Remote desktop service
FastX
and
VNC on Casper

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X-Forward vs FastX response comparison

This video compares time needed to start MATLAB:

1. With X-forwarding and
2. From remote desktop server fastx.ucar.edu
Agenda

- What is a remote desktop service
- Our temporary deployment of remote desktop (FastX)
- Access modes and clients
- Known issues so far
- Best practices
- Desktop for hardware rendered graphics or existing VNC
- Which one to choose
- Question and answer
Benefits of remote desktop service

- Single point of entry to NWSC
  - Few windows on Cheyenne login (passwd less), perhaps for your scripts / source code edit
    - For running
    - Checking your results
  - Few on Casper (execdav)
    - For data analysis
    - For graphical output
- If connection breaks reconnect to exactly where you left
- Not done yet, but enough for the day!
  - leave the session and reconnect the day next
FastX

- Temporary, just to manage current crisis
- Carefully planned, robust and sized deployment later
- Running on a single Casper node
  - 384 GB total memory and
  - 36 cores
- Host: fastx.ucar.edu
- Web URL: https://fastx.ucar.edu:3300/
- Doc URL: https://www2.cisl.ucar.edu/resources/computational-systems/casper/using-fastx-remote-desktops

Your laptop shared with 3,000 potential users!
How to connect (native client)

- Slightly faster to start
- Can be connected from anywhere
- (VPN not required) but on your machine client installation required
- Root privilege may be needed (shared use installation)
How to connect, web browser

Browser-based access slightly slower to start

Nothing to be installed but requires either:
  ● to be in VPN or
  ● an ssh tunnel
If on VPN

- Point browser to: 
  https://fastx.ucar.edu:3300/

- Authenticate using token authentication
This video demonstrates logging in to fastx using a web browser while the client machine is on the UCAR internal network or VPN.
If not on VPN

- Create an ssh tunnel
  
  ```bash
  ssh -L 3300:fastx.ucar.edu:3300 <user-id>@fastx.ucar.edu
  ```

- Point browser to:
  
  ```
  https://localhost:3300/
  ```

- Authenticate using token authentication
This video demonstrates logging into fastx.ucar.edu using ssh tunnel
This video demonstrates steps to create ssh tunnel to fastx.ucar.edu using putty in windows platform.
This video demonstrates how to create a tunnel to fastx.ucar.edu using SecureCRT.
Access FastX using native client

- Web client is nice and convenient but web instance is shared with other stuff so you may want compute to be outside browser
- FastX has native clients for Windows, Mac and Linux
This video demonstrates how to connect to fastx.ucar.edu using native client.
Best practices, *limit local resource use*

- Short Matlab, IDL, NCL or Python OK
- So are editing, xxdiff casual ncview etc.
- Anything beyond (ssh Cheyenne / execdav)
- Limit number of desktops to one!
- If persistence not needed, please terminate

Sessions that use excessive resource may get killed
Known issues

- Web URL site times out
  
  *Check if VPN / ssh tunnel is alive*

- KDE desktop fails to start with dbus error
  
  *Check if you’re initializing python path in shell startup*

- Response is unusually slow
  
  *Server could be busy, notify us*
VNC using vncmgr

For graphics hardware rendered display, use:
- **vncmgr** script and
- a VNC client (TurboVNC or TigerVNC)

Documentation:
[https://www2.cisl.ucar.edu/resources/computational-systems/casper/using-remote-desktops-casper-vnc](https://www2.cisl.ucar.edu/resources/computational-systems/casper/using-remote-desktops-casper-vnc)
This video demonstrates how to use vncmgr script to connect to a VNC session primarily for high-end hardware rendered graphics on Casper.
Concluding remarks

- Use FastX remote desktop for most of your daily interactions with CISL resources
- ssh to Cheyenne
- execdav for any resource intensive DAV work, DISPLAY will be forwarded from exec host
- For hardware accelerated graphics use vncmgr
- Current FastX deployment is for crisis management more robust deployment to follow perhaps later this year
Questions