ICS-ACI

Onboarding

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Agenda

- Introductions
- ICS-ACI Overview
- Review Training Materials
  - User Accounts
  - Two Factor Authentication (2FA)
  - Logging into ICS-ACI
  - Your Directories
  - Checking Your Software
  - Submitting a Job

ICS-ACI Overview

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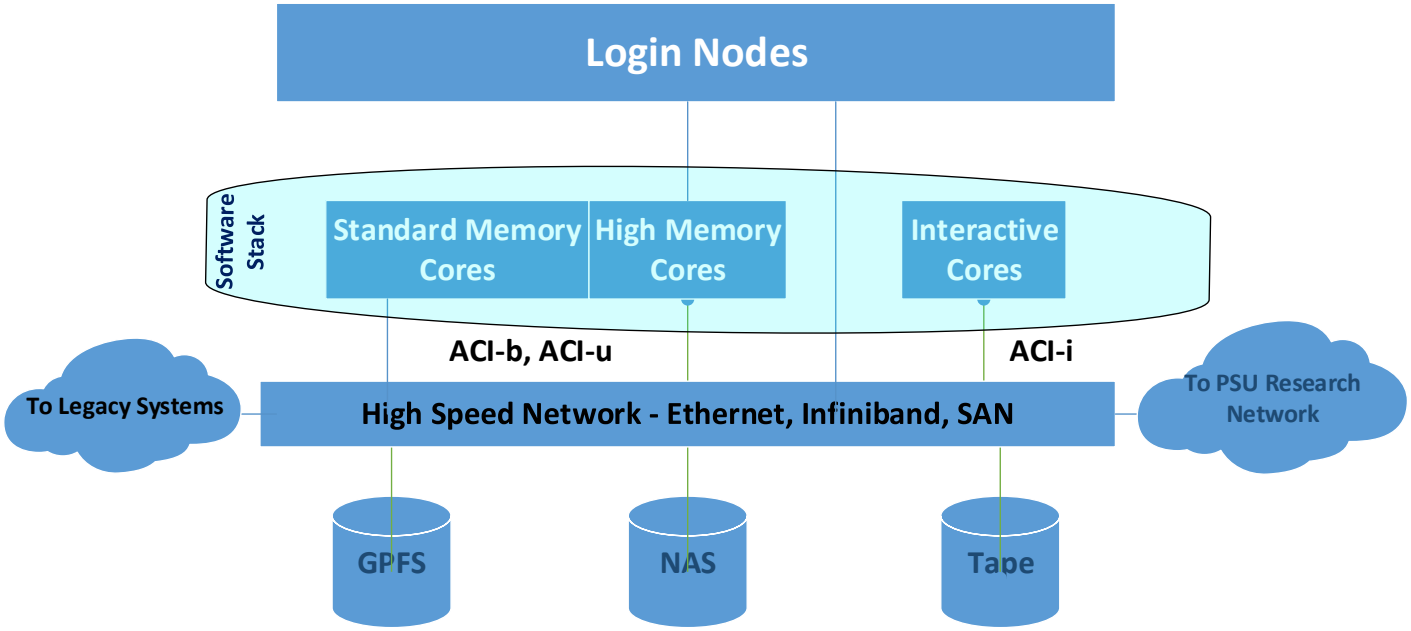
Overview of ICS-ACI computing System



- "**b**"atch Systems (ICS-ACI-**b**) – Systems configured to execute jobs submitted to a variety of Queues i.e. batch processing.
- "**i**"nteractive Systems (ICS-ACI-**i**) – Systems configured as a common GUI interactive system for testing, small jobs, and pre/post processing
- "**u**"ser-specific "Development/Test" Interactive Systems (ICS-ACI-**u**) Systems in which PI's may specify a system configuration for user-specific interactive sessions, including root access and user-defined software stacks.

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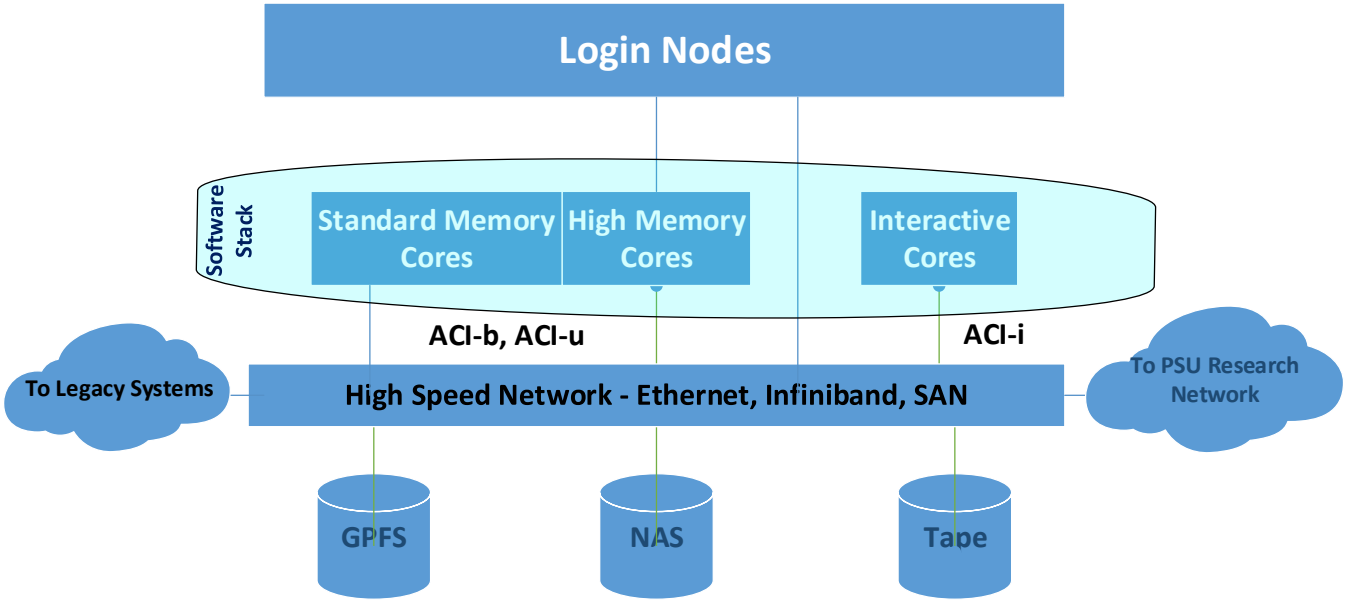
What is ICS-ACI?



- ICS-ACI is Advanced CyberInfrastructure
- Onsite HW and SW designed to support PSU Researchers
- Consists of ~6,000 cores
  - 960 High Memory Cores
    - High Memory Core – Intel Xeon E7-4830 v2 2.2GHz, 1Tb of RAM, 40 Cores per node
  - 4,800 Standard Memory Cores
    - Standard Memory Core – Intel Xeon E5-2680 v2 2.8 GHz, 256 Gb RAM, 20 cores per node

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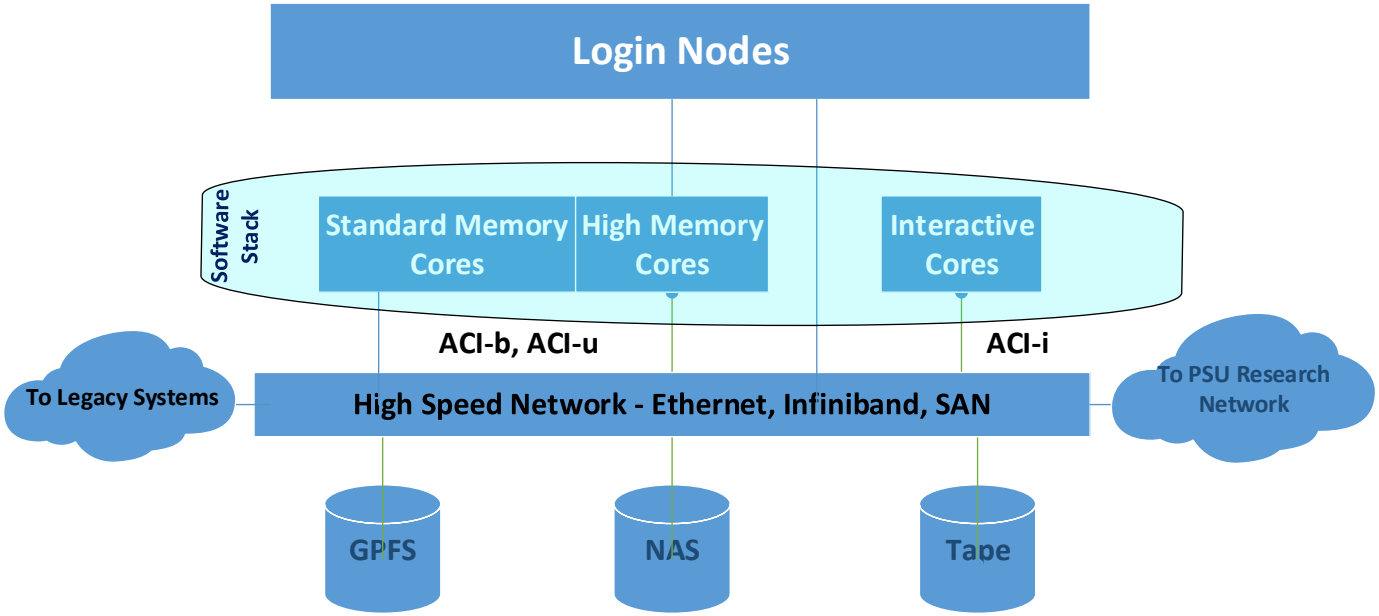
What is ICS-ACI?



- High Speed Network
  - 10/40/100 Gb Ethernet
  - FDR Infiniband
  - Storage Area Network (SAN) 16 Gb/s

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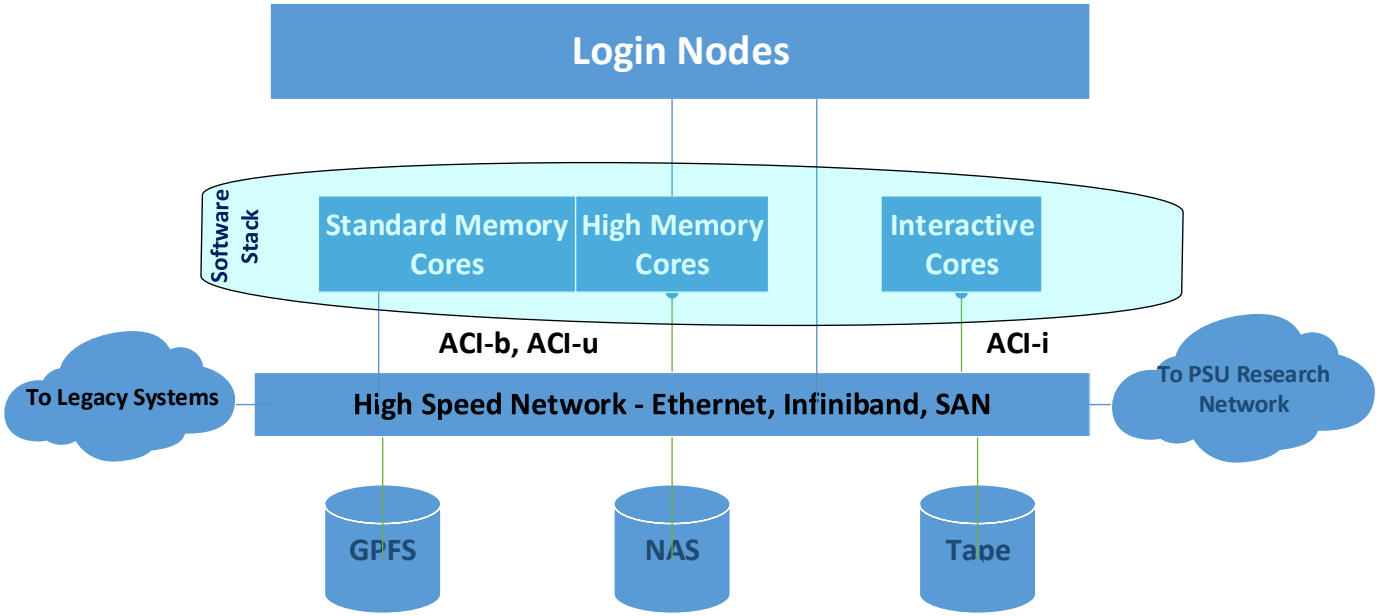
What is ICS-ACI?



- Secure Data Storage
  - NAS – 2.5Pb
  - GPFS – 0.75Pb
  - Tape- 4 Pb
- Customized Software Stack

User Accounts

User Accounts signup

- Everyone is required to have a new User Account to access ICS-ACI
  - Sign up for a new account at: http://accounts.aci.ics.psu.edu/acipriv/

Two Factor Authentication (2FA)

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Signing up for Two Factor Authentication

- In order to ensure data integrity all users must also sign up for Two Factor Authentication (2FA)
  - You can learn more about and sign up for Duo by visiting:
    - http://identity.psu.edu/services/authentication-services/two-factor/self-service-portal/
    - http://2fa.psu.edu

Logging Into ICS-ACI

Using SSH or PuTTY to Connect to ICS-ACI

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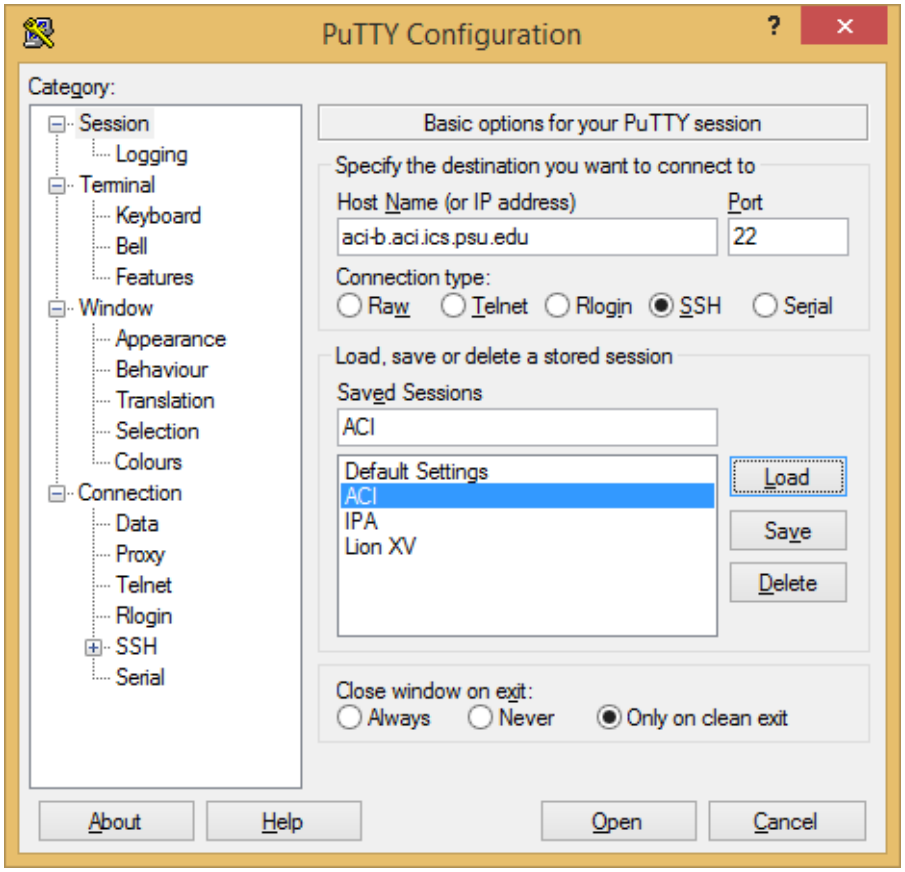
Using PuTTY to connect to ICS-ACI

- Enter ***aci-b.aci.ics.psu.edu*** in the Host Name field



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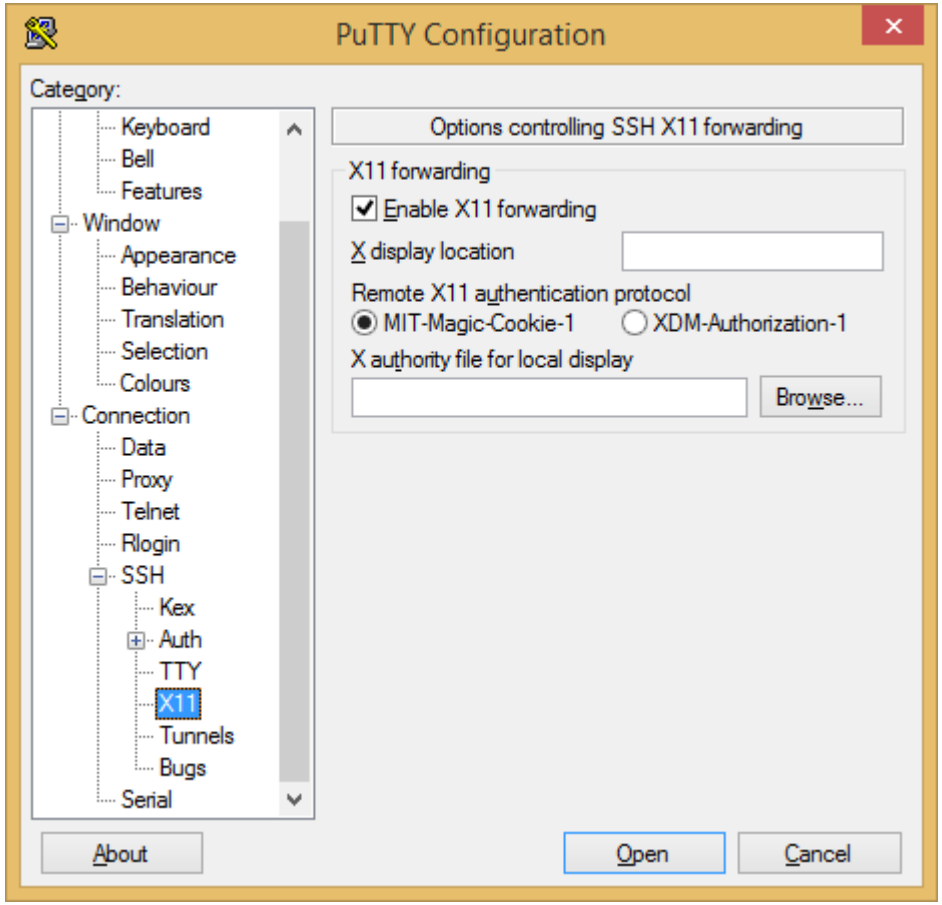
Using PuTTY to connect to ICS-ACI



- Select SSH > X11 and Enable X11 forwarding

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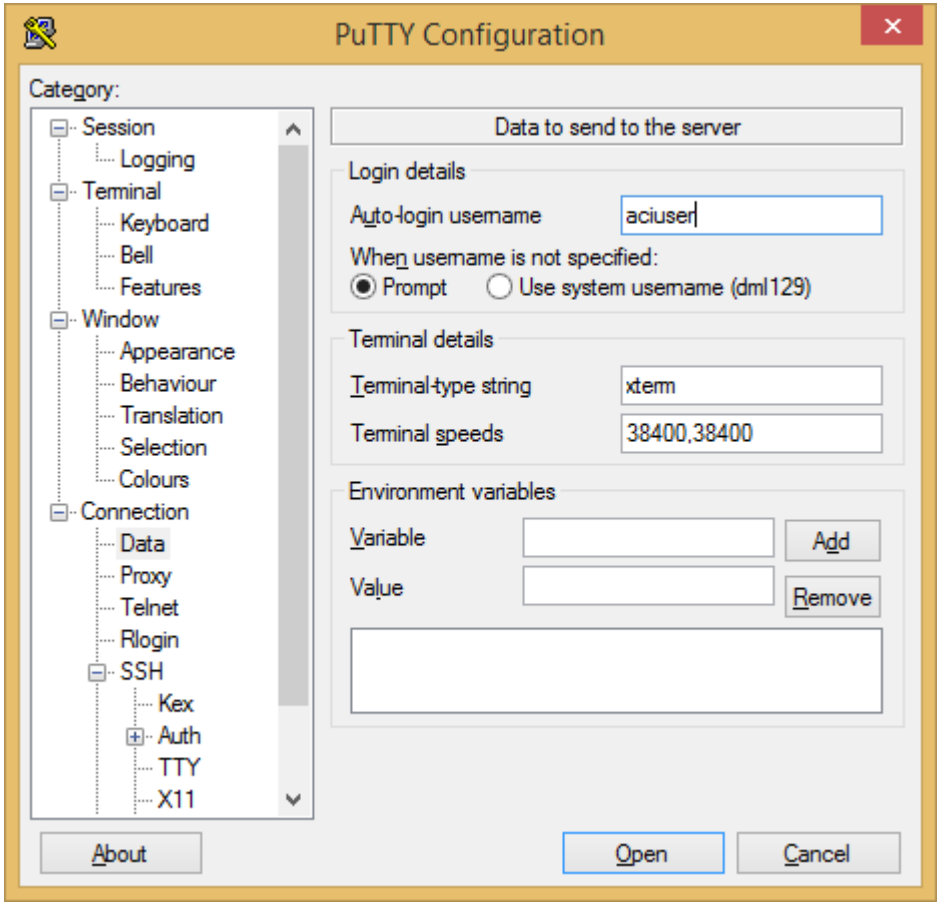
Using PuTTY to connect to ICS-ACI



- Select Connection > Data and enter your username in the Auto-login username field

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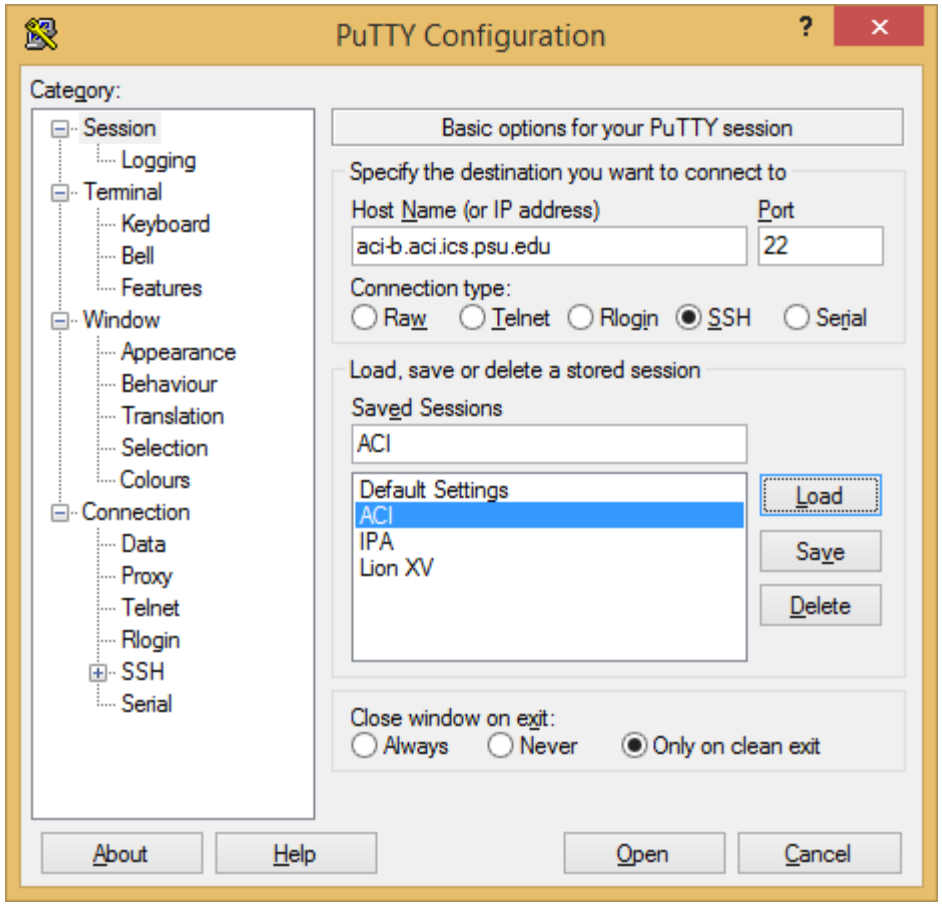
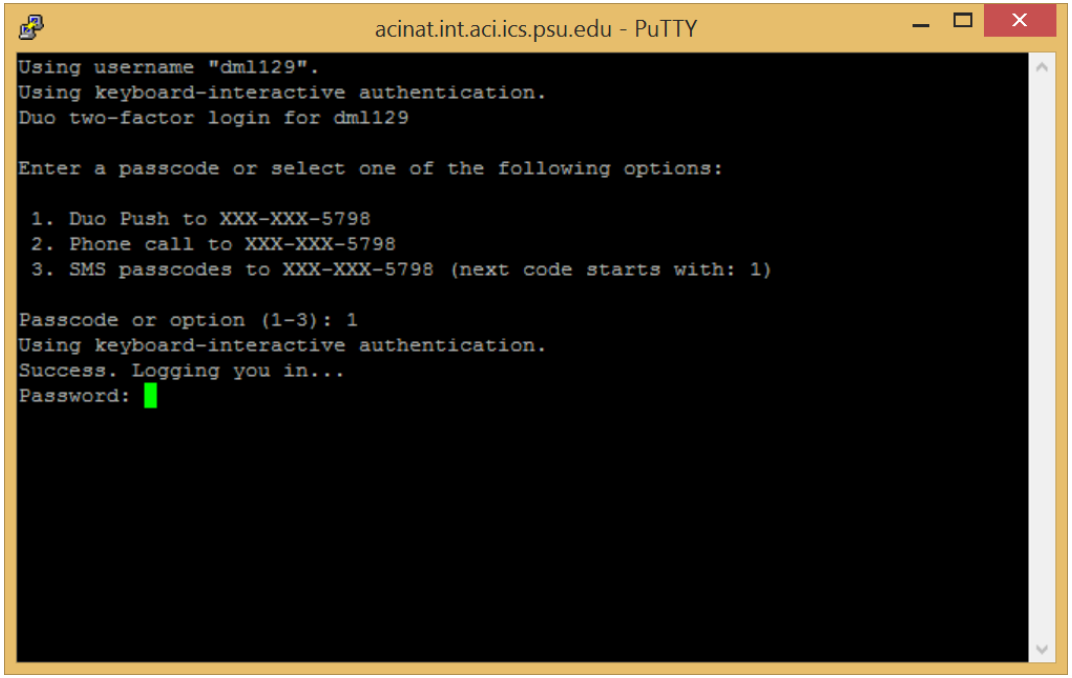
Using PuTTY to connect to ICS-ACI



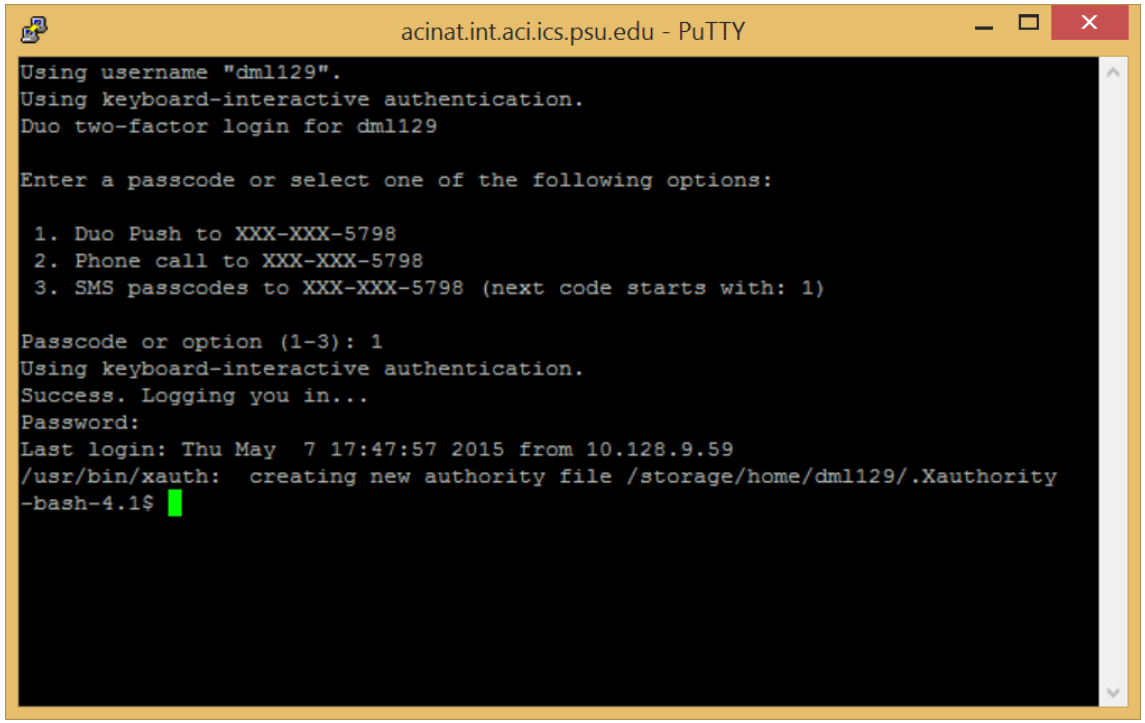
- Don't forget to name your session and save it for future use

SSH using PuTTY



- Authenticate using your 2FA

SSH using PuTTY



- You are now logged in to ICS-ACI

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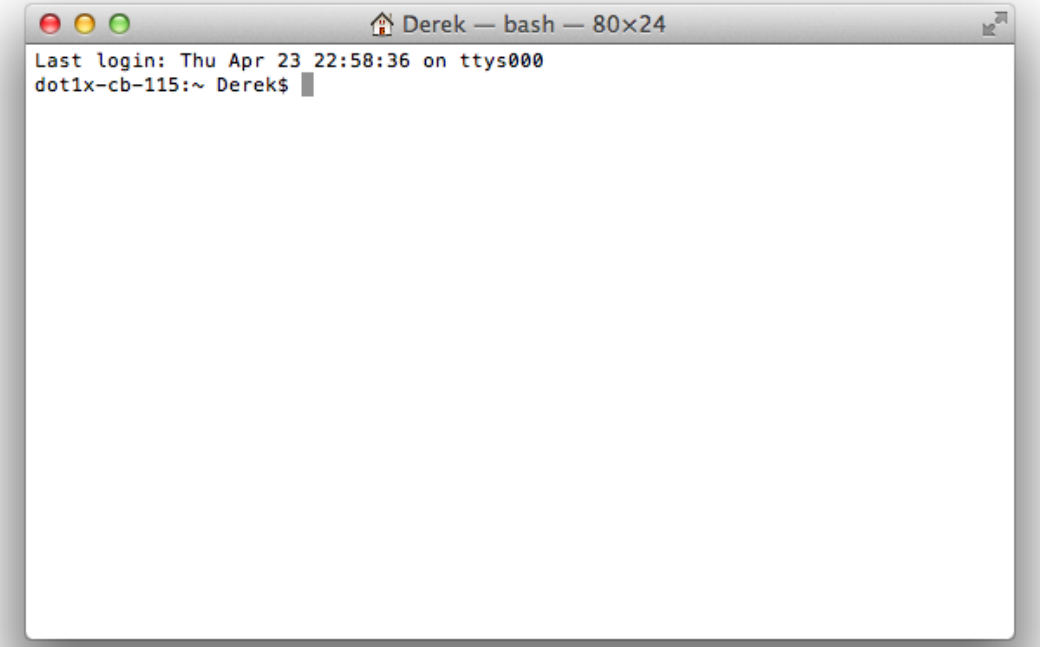
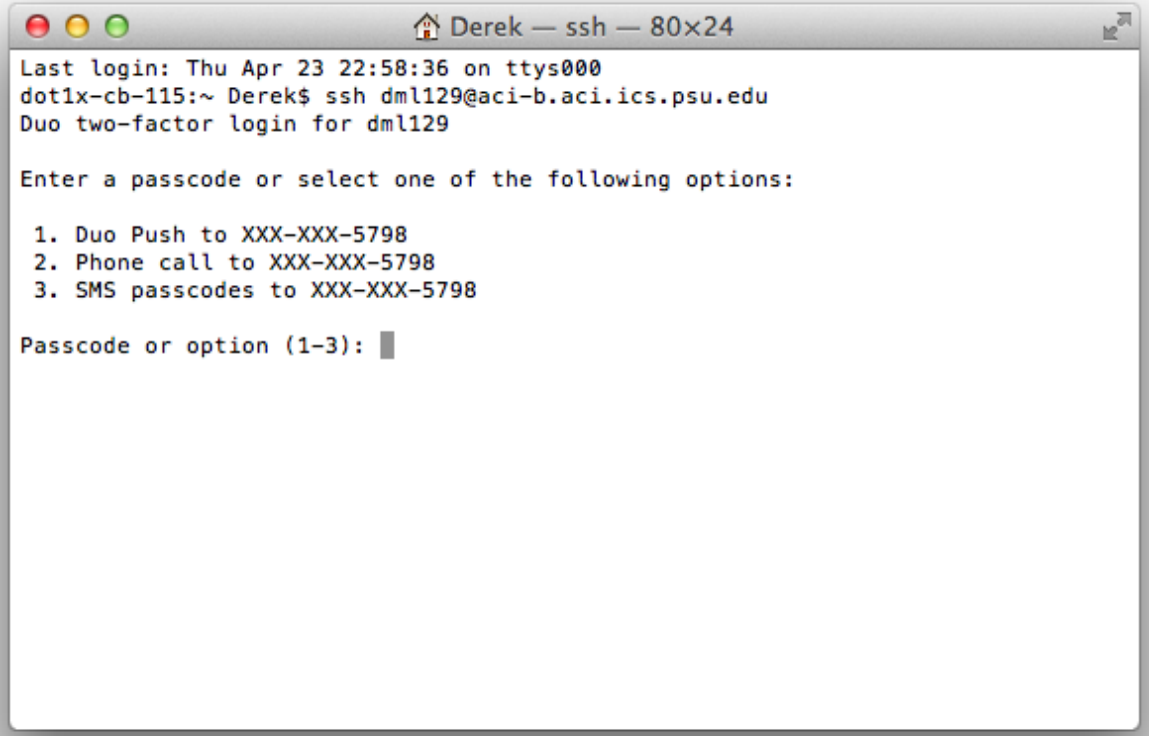
Connecting Directly through SSH



- When using SSH enter:

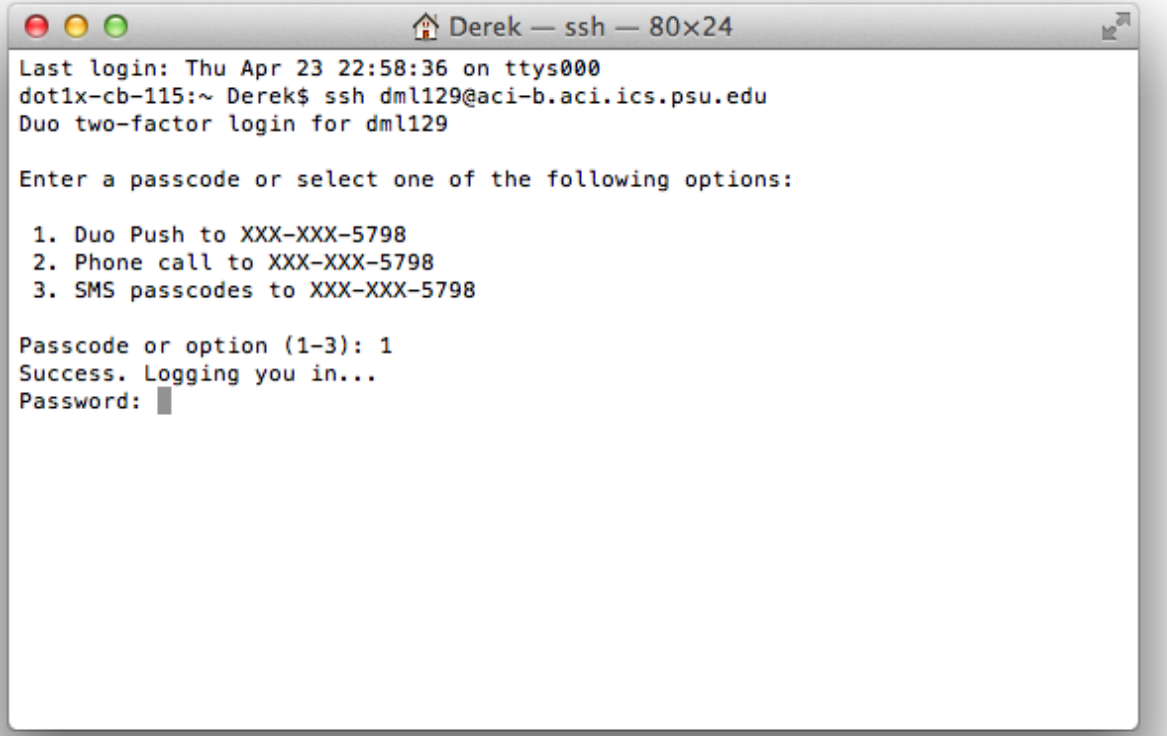
  ssh –X <username>@***aci-b.aci.ics.psu.edu***

Using 2FA



- Once you have established an SSH session the 2FA option is displayed

Using 2FA



- Select the option for the 2FA or enter a key (app, phone call, token or SMS) and follow the instructions

Accessing ACI-i

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Accessing ACI-i

- To access ACI-i it is as simple as replacing the "b" with an i

  @*aci-i.aci.ics.psu.edu*

- You will have to use Exceed on Demand for ACI-I
  - http://ics.psu.edu/advanced-cyberinfrastructure/support/tutorials/exceed-ondemand/

Storage

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ICS-ACI Account Storage

- By default, user accounts come with three storage areas, "Home", "Work", and "Scratch", attached to the ICS-ACI cluster.

CapICS-ACIty and capabilities of ICS-ACI storage

Storage Directory	Default CapICS-ACIty	Capabilities
Home	10Gb	Private NFS with Backup/Recovery
Work	128Gb	Shared NFS with Backup/Recovery
Scratch	1 million files*	GPFS with no Backup*
Group	5Tb blocks	NFS with Backup/Recovery and dual mount capability

*ICS-ACI uses a high performance parallel GPFS scratch storage system that is available for each user of the cluster. Scratch space is intended for temporary data required between program runs. Files are not backed up and non-recoverable, including accidental deletion. The integrity of the scratch storage components is accomplished via a redundant disk system. All efforts are made to maintain integrity of the file system however there may be circumstances beyond our control that could result in the loss of data.

Removal Policy – files should be present for only 30 days from creation date. Users having files existing for longer than 45 days from creation date will be sent a reminder at 45, 52, 59 days to move the data. Files existing at 60 days beyond creation date will be purged from the system.

If files are needed for longer than 30 days or require back-up, they should be placed in Group storage.

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Storing your output

- There is a new Network Attached Storage (NAS) pool for storing your work
- Home ***/storage/home/userid***
  - For private information only
  - No world readable permissions
- Work ***/storage/work/userid***
  - Results storage pool
  - Shareable
- Group ***/storage/group/poolname (not auto mounted)***
  - Large scale results storage
  - Group Shared
- Scratch ***/gpfs/scratch/userid***
  - Used during active runs
  - Shareable
  - NOT BACKED UP (policy will be enforced)

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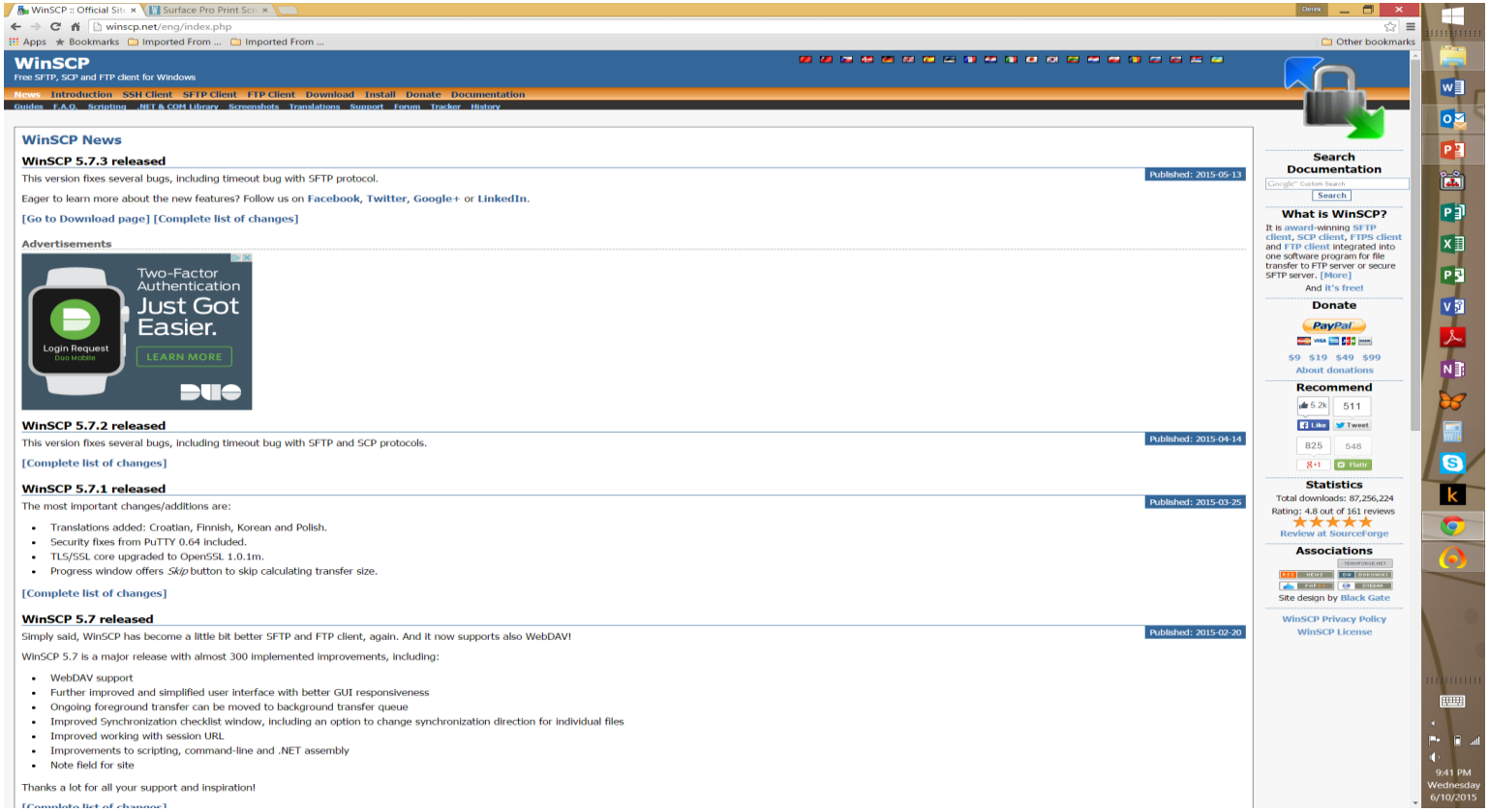
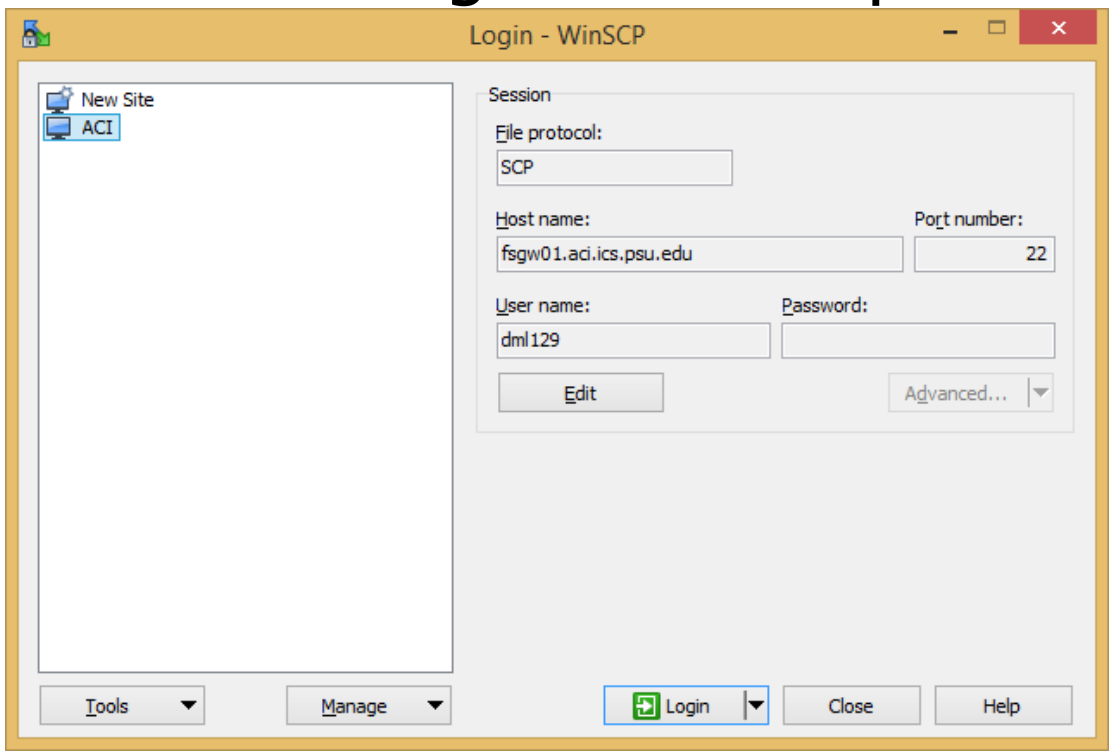
WinSCP Download

- You can download WinSCP at winscp.net



WinSCP Session Settings

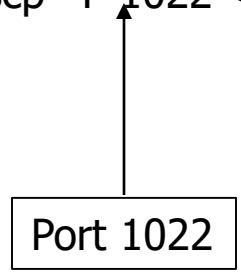
- Select Edit for the Session and edit:
  - File Protocol = SCP
  - Host Name = fsgw01.aci.ics.psu.edu



From Command Line

- Select Edit for the Session and edit:

scp –P 1022 <username>@aci-b.aci.ics.psu.edu:<full path/filename> <target>



ICS-ACI Models

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ICS-ACI Models

- GReaT model or Try ACI
  - Guaranteed Response Time – within 1 hour of submission
  - Burst capability -Any jobs submitted in excess of core allocation become Burst queue jobs
  - Default wall time of 96 hours
- Burst Queue jobs
  - Jobs that run under a GReaT allocation, but exceed the resources of a GReaT account
  - Multiple burst jobs may be submitted
  - You may only burst up to 4 times (4x) your core allocation (anything over will be rejected)
- Once all allocations on ICS-ACI-b are utilized may compute in the Open allocation
  - Lower priority and no guarantees unlike ICS-ACI-b
  - Limited to no more than 20 cores for a single job
  - Maximum of 100 submitted jobs at a time per user
  - Jobs in the open allocation will not run unless resources are available
  - Maximum wall time in the Open allocation is 24 hours

Submitting a Job

Submitting a Job

- Jobs are submitted to allocations on ICS-ACI
  - The command is still a qsub though
- To specify submitting a job to your allocation (preferred) use the allocation command
  - qsub -A <Sponsors ID>_collab
    - qsub –A xxx123_collab
- For the open allocation
  - qsub –A open

Software

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Software Stack

- You can review the available software on the ICS-ACI system at any time once you are logged in and have been authenticated
- Software packages have been specifically designed for your group
- ***module available***
  - ***module available<keyword>*** - to search any specific keyword
  - ***module load <keyword>*** - to load specific software
- Use the module available command to ensure that your software is on ACI-b

Ensuring your access

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Please ensure you have tried the following to test your access

- Use the <module av> command to ensure that your software is on ACI-b
- Check your directories
  - Home - /storage/home/<userid>
  - Work - /storage/work/<userid>
  - Group (if applicable) - /storage/group/<poolname>
  - Scratch - /gpfs/scratch/<userid>
- SCP files
  - scp –P 1022 <username>@aci-b.aci.ics.psu.edu:<full path/filename><target>
- Please try to run a small piece of code against both the open allocation and your allocation
  - qsub –A <sponsorid_collab> -l nodes=1:ppn=1 –l walltime=0:05:00 script.pbs
  - qsub -l nodes=1:ppn=1 –l walltime=0:05:00 script.pbs

Checking your usage

How to check your usage

- Go to https://aci-b.aci.ics.psu.edu/usage to check your usage
- Updated twice daily
- You can also use the gls command
  - glsusage –a abc123_collab

Support

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How to get Support

- Any issues should have a ticket created through i-ASK for review and resolution
  - contact the i-ASK center at https://iask.aci.ics.psu.edu or phone (814) 865-4275 and someone will review your issue promptly