Remote Visualization At TACC

Greg Abram
Why?

• Avoid moving the data
• Avail yourself of high-performance parallel visualization systems at TACC
Remote Client/Server Visualization

- TACC compute nodes are not directly accessible from outside
- Necessitates access through FE node
- Still not good:
  - Assumes version match
  - “conversation” between server and GUI may be “chatty” – therefore burdensome on FE node
Plan B: X Forwarding

- Worse...
  - GUI on FE node is very heavyweight
  - X-forwarding is very chatty – lots of round-trips
Plan B’: X Forwarding from compute node

- Better...
  - GUI on now on compute node
- Still bad, though
  - X-forwarding is still very chatty – lots of round-trips
Avoiding X Forwarding via VNC

1. Connect to remote node
   a. SSH from login node

2. Start VNC Server on remote node

3. Start VNC Client on remote node
   a. Various implementations available
   b. I use RealVNC

4. Connect them

Now any program you run from the VNC desktop on your local system actually runs on the remote system!

VNC protocol is very terse and compact!
Here’s How We Really Do It

1. SBATCH `vncserver`
   - Allocate multiple nodes
   - IBRUN vncserver on root node

2. Run `vncclient` locally and connect through tunnel

3. Run GUI and IBRUN server on the VNC desktop
We Make It Easy –
The Vis Portal

- http://vis.tacc.utexas.edu
- Log in using TACC credentials
We Make It Easy – The Vis Portal

- Fill in fields
  - Which supercomputer
  - Project to be billed
  - Type
    - VNC
    - Rstudio
    - Iron Python
  - Desktop resolution
  - Number of nodes
  - Number of processes per node
- First time – set VNC password
- Hit Start Job
- Wait for job to run
We Make It Easy –
The Vis Portal

• Enter your VNC Password...
We Make It Easy –
The Vis Portal

• And there’s your desktop!
One last bit of magic....

- Brought to you via the vglrun wrapper for OpenGL apps!
Real-Time Remote Visualization