Visualization

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Visualization Consulting

UA HPC offers consulting services in visualization. You can send an email to vislab-consult@list.arizona.edu for technical support from Data & Visualization consultants.

Paraview and VisIt are available on Ocelote as modules

Visual Applications like Matlab

You can utilize the GUI version of an application like Matlab using the Ocelote Desktop version of OnDemand.

Open On Demand

When you choose Ocelote Desktop from the Interactive Apps dropdown at the top of the page and then choose the resources you need (like cores and wall time hours) you will get a session that is started on one of the GPU provisioned nodes. Click on the Launch noVNC in New Tab button and you will get a Desktop screen. From there you could choose Applications, System Tools, Terminal. For an example do "module load matlab", "matlab" and then wait for all the busy Matlab things to happen.
**VPN - Virtual Private Network**

A VPN service (Virtual Private Network) is available for HPC, primarily for applications that cannot navigate the bastion host for visualization, and because the performance is frequently better than tunneling through the Bastion host. This is separate from the UA VPN. We suggest you try the Desktop application of OnDemand for GUI applications as shown for Matlab immediately above.

**Ansyl Workbench**

This is a GUI used to launch Ansys projects.

1. `ssh -X netid@hpc.arizona.edu`
2. `ocelote -X`
3. `qsub -l X -N jobtest -W group_list=hpcteam -q windfall -l select=1:ncpus=28:mem=168gb -l walltime=1:0:0`  
   # starts an interactive session. Be sure to use the -X which tunnels the graphical functionality. And replace group_list value with the group you belong to.
4. `module load cuda10.1`  
   # provides the GLX functionality needed by some components like CFD Post
5. `module load ansys`
6. `runwb2`

Alternatively, Ansys can be run from the OnDemand desktop as shown for Matlab above.

**GLX - Useful for VisIt**

The functionality of GLX requires synchronization between your workstation and the Ocelote nodes. Keep in mind that on Ocelote you will first access the login nodes which do not have a graphics.

These steps provide a practical example for using the Visualization software called VisIt

1. `ssh -X netid@hpc.arizona.edu`
2. `echo DISPLAY`  
   # should show localhost
3. `ocelote -X`
4. `qsub -l X -N jobtest -W group_list=hpcteam -q windfall -l select=1:ncpus=28:mem=168gb -l walltime=1:0:0`  
   # starts an interactive session. Be sure to use the -X which tunnels the graphical functionality. And replace group_list value with the group you belong to.
5. `module load cuda9.1`  
   # This is key as it has support for GLX although you do not need to run on a node with a GPU.
6. `glxinfo`
   
   # You might get “Bad Value” error on the Mac command line. Fixed with entering this command on the Mac: `defaults write org.macosforge.xquartz.X11 enable_glx -bool true`

   # On a linux workstation you might need to create a file "/etc/X11/xorg.conf" with the following section:

```
Section "ServerFlags"
  Option "AllowIndirectGLX" "on"
  Option "IndirectGLX" "on"
```

7. glxspheres64  # this is a good test of rendering back on the workstation
8. module load visit
9. visit