Federating Non-Web Applications: Current Practice in Grid Computing

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“Non-Web” Apps in Grids

- Remote Login: SSH/GSISSH
- Remote File transfer: GridFTP, SCP/SFTP
- Remote Compute: GRAM, Condor-G
- Data Management: SRM, iRODS/SRB

Federated Access to Grids

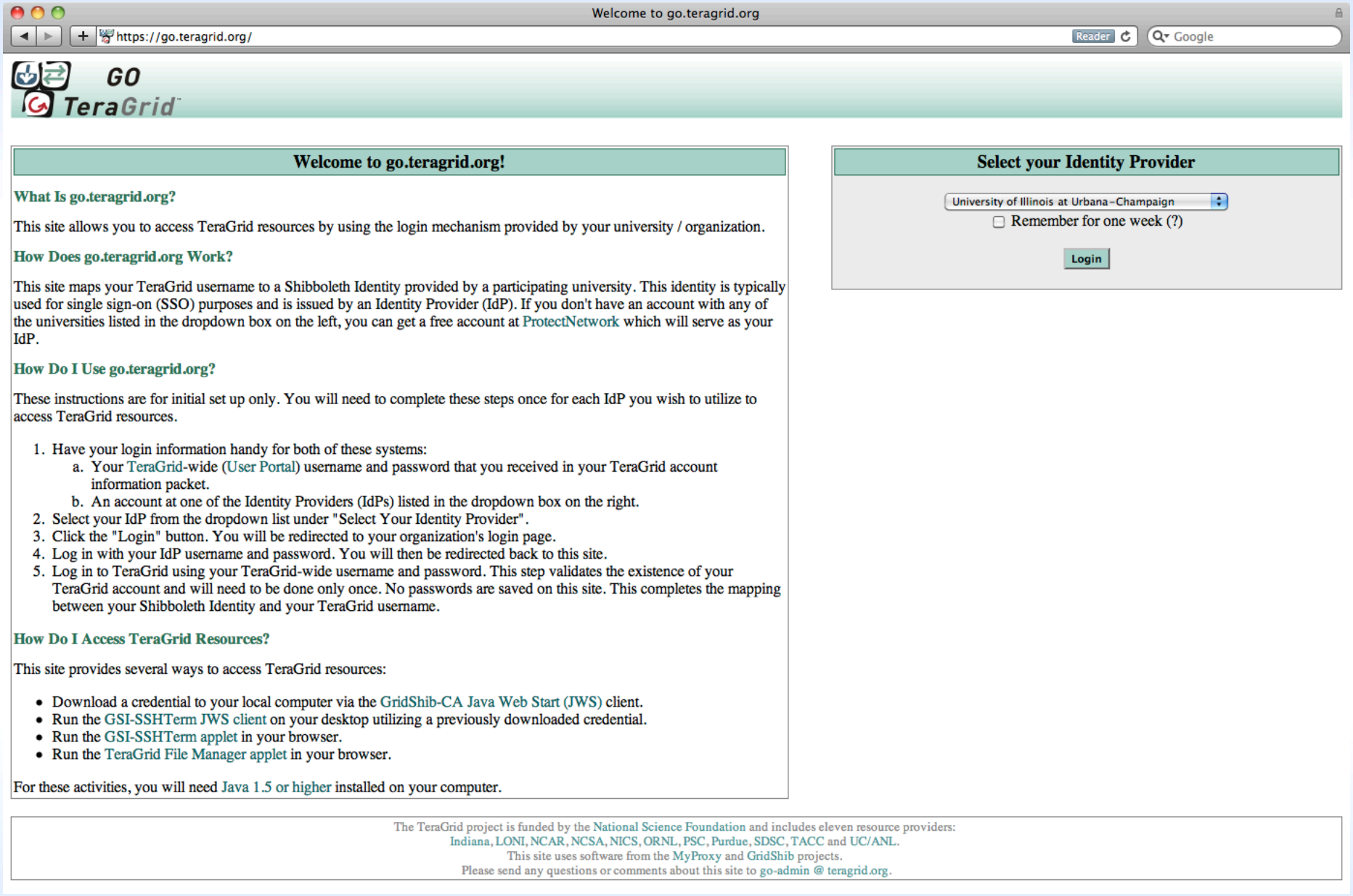
- Goals:
  - Leverage researchers' existing credentials at their home institution
  - Ease credential management for researchers and grid resource providers
- Non-Goals:
  - Anonymity
  - Authorization based on campus attributes

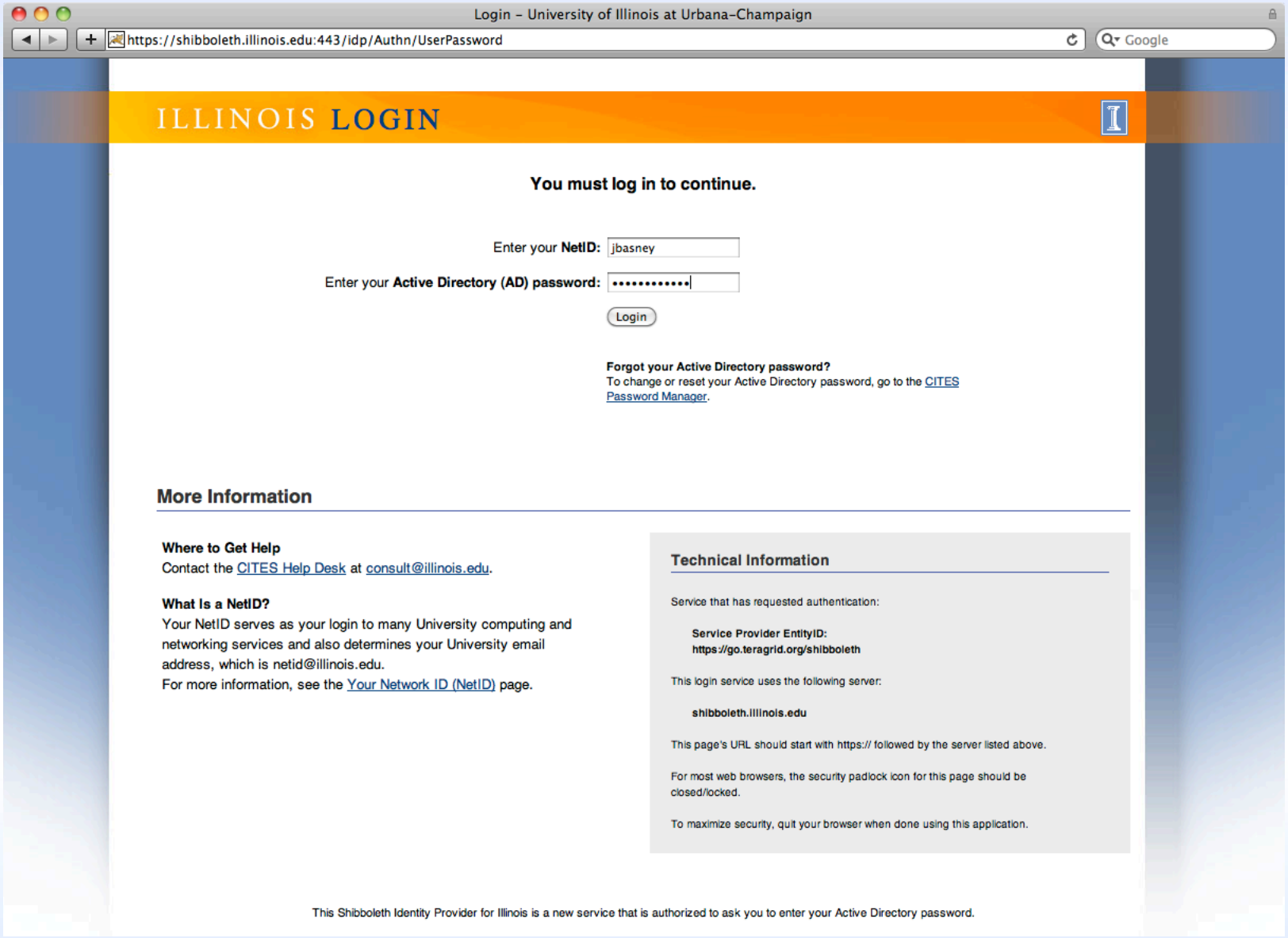
Our Approach

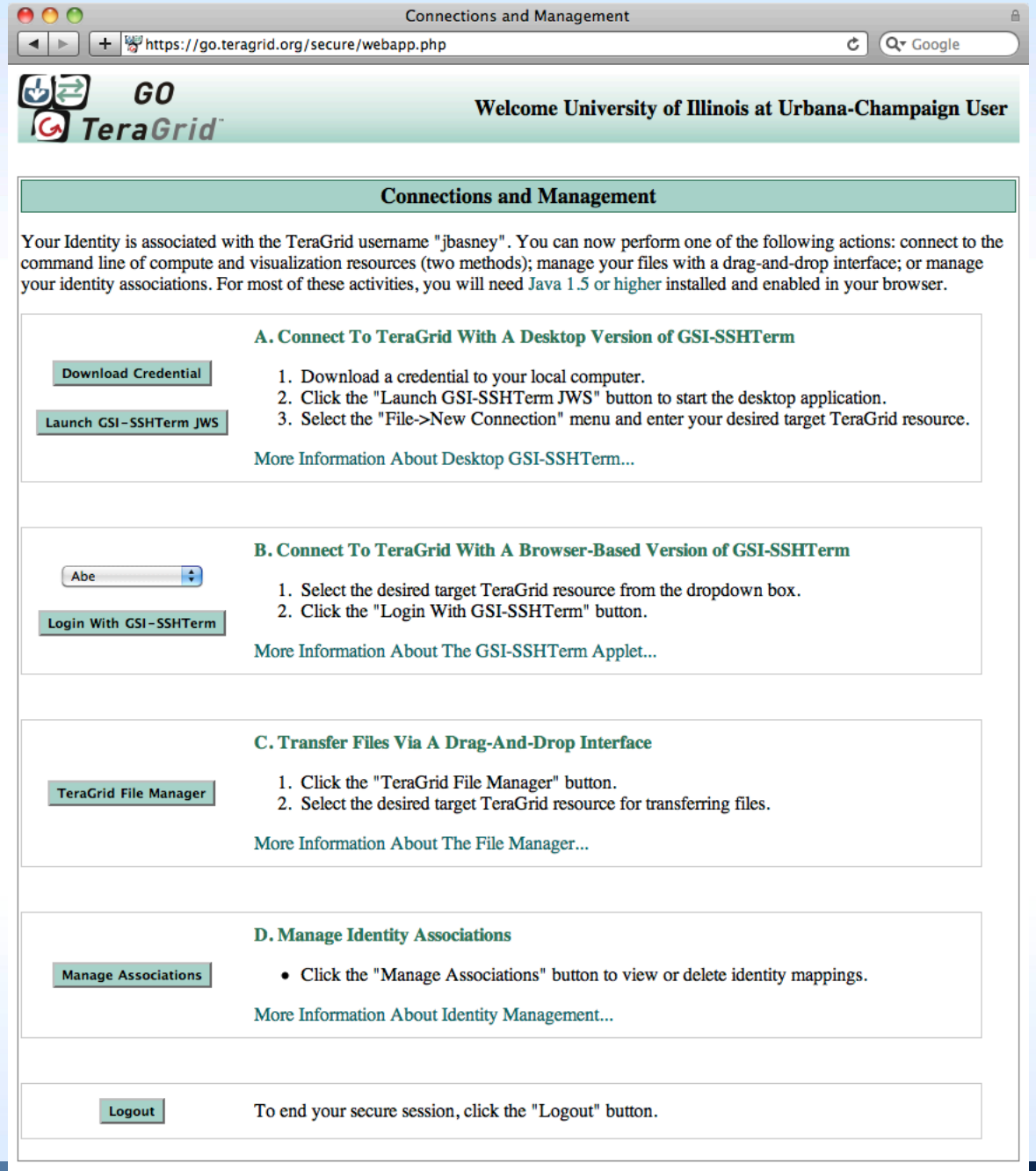
- Work with existing infrastructure
  - Leverage the federated authentication supported by campuses today
    - SAML Web Browser Single Sign-On
  - Leverage the PKI supported by grids today
- Bridge via online Certification Authority (CA)
  - Examples:
    - SWITCH SLCS (http://www.switch.ch/grid/slcs/)
    - DFN SLCS (https://www.pki.dfn.de/grid/slcs/)
    - NGS Shibboleth Login (https://cts.ngs.ac.uk/)
    - TERENA Certificate Service (https://www.terena.org/tcs/)
    - TeraGrid Federated Login (https://go.teragrid.org/)
    - CILogon (https://cilogon.org/)

Example:

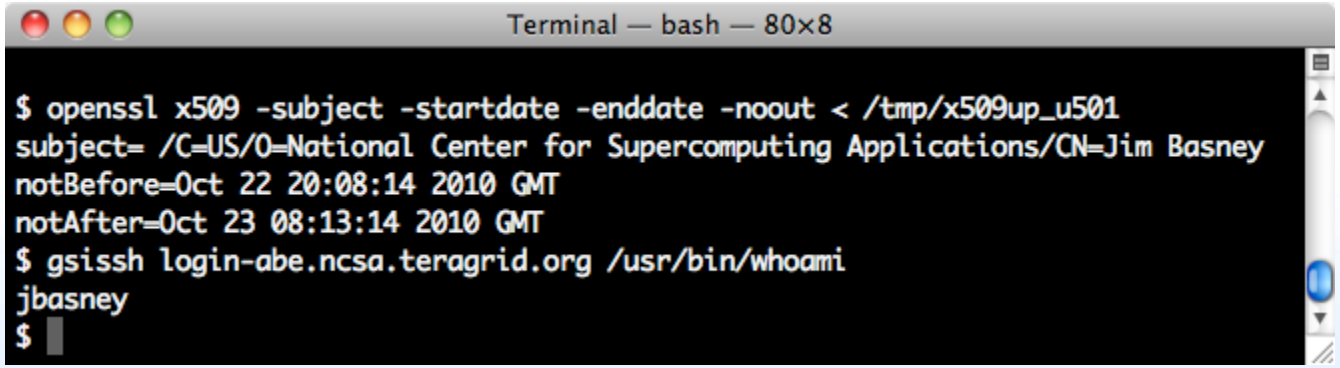
https://go.teragrid.org

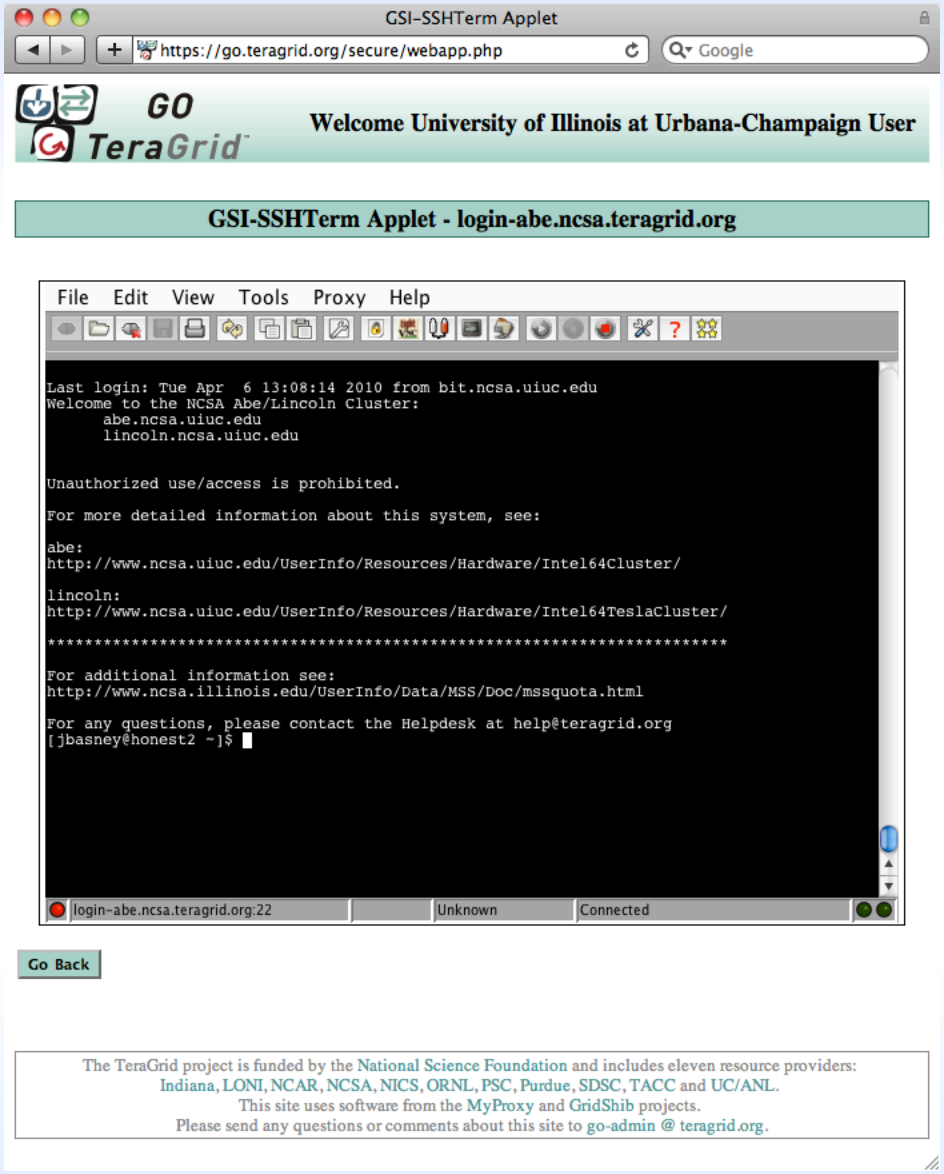

Welcome to go.teragrid.org
https://go.teragrid.org/
Reader
Google
GO
TeraGrid
Welcome to go.teragrid.org!
What Is go.teragrid.org?
This site allows you to access TeraGrid resources by using the login mechanism provided by your university / organization.
How Does go.teragrid.org Work?
This site maps your TeraGrid username to a Shibboleth Identity provided by a participating university. This identity is typically used for single sign-on (SSO) purposes and is issued by an Identity Provider (IdP). If you don't have an account with any of the universities listed in the dropdown box on the left, you can get a free account at ProtectNetwork which will serve as your IdP.
How Do I Use go.teragrid.org?
These instructions are for initial set up only. You will need to complete these steps once for each IdP you wish to utilize to access TeraGrid resources.
1. Have your login information handy for both of these systems:
a. Your TeraGrid-wide (User Portal) username and password that you received in your TeraGrid account information packet.
b. An account at one of the Identity Providers (IdPs) listed in the dropdown box on the right.
2. Select your IdP from the dropdown list under "Select Your Identity Provider".
3. Click the "Login" button. You will be redirected to your organization's login page.
4. Log in with your IdP username and password. You will then be redirected back to this site.
5. Log in to TeraGrid using your TeraGrid-wide username and password. This step validates the existence of your TeraGrid account and will need to be done only once. No passwords are saved on this site. This completes the mapping between your Shibboleth Identity and your TeraGrid username.
How Do I Access TeraGrid Resources?
This site provides several ways to access TeraGrid resources:
• Download a credential to your local computer via the GridShib-CA Java Web Start (JWS) client.
• Run the GSI-SSHTerm JWS client on your desktop utilizing a previously downloaded credential.
• Run the GSI-SSHTerm applet in your browser.
• Run the TeraGrid File Manager applet in your browser.
For these activities, you will need Java 1.5 or higher installed on your computer.
Select your Identity Provider
University of Illinois at Urbana-Champaign
Remember for one week (?)
Login
The TeraGrid project is funded by the National Science Foundation and includes eleven resource providers:
Indiana, LONI, NCAR, NCSA, NICS, ORNL, PSC, Purdue, SDSC, TACC and UC/ANL.
This site uses software from the MyProxy and GridShib projects.
Please send any questions or comments about this site to go-admin @ teragrid.org.


Login – University of Illinois at Urbana-Champaign
https://shibboleth.illinois.edu:443/idp/Authn/UserPassword
Google
ILLINOIS LOGIN
You must log in to continue.
Enter your NetID: jbasney
Enter your Active Directory (AD) password:
Login
Forgot your Active Directory password?
To change or reset your Active Directory password, go to the CITES Password Manager.
More Information
Where to Get Help
Contact the CITES Help Desk at consult@illinois.edu.
What Is a NetID?
Your NetID serves as your login to many University computing and networking services and also determines your University email address, which is netid@illinois.edu.
For more information, see the Your Network ID (NetID) page.
Technical Information
Service that has requested authentication:
Service Provider EntityID:
https://go.teragrid.org/shibboleth
This login service uses the following server:
shibboleth.illinois.edu
This page's URL should start with https:// followed by the server listed above.
For most web browsers, the security padlock icon for this page should be closed/locked.
To maximize security, quit your browser when done using this application.
This Shibboleth Identity Provider for Illinois is a new service that is authorized to ask you to enter your Active Directory password.


Connections and Management
https://go.teragrid.org/secure/webapp.php
Google
GO TeraGrid
Welcome University of Illinois at Urbana-Champaign User
Connections and Management
Your Identity is associated with the TeraGrid username "jbasney". You can now perform one of the following actions: connect to the command line of compute and visualization resources (two methods); manage your files with a drag-and-drop interface; or manage your identity associations. For most of these activities, you will need Java 1.5 or higher installed and enabled in your browser.
Download Credential
Launch GSI-SSHTerm JWS
A. Connect To TeraGrid With A Desktop Version of GSI-SSHTerm
1. Download a credential to your local computer.
2. Click the "Launch GSI-SSHTerm JWS" button to start the desktop application.
3. Select the "File->New Connection" menu and enter your desired target TeraGrid resource.
More Information About Desktop GSI-SSHTerm...
Abe
Login With GSI-SSHTerm
B. Connect To TeraGrid With A Browser-Based Version of GSI-SSHTerm
1. Select the desired target TeraGrid resource from the dropdown box.
2. Click the "Login With GSI-SSHTerm" button.
More Information About The GSI-SSHTerm Applet...
TeraGrid File Manager
C. Transfer Files Via A Drag-And-Drop Interface
1. Click the "TeraGrid File Manager" button.
2. Select the desired target TeraGrid resource for transferring files.
More Information About The File Manager...
Manage Associations
D. Manage Identity Associations
• Click the "Manage Associations" button to view or delete identity mappings.
More Information About Identity Management...
Logout
To end your secure session, click the "Logout" button.


GridShib-CA Logon Client
Menu
GridShib-CA Logon Client
Status: Credential successfully saved.
Exit or see Menu for more options.
Exit


Terminal — bash — 80×8
$ openssl x509 -subject -startdate -enddate -noout < /tmp/x509up_u501
subject= /C=US/O=National Center for Supercomputing Applications/CN=Jim Basney
notBefore=Oct 22 20:08:14 2010 GMT
notAfter=Oct 23 08:13:14 2010 GMT
$ gsissh login-abe.ncsa.teragrid.org /usr/bin/whoami
jbasney
$


GSI-SSHTerm Applet
https://go.teragrid.org/secure/webapp.php
Google
GO TeraGrid
Welcome University of Illinois at Urbana-Champaign User
GSI-SSHTerm Applet - login-abe.ncsa.teragrid.org
File Edit View Tools Proxy Help
Last login: Tue Apr 6 13:08:14 2010 from bit.ncsa.uiuc.edu
Welcome to the NCSA Abe/Lincoln Cluster:
abe.ncsa.uiuc.edu
lincoln.ncsa.uiuc.edu
Unauthorized use/access is prohibited.
For more detailed information about this system, see:
abe:
http://www.ncsa.uiuc.edu/UserInfo/Resources/Hardware/Intel64Cluster/
lincoln:
http://www.ncsa.uiuc.edu/UserInfo/Resources/Hardware/Intel64TeslaCluster/
For additional information see:
http://www.ncsa.illinois.edu/UserInfo/Data/MSS/Doc/mssquota.html
For any questions, please contact the Helpdesk at help@teragrid.org
[jbasney@honest2 ~]$
login-abe.ncsa.teragrid.org:22
Unknown
Connected
Go Back
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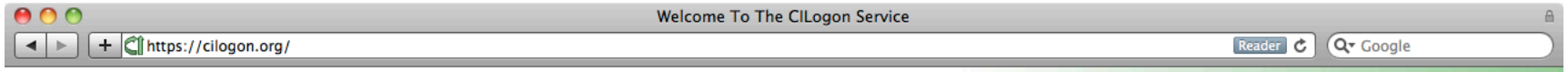

CILogon Service

Welcome To The CILogon Service

About The CILogon Service

What Is The CILogon Service?

The CILogon Service allows users to authenticate with their home organization and obtain a certificate for secure access to CyberInfrastructure (CI). Additional information can be found at www.cilogon.org.

CILogon + Your Organization = Secure Access to CI

How Does The CILogon Service Work?

The CILogon Service is a member of InCommon, a formal federation of over 200 universities, agencies, and organizations. Many of these organizations maintain an authentication service to provide their users with web single sign-on. An InCommon organization can partner with the CILogon Service to provide user information for the purpose of issuing certificates. These certificates can then be used for accessing cyberinfrastructure resources.

How Do I Use The CILogon Service?

Select your organization from the drop-down list, then click the "Log On" button. You will be redirected to your organization's login page. After you authenticate with your organization as you typically would, you will be redirected back to the CILogon Service. Then you will be able to fetch a certificate for use with cyberinfrastructure resources.

What If I Don't See My Organization Listed?

If you don't have an account with any of the organizations listed in the drop-down list in the "Start Here" menu, you can register for a free user account at ProtectNetwork for use with the CILogon Service. Also, you can make a request for your organization to appear in the list of available organizations. Identity Provider administrators can view the InCommon Participant Operational Practices document for the CILogon Service and then test and add their identity provider to the CILogon Service.

Can I Use OpenID Instead?

The CILogon Service also supports the use of OpenID as an alternate authentication mechanism. Many users have an OpenID account without even knowing it. For example, you can use your Google or Yahoo account for OpenID authentication. However, the certificates issued to OpenID users may be accepted by fewer cyberinfrastructure resource providers than those issued to InCommon users.

What If I Have More Questions?

Please see the CILogon FAQ for answers to frequently asked questions. If your question is not answered there, please use the email address at the bottom of this page to contact us.

Note: You must enable cookies in your web browser to use this site.

Start Here

Select An InCommon Organization:

University of Illinois at Urbana-Champaign

Remember this selection: ☐

Log On

Use OpenID instead

By selecting "Log On", you agree to our privacy policy.

GSISSH

- Protocol:
  - GSS-API for SSH (RFC 4462)
  - Grid Security Infrastructure (GSI) GSS-API (www.ogf.org/documents/GFD.78.pdf)
- Implementations:
  - GSI-OpenSSH (http://grid.ncsa.illinois.edu/ssh/)
  - GSI-SSHTerm (http://www.ngs.ac.uk/tools/gsisshterm)
  - SecureNetTerm (http://www.securenetterm.com/)

Evaluation

Benefits:

- It works!
- Login via trusted campus web page
- Command-line SSO
- RFC 3820 proxy certificate delegation

Drawbacks:

- Requires initial login via web browser
- SAML+PKI = complex
- Only for certificate-enabled apps

Conclusions

- We're providing a bridge from federated authentication to "non-web" grid apps
  - Using online CAs to bridge SAML to PKI
  - Working with today's infrastructure
- We look forward to campus deployment of solutions without browser dependencies (i.e., SAML ECP and Project Moonshot)

Thanks

For more information:

www.cilogon.org

info@cilogon.org