

# Frost Data Analysis and Visualization Resources

## Introduction

Twister is the dedicated Data Analysis and Visualization (DAV) computing resource coupled to the Frost computing platform. It provides hardware-accelerated, interactive visualization, and data analysis capabilities for UCAR and Frost TeraGrid account holders (TeraGrid account holders with logins on [NCAR's Frost system](#)). This document describes basic user procedures for Twister. In most cases the procedures are the same regardless of whether you are a TeraGrid or UCAR account holder. Where they are different, the documentation below explicitly calls them out.

## System Overview

Twister is a dual-core AMD Opteron system with 8GBs of memory, and hardware accelerated graphics (nVidia Quadro FX 3500). Remote access to Twister's graphics resources are provided via VirtualGL (see below).

Twister mounts Frost data file systems (/ptmp, /bstmp, etc). Hence data generated on Frost are immediately available with read/write access from Twister.

Home directories are local to Twister (not shared with Frost).

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## Getting Started

### Requesting an account

All Frost account holders are automatically granted an account on Twister (you must be a Frost account holder to access Twister). To request a Frost account consult the documentation [here](#)

### Logging in

The procedure for logging on to twister is different for TeraGrid and UCAR account holders:

UCAR Account Holders:

You will need a CryptoCard to login to Twister if you are a UCAR account holder

- Use ssh to login with your UCAS username to **twister.ncar.teragrid.org**
- Wait for the CryptoCard Challenge prompt, then enter your PIN on your CryptoCard, hit **ENT**, then type the number that appears on the card at the CryptoCard Challenge prompt.

Example: `ssh myusername@twister.ncar.teragrid.org`

If you experience issues with your gatekeeper password, please refer to this page on verifying or changing your UCAS password: <http://www.cisl.ucar.edu/docs/password/ucas.jsp>

If you receive the 'Token\_Response' multiple times in a row, try to resynchronize your cryptocard: <https://www.resync.ucar.edu/resync.html>

TeraGrid Account Holders:

TeraGrid account holders should consult the TeraGrid user documentation describing Logging In with Single Sign On (<http://www.teragrid.org/userinfo/>)

Note: only command line versions of SSO are supported. SSO via the TeraGrid portal is not possible.

The fully qualified host name for Twister is: `twister.ncar.teragrid.org`

### Remote Visualization

Twister's desktop display can be accessed remotely via VirtualGL to enable use of interactive applications with Graphics User Interfaces (e.g. Matlab, VAPOR). For applications dependent on hardware accelerated graphics (i.e. applications relying on OpenGL), VirtualGL is the only way these applications can be run. X11 based such as Matlab and IDL also benefit from VirtualGL.

Documentation on remote visualization may be found [here](#).

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## Software

The following commercial and 3rd party DAV applications are installed on Twister:

- [Visit](#)
- [NCL](#)
- [Paraview](#)

- [VAPOR](#)
- [VTK](#)
- [IDL](#)

Twister uses [softenv](#) to properly configure user execution environments. A newly created user account should have a properly configured softenv environment for running the above applications as well as others on Twister. If you are not able to access Twisters 3rd party applications send mail to [frost-help@ucar.edu](mailto:frost-help@ucar.edu)

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## File Systems

[Is there Frost documentation for this?]

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## File Transfer

All Twister data file systems (e.g. /ptmp, /bstmp) are hosted by Frost. Data transfered between these file systems and the outside world should be performed on Frost, not Twister.

For file transfers between Frost and a host not on the TeraGrid consult the documentation [here](#).

For file transfers between Frost and another TeraGrid resource consult the [TeraGrid file transfer documentation](#).