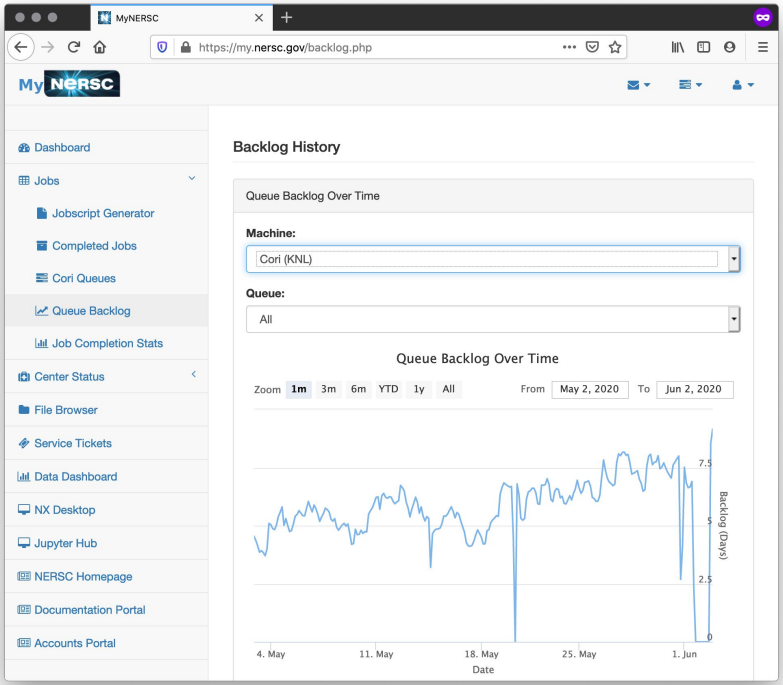
https://my.nersc.gov

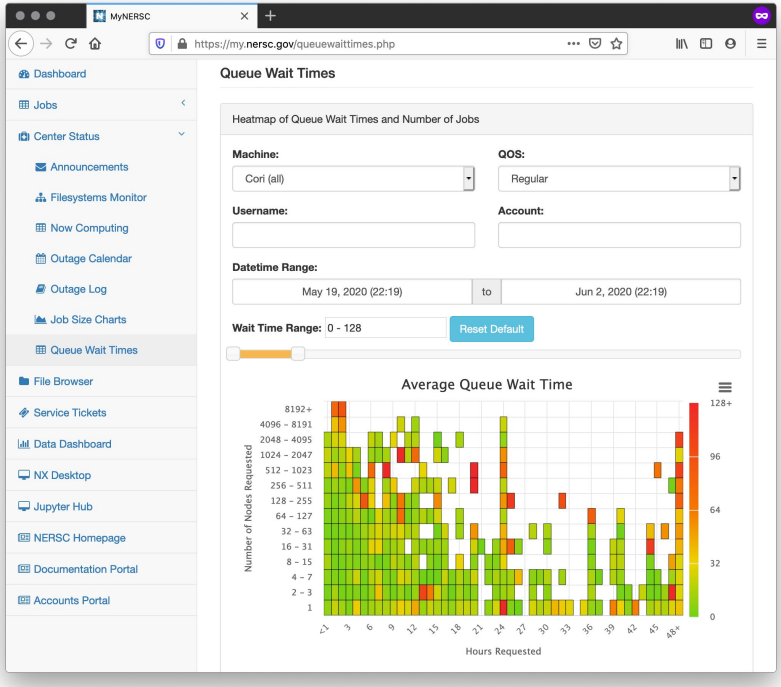
Most things require login (also MFA)



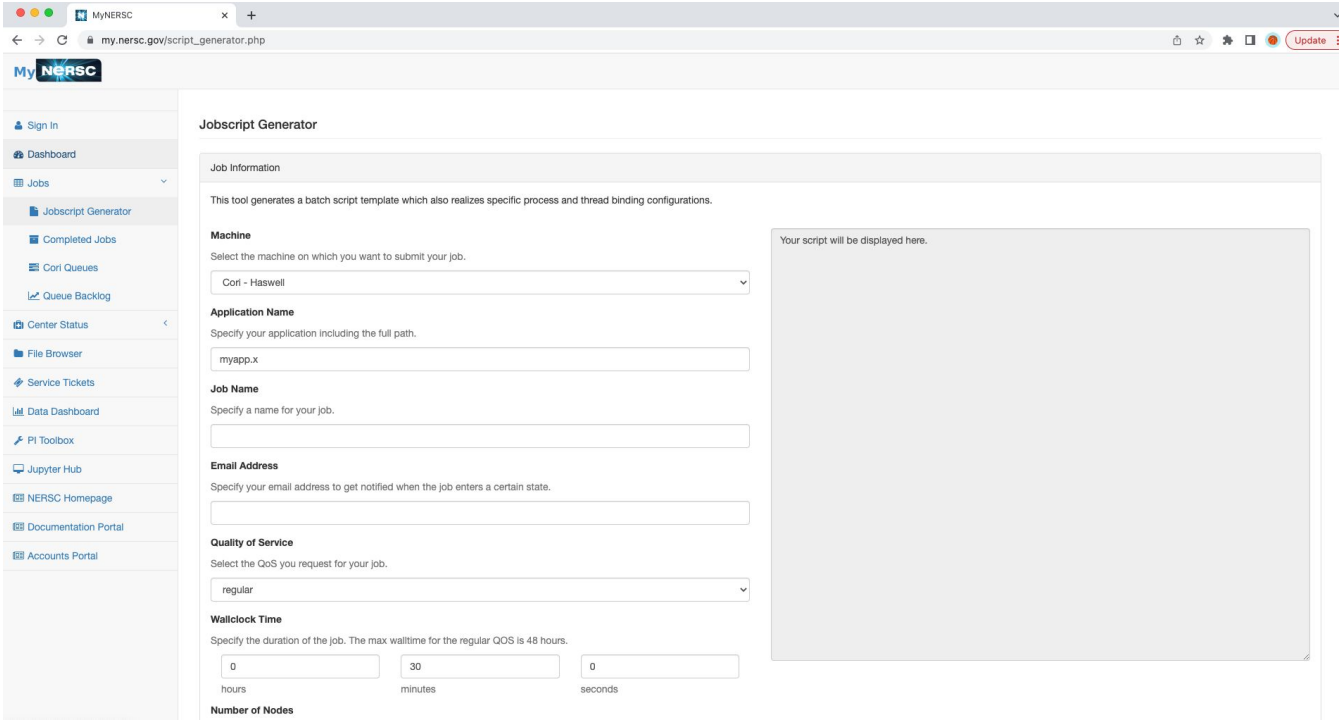


https://my.nersc.gov





Jobscript Generator



Connecting to NERSC Systems

Connecting with SSH

"The traditional method"

- For those comfortable working in a terminal, ssh from your local terminal 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 (https://www.putty.org/), MobaXterm (https://mobaxterm.mobatek.net/) or XWin32 or Git BASH
- Linux: Your own favorite :)
- Chromebook: crosh (developer mode) or Crostini (Linux-in-a-container) or SSH App

Connecting to NERSC systems

Connect to NERSC Computational Systems

Please make sure you have configured Multi-Factor Authentication (MFA) prior to login.

To access Perlmutter via `ssh` you can do the following:

```
ssh <user>@perlmutter-p1.nersc.gov
```

or

```
ssh <user>@saul-p1.nersc.gov
```

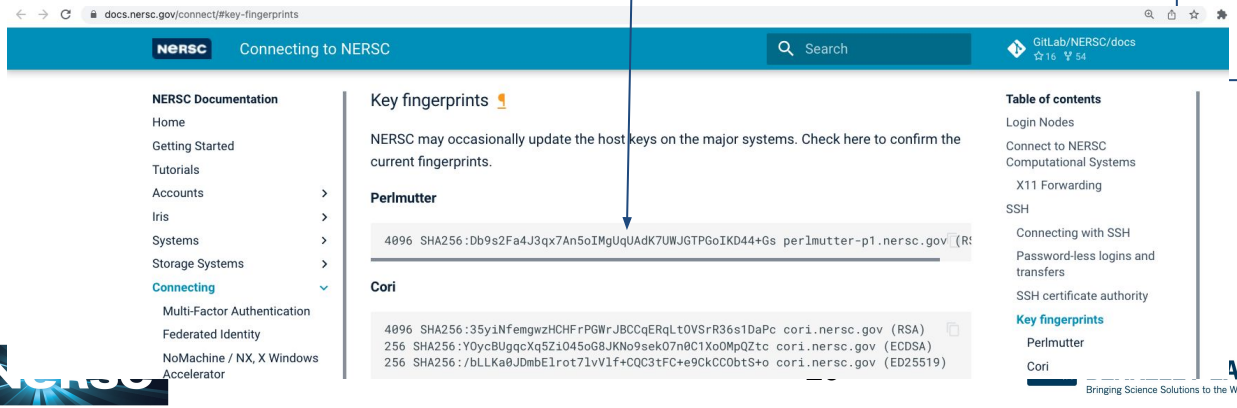
Similarly, you can access Cori with

```
ssh <user>@cori.nersc.gov
```

Connecting with SSH

```
ssh -l siddiq90 -Y perlmutter-p1.nersc.gov
78%  9/21, 11:41 AM
siddiq90 (ssh)
~/ ssh -l siddiq90 -Y perlmutter-p1.nersc.gov
The authenticity of host 'perlmutter-p1.nersc.gov (128.55.126.9)' can't be established.
RSA key fingerprint is SHA256:Db9s2Fa4J3qx7An5oIMgUqUAdK7UWJGTPGoIKD44+Gs.
Are you sure you want to continue connecting (yes/no/[fingerprint])?
```

This means your laptop doesn't recognize the computer. The first time you log in, this is expected. But if your laptop **should** recognize Perlmutter, it's a red flag



Connecting with SSH

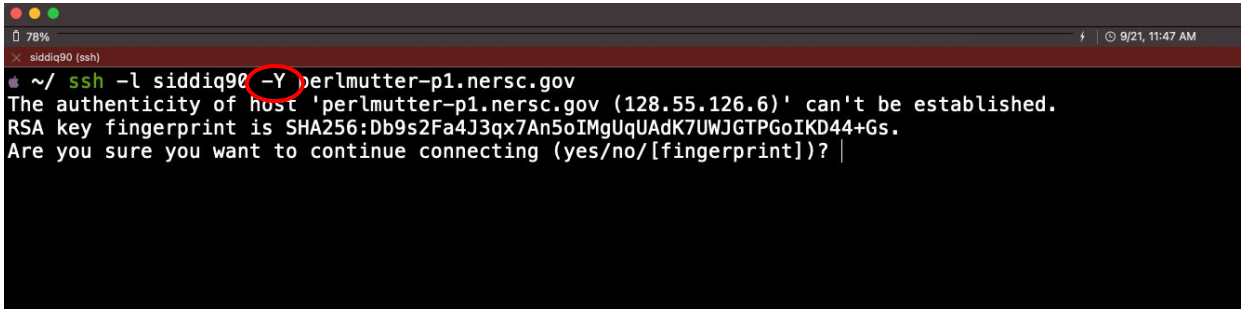
When you ssh in, you'll see a prompt like:
Password + OTP:

Enter your (iris) password, then the 6 digits from Authenticator, with no spaces etc between
eg **`Pa$$w0rd!123456`**

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" ?

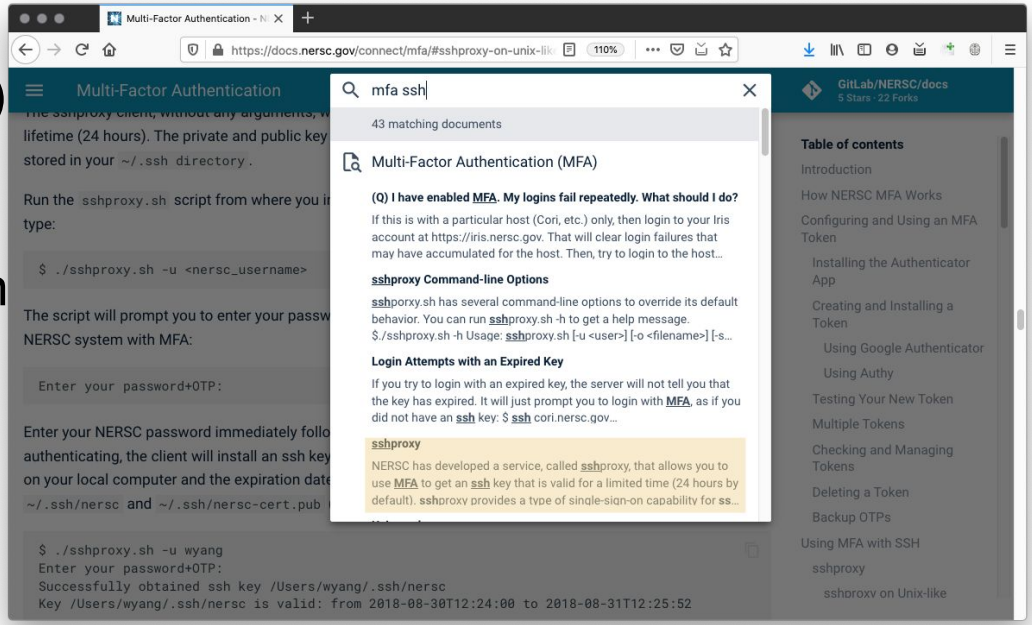


"`ssh -Y`" (or "`ssh -X`")
allow X (ie, GUI) programs to display on your local monitor.

- 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

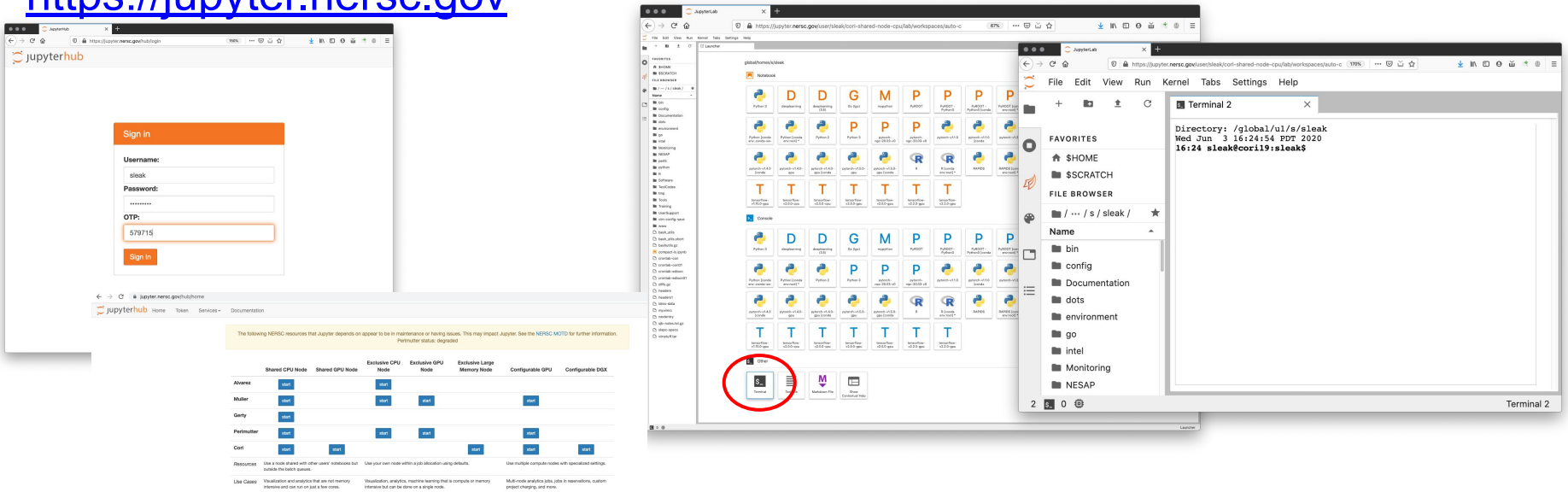
- Tired of repeatedly typing password + OTP?
  - **`sshproxy.sh`** creates a short-term (24 hours) certificate
  - Run **`sshproxy.sh`** once, then you can ssh to NERSC systems for the next 24 hours before being asked for password+OTP again



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

Jupyter

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

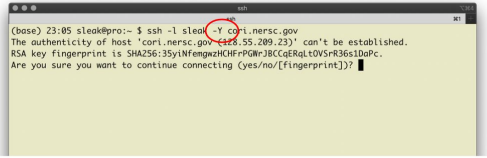


Running GUI Apps

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

Why is this, and how can we fix it?

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!

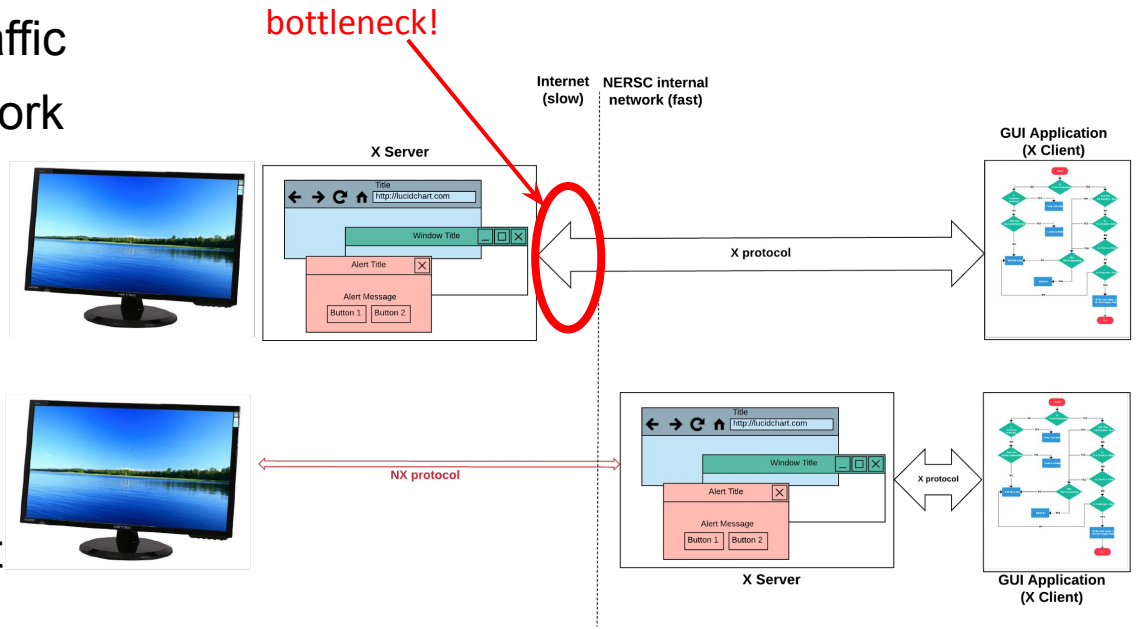
NoMachine

NoMachine: Accelerated X

X protocol makes a lot of traffic

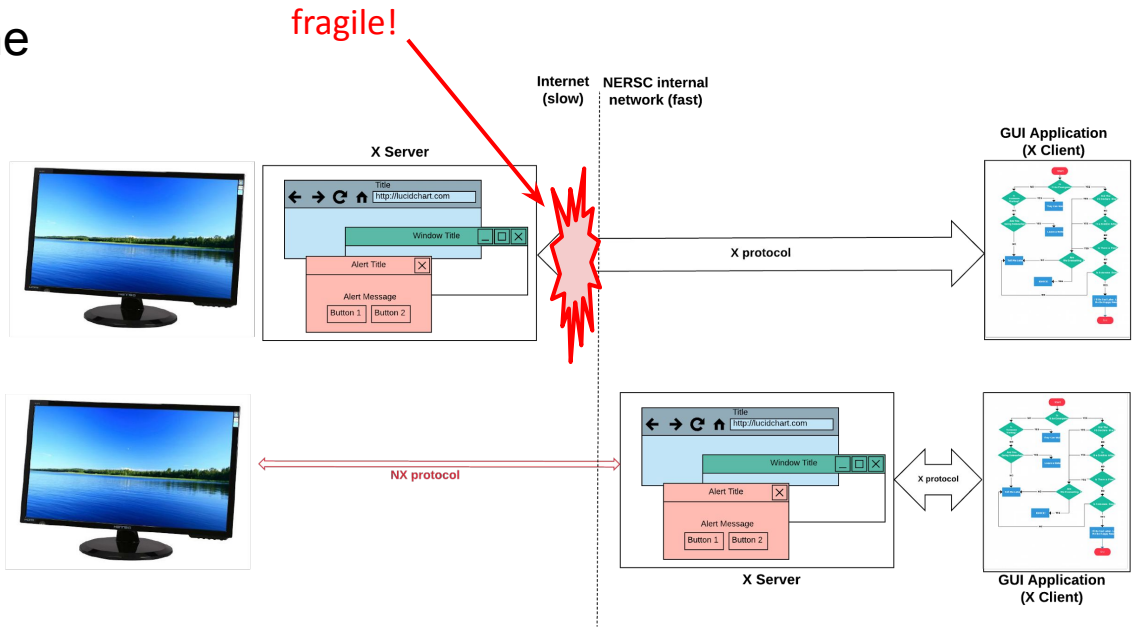
- OK over the (fast) network internal to NERSC
- Not OK over the (slow) internet

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



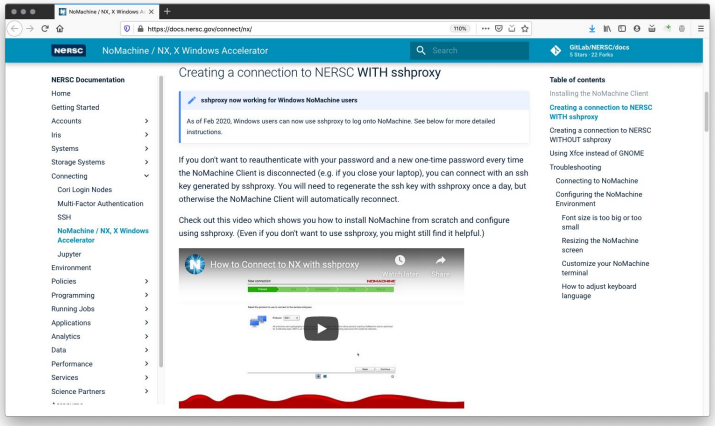
NoMachine: Accelerated X

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

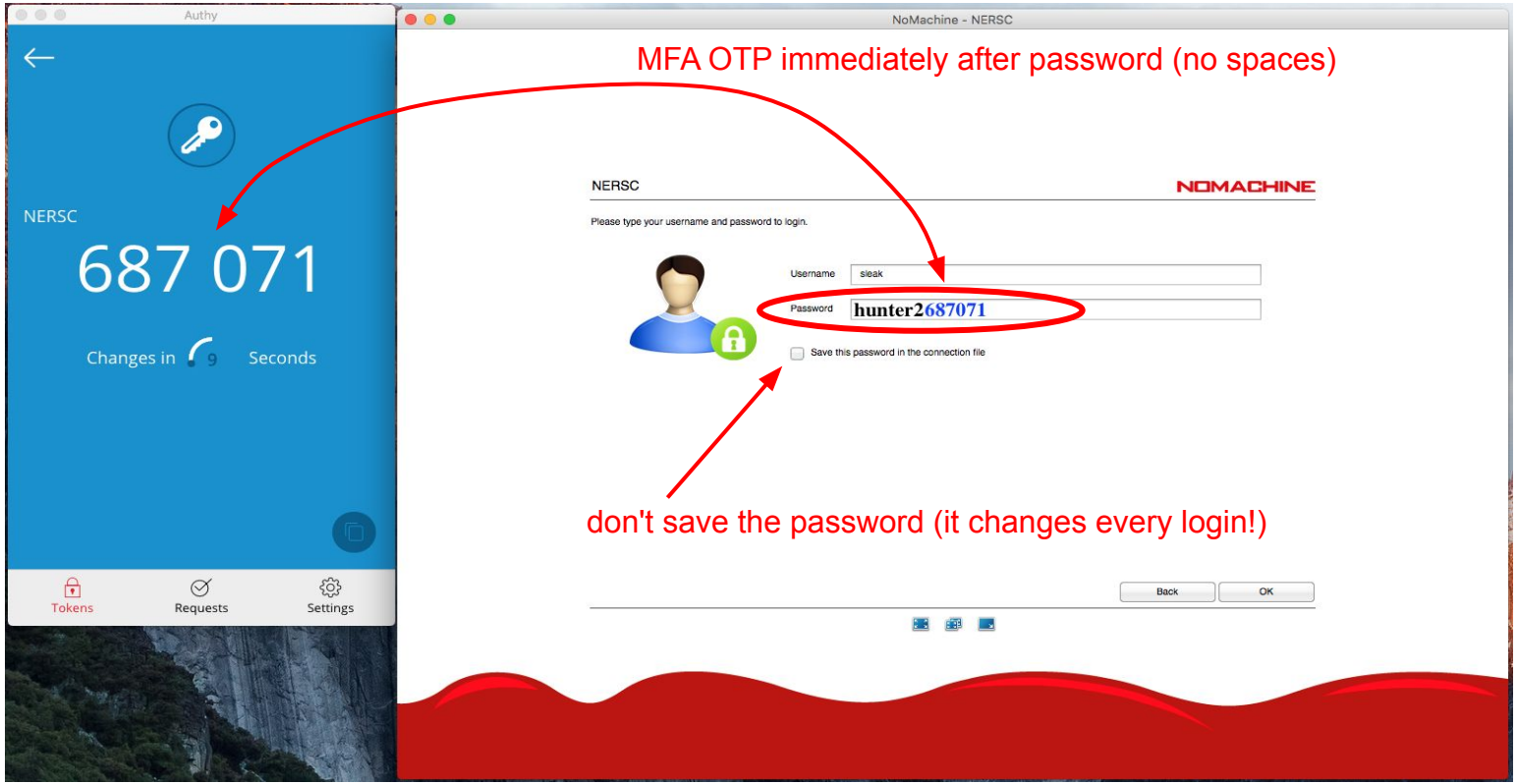


How to Set It Up

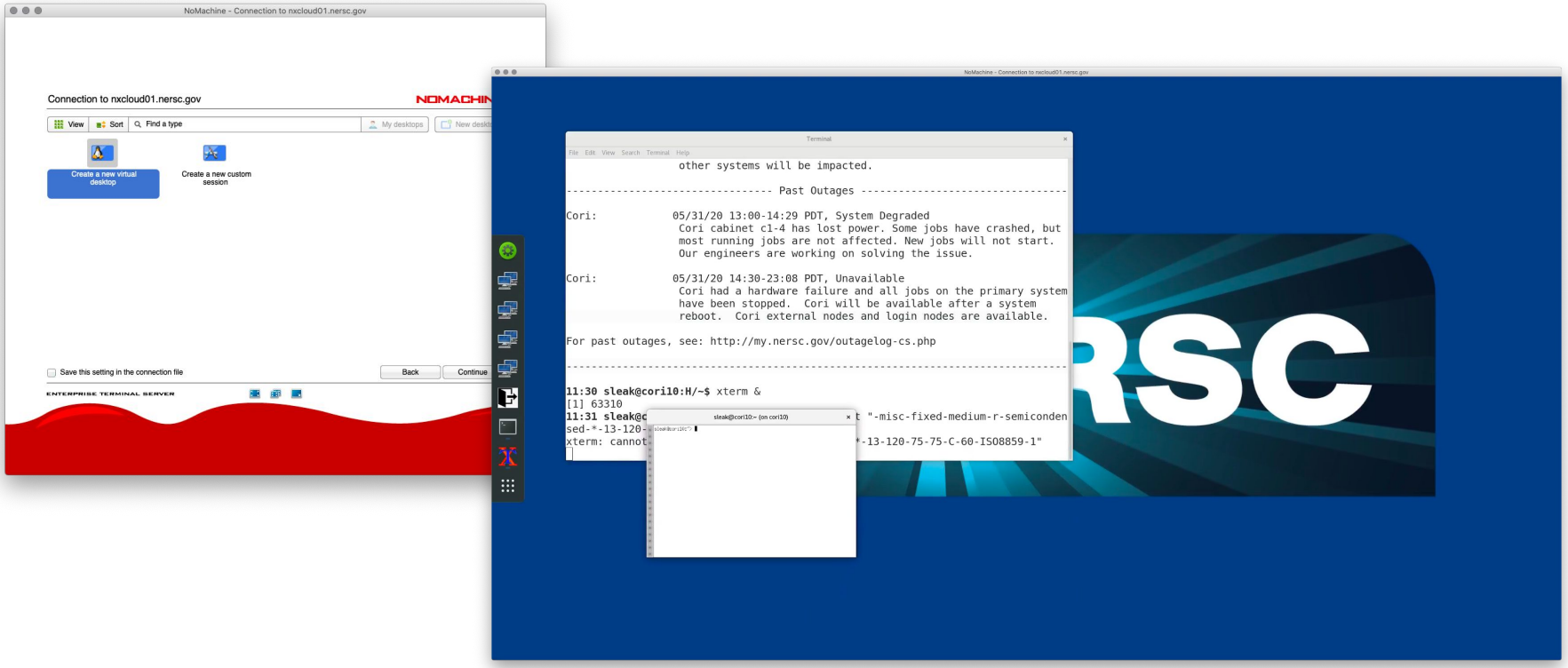
- https://docs.nersc.gov/connect/nx/ has detailed instructions
  - Download the client (https://www.nomachine.com/download-enterprise#NoMachine-Enterprise-Client) (Make sure to get the **client**, not the server or workstation)
  - Setup a connection (can optionally use the key you generated with `sshproxy.sh`)



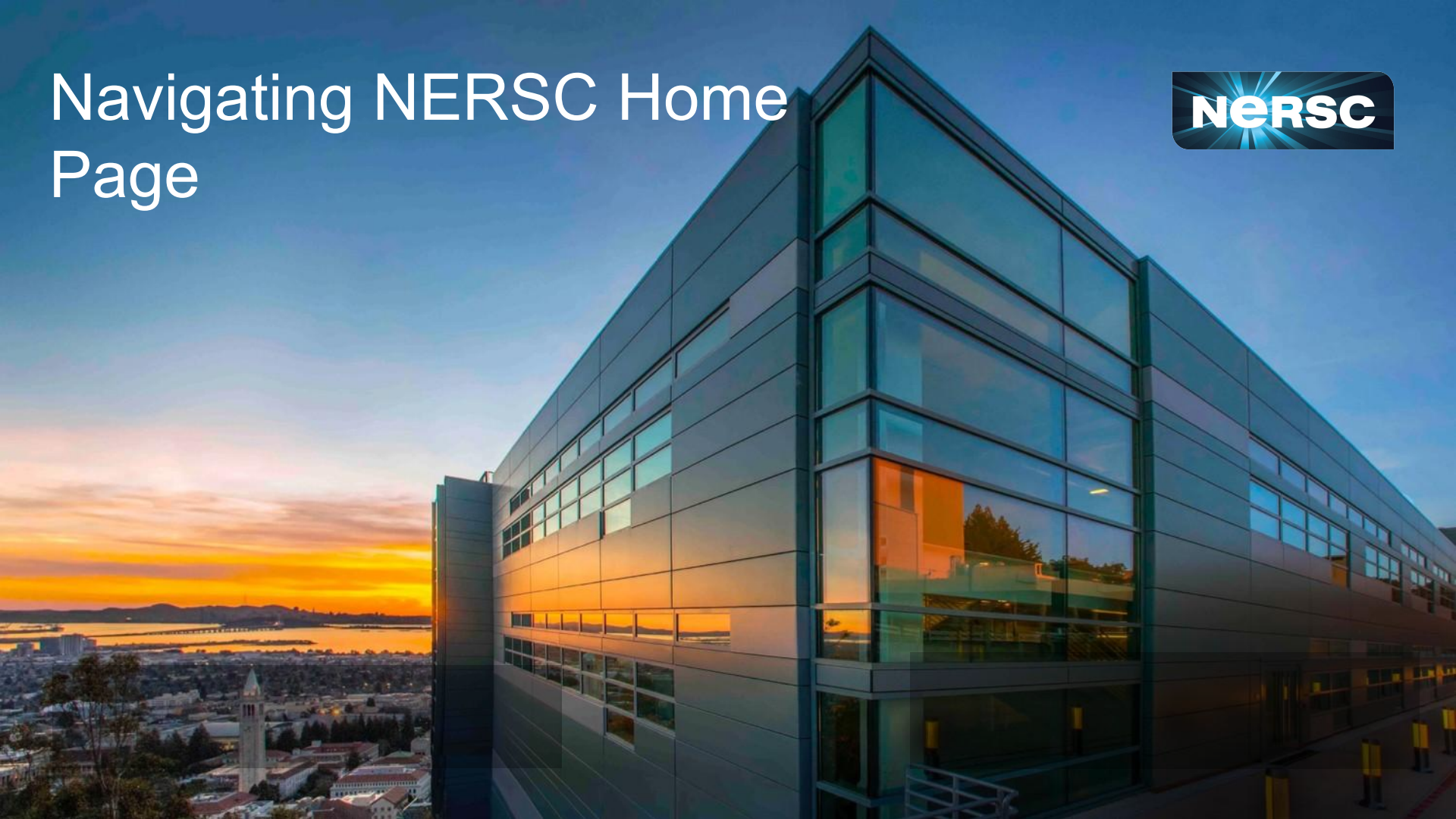
NoMachine without sshproxy



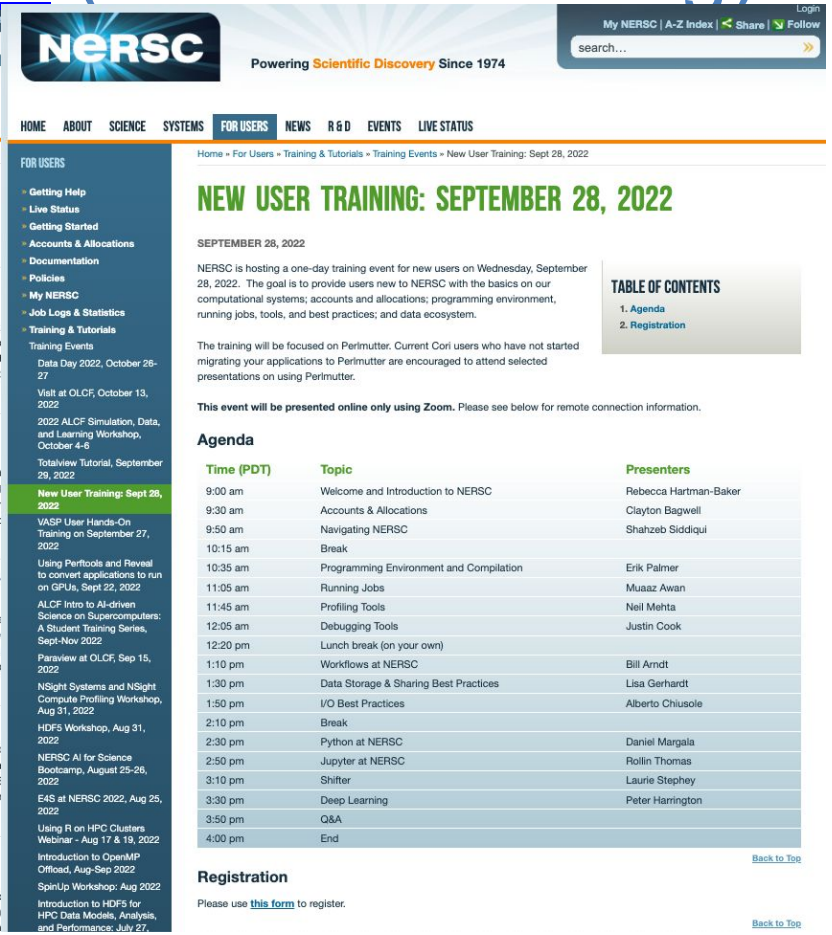
NoMachine


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

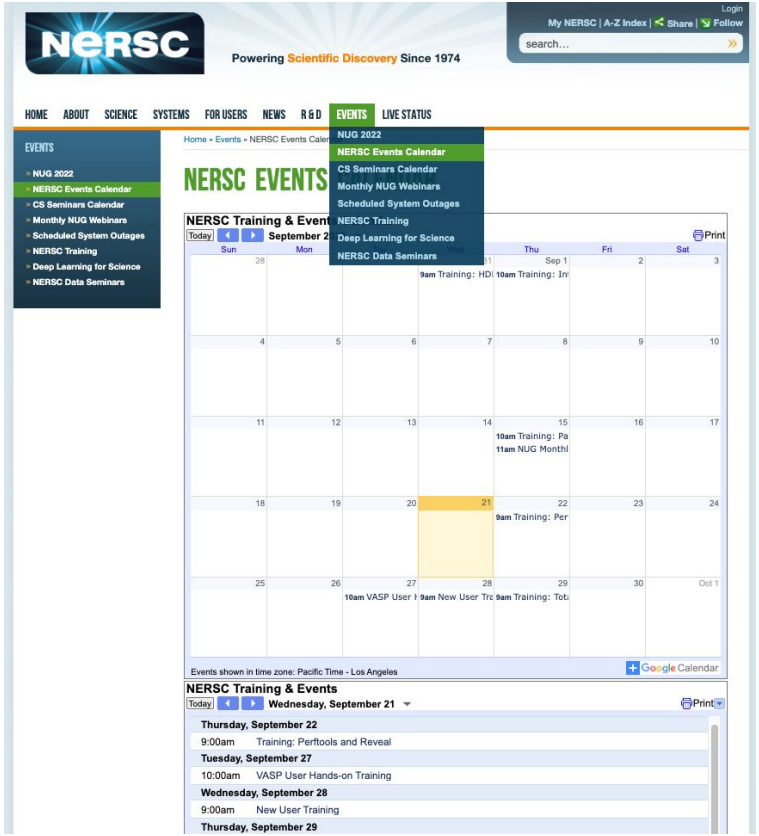
Navigating NERSC Home Page



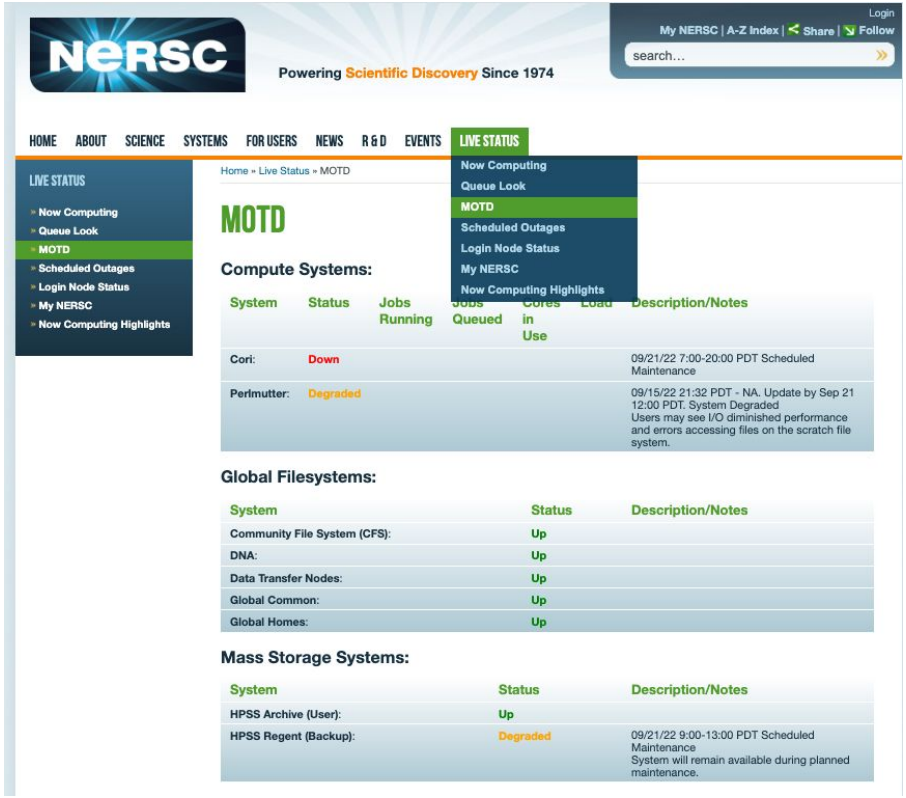
Navigating www.nersc.gov (NERSC Training)



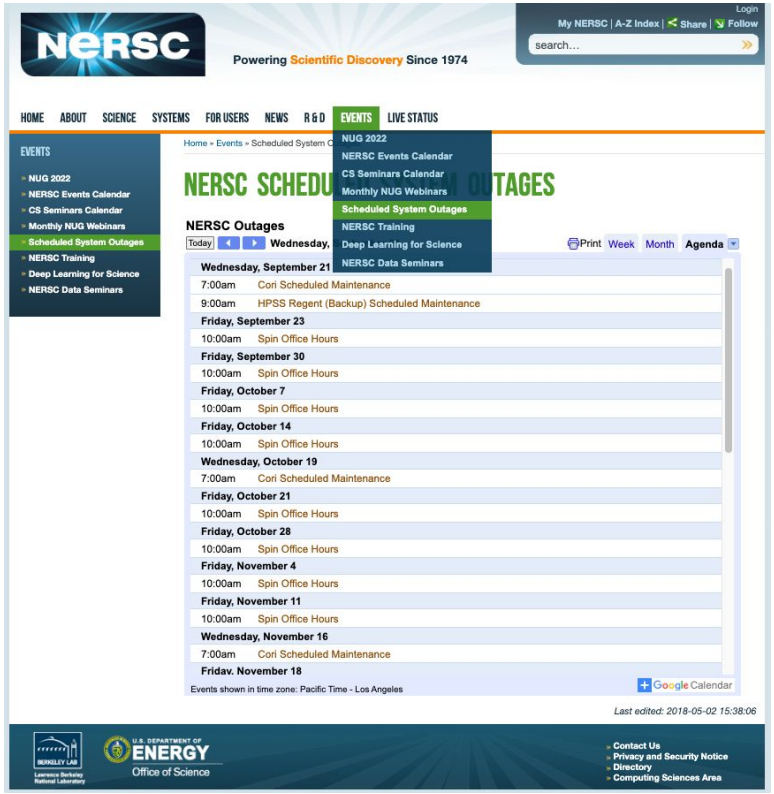
Navigating www.nersc.gov (NERSC Events)



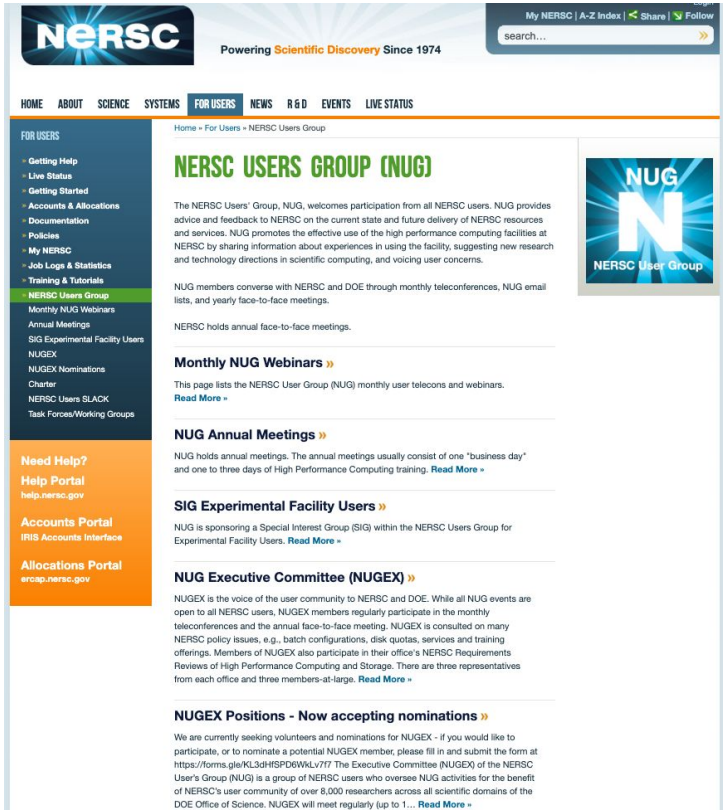
Navigating www.nersc.gov (MOTD)

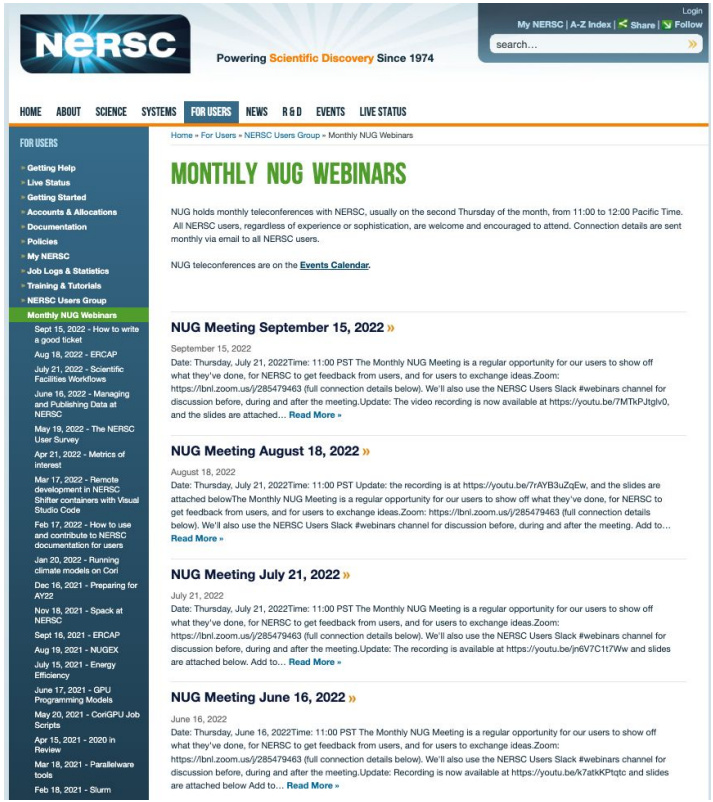


Navigating www.nersc.gov (Scheduled System Outages)

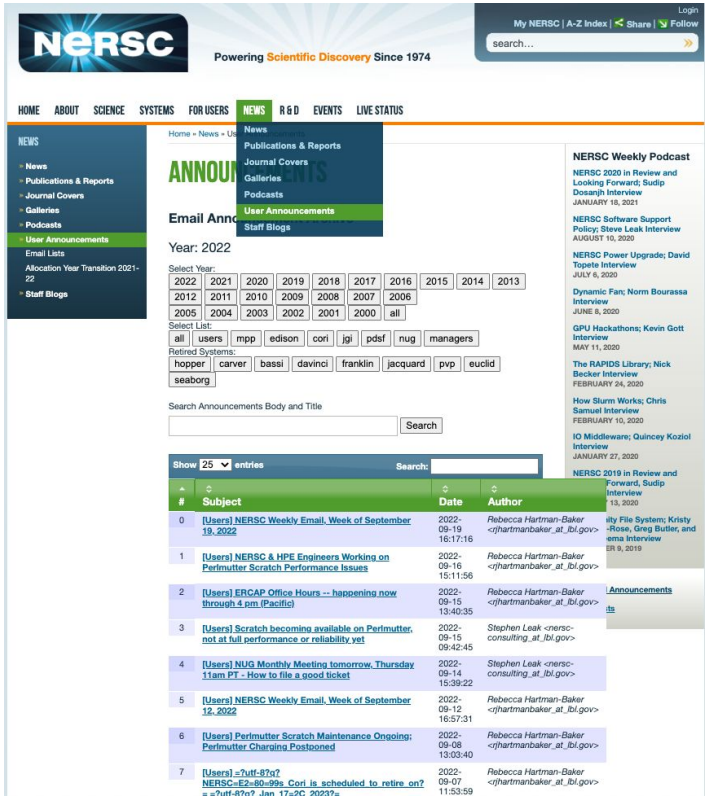


Navigating www.nersc.gov (NERSC User Slack)



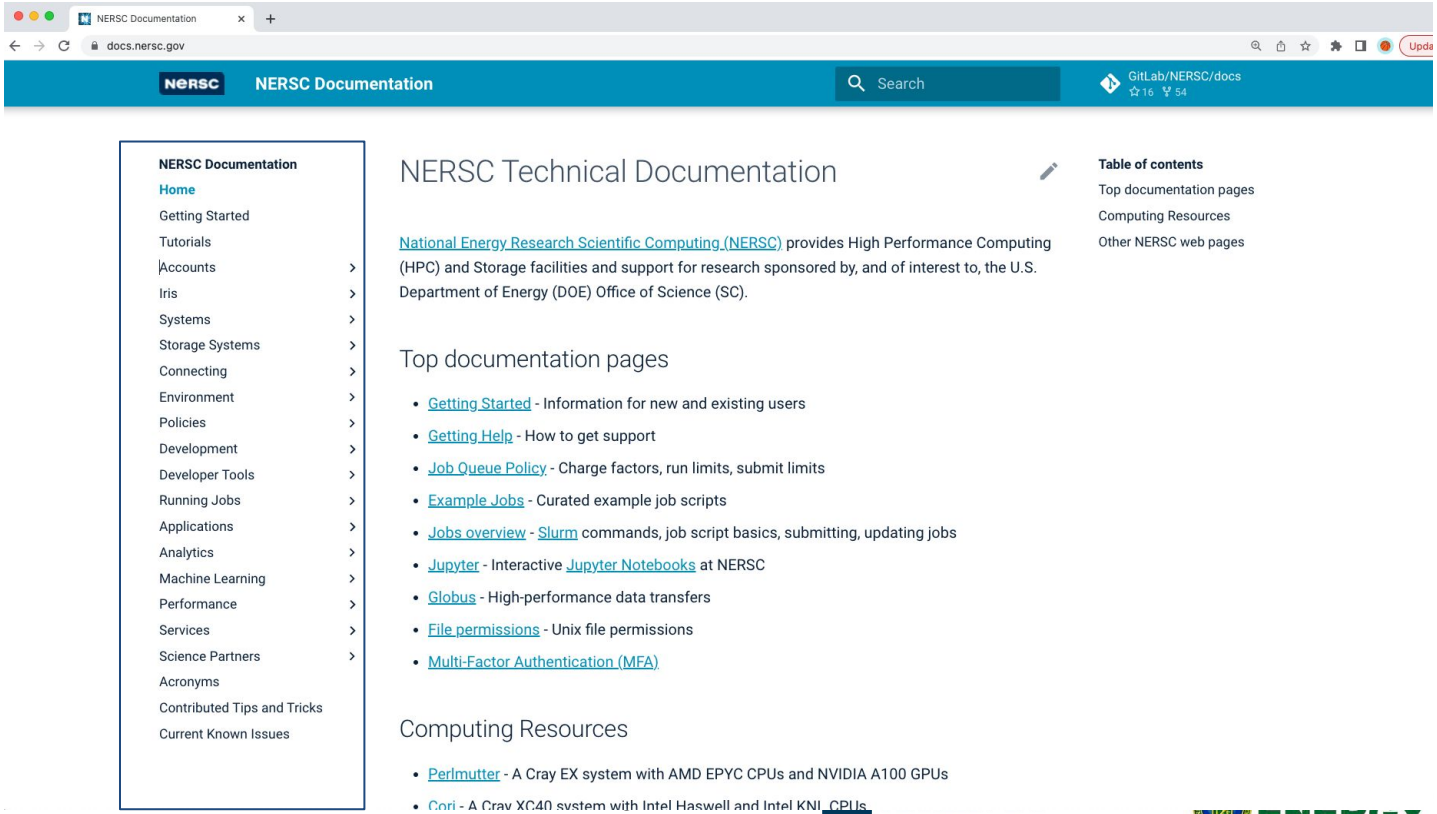


Navigating www.nersc.gov (User Announcement)

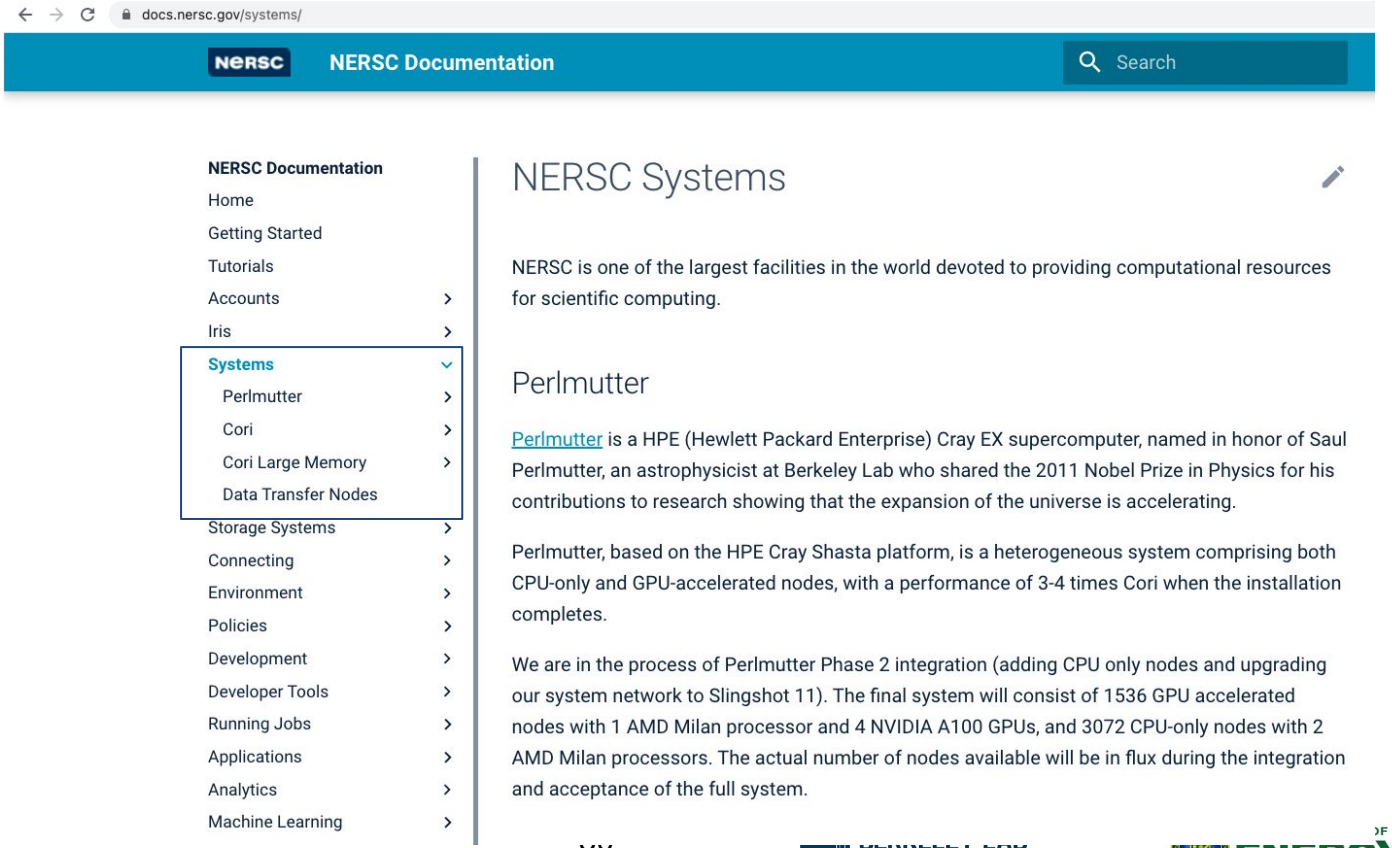


Navigating NERSC User Documentation

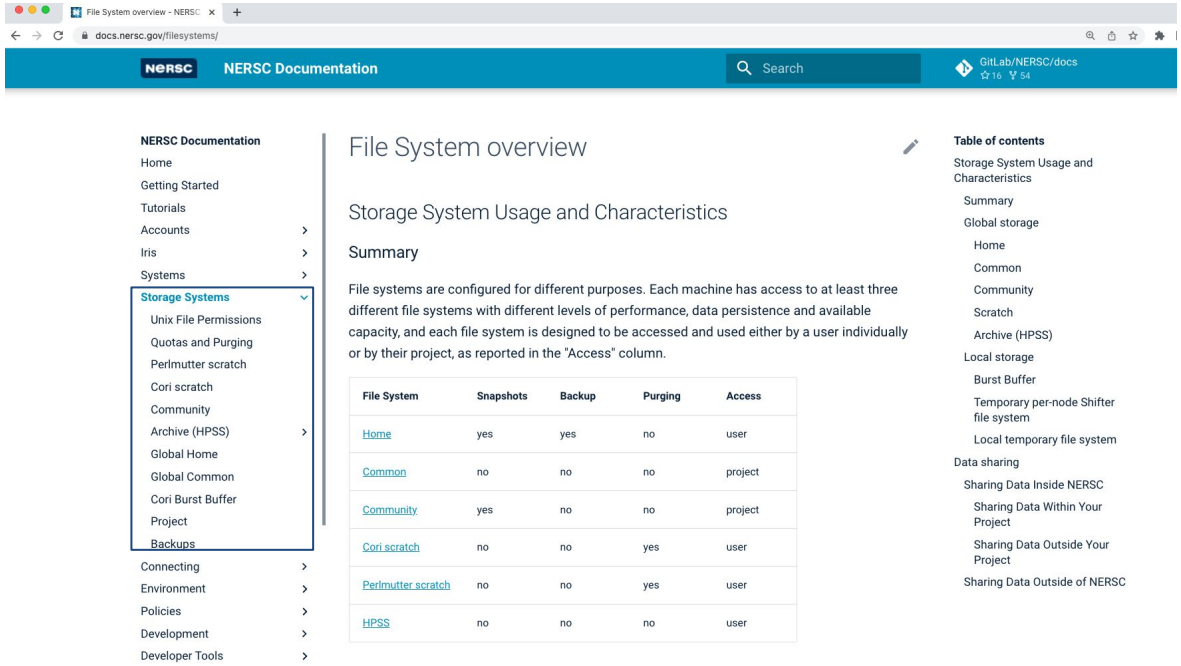
NERSC Documentation - Main Page



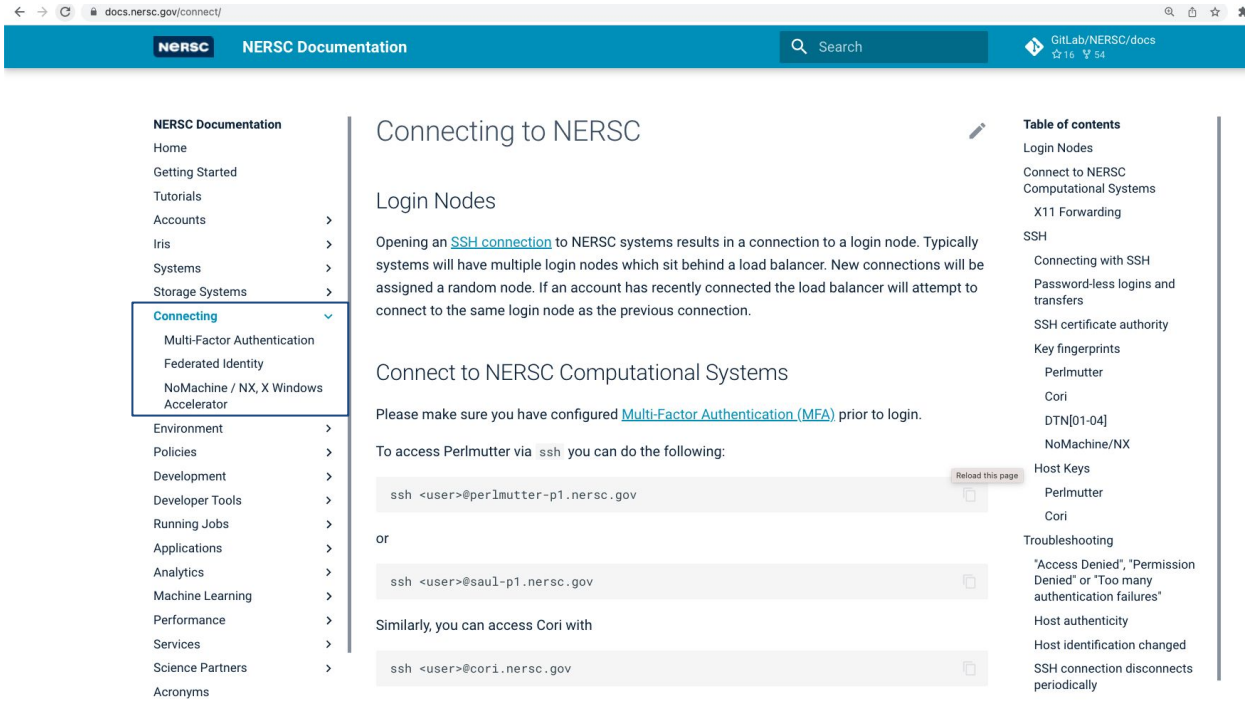
NERSC Documentation - System Overview



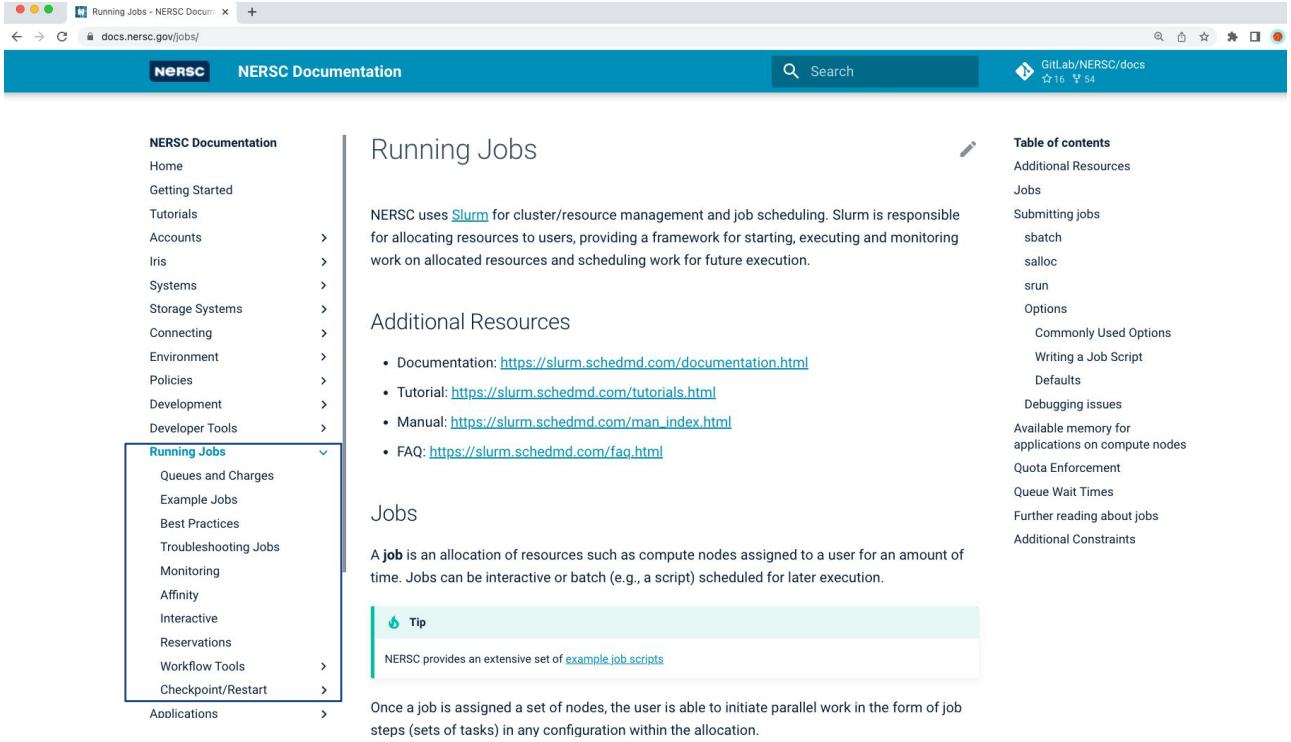
NERSC Documentation - Storage Overview



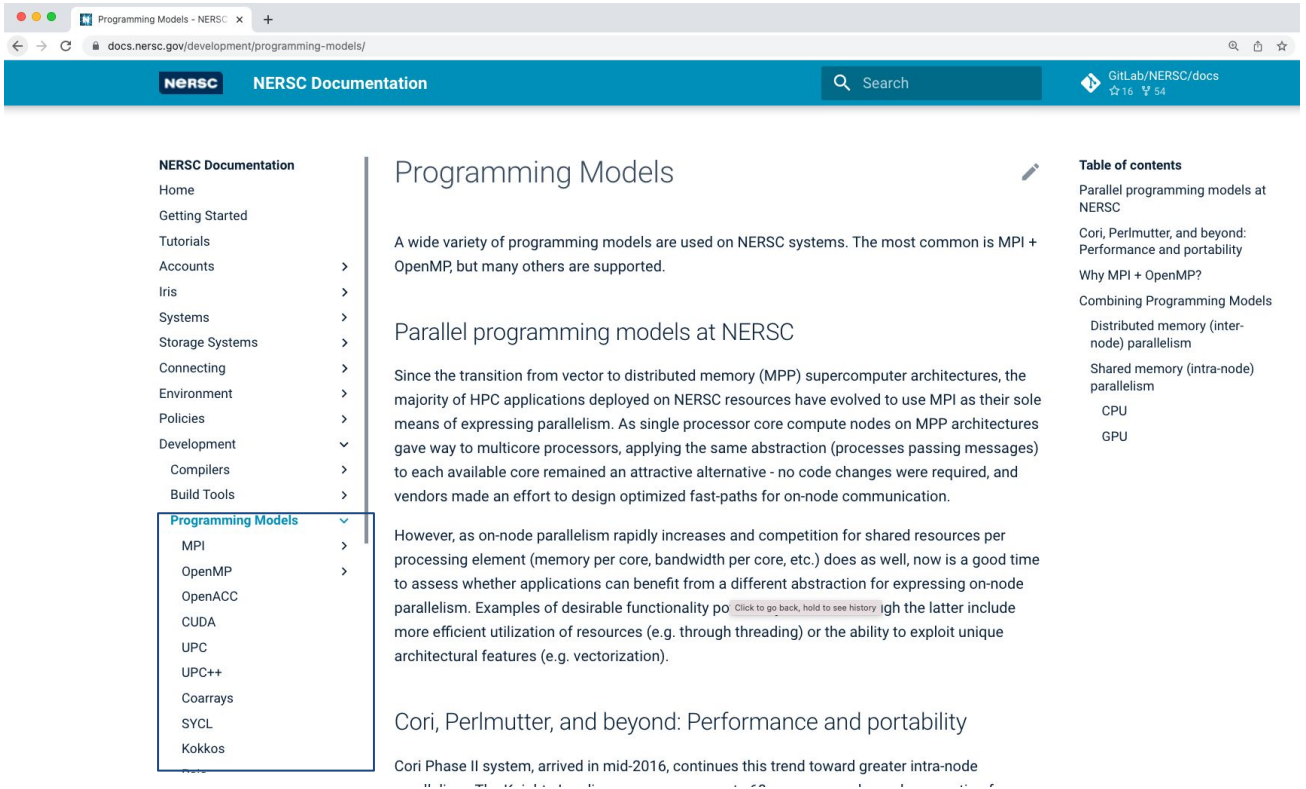
NERSC Documentation - Connecting to NERSC



NERSC Documentation - Running Jobs



NERSC Documentation - Programming Models




Thank You and
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