

ATLAS Connect Technicals & Usability

David Champion

Computation Institute & Enrico Fermi Institute
University of Chicago



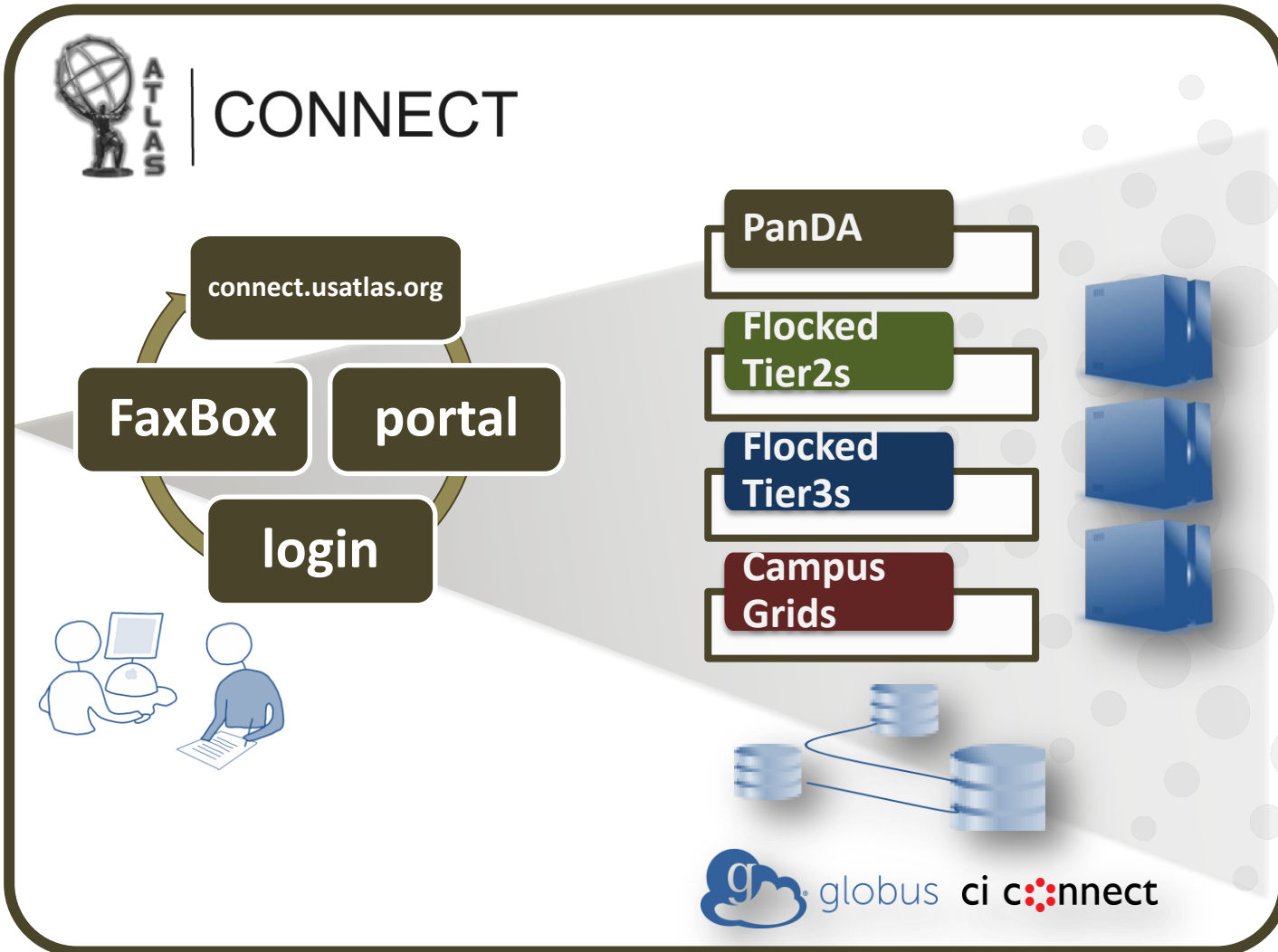


- A combined job submission environment and storage platform
- Low entry overhead
 - simple signup
 - easy sponsorship procedure
- Ready-to-use tools
- Growth — straightforward connectivity to:
 - existing tier2 and tier3 facilities
 - ready to integrate with future sites



- Current tier3 sites with limited resources for cluster management
- Tier3 sites with capacity or throughput needs
 - can benefit from direct resource sharing with other sites
 - can connect short-lived cycle pools
 - leverage other sites' bandwidth through computational locality
- Future Tier3 working groups
 - lower startup cost by leaning upon shared infrastructure

Architectural Overview



Courtesy of
Rob Gardner

Components



- Web gateway: <http://connect.usatlas.org/>
- Identity/Access portal (via web site)
- FAXbox: storage nexus
- Login node: <ssh://login.usatlas.org>

- Provides central access gateway
 - ATLAS Connect facilities
 - documentation
 - user & resource management
 - analytics
- New user signup → Identity & Access Portal
- Hub for future features

- Define identity external to home institutions
 - ability to co-locate user activities at one site, regardless of origin
 - no dependency on scoped identity@domain names
 - (users may change institutions)
 - integration with third-party compute and data services (e.g. Globus)

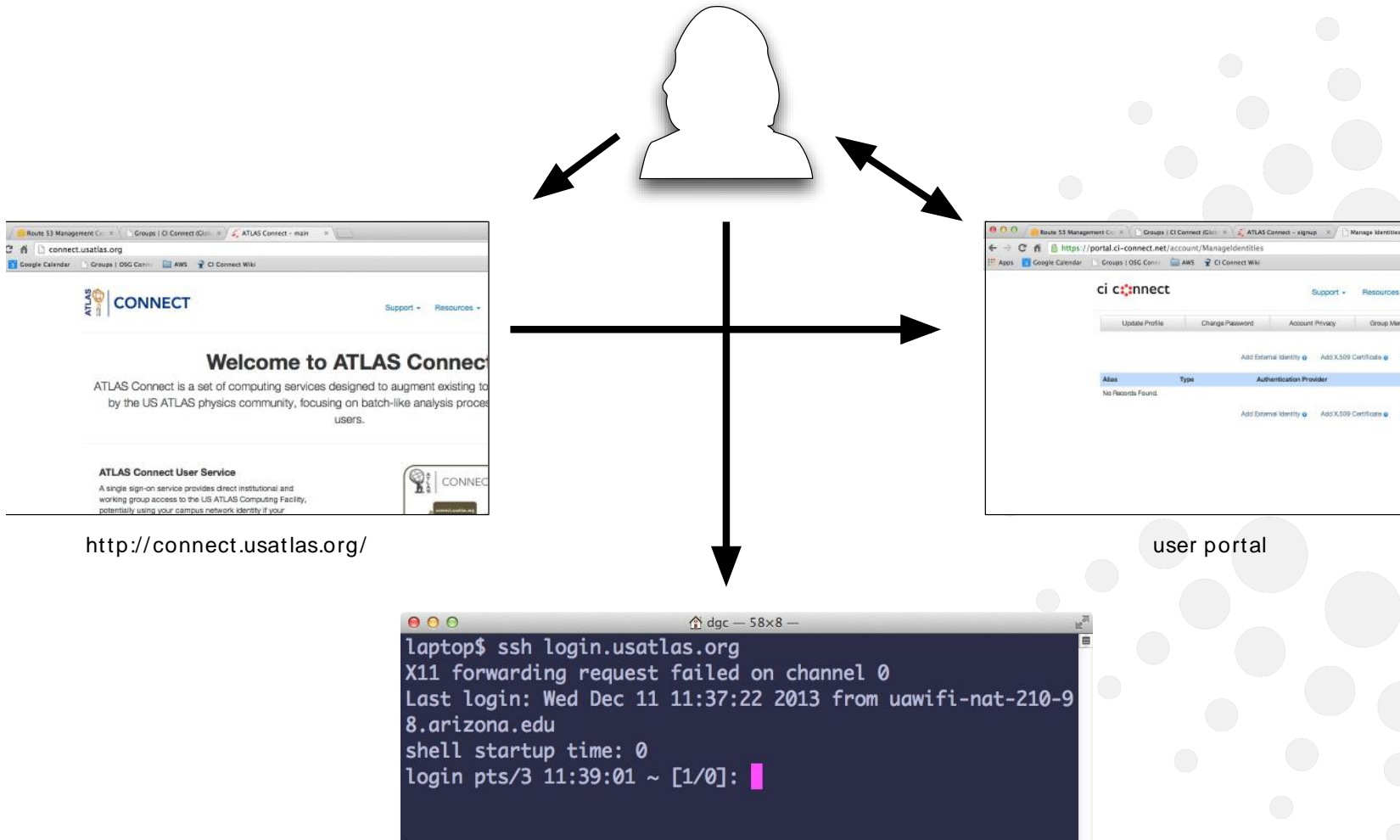
- Access mechanisms that *are* based on home identity
 - InCommon authentication via CILogon
 - existing SSH and x.509 identity, depending on context
- Role management
 - Institution
 - ATLAS working groups

- Storage nexus integrating multiple access protocols
 - Federated ATLAS XRootD (FAX)
 - HTTP
 - Filesystem
 - Parrot/Chirp

- SSH access
 - RSA keys provided in advance via user portal
 - or password
- Web access through JavaScript vt100 emulation
- Direct local or xrdcp access to FAXbox data

- Job management:
 - Condor submission frontend
 - Backends
 - Condor flocking to MWT2, tier3 clusters, other campus grids
 - Remote submission via BOSCO to Condor or other queuing systems
- Job metadata insertion to analytics tools
 - available via web gateway

High-Level Workflow



<http://connect.usatlas.org/>

user portal

Sequence of Steps



- User visits ATLAS Connect site
- User signs up (see attached workflow screenshots)
- User requests institutional group membership
- Approver validates group join request (possibly involving contact with site principals)
- User is joined into group
- After 3-5 minutes, credentials authorized
- User may ssh or web connect to `login.usatlas.org`

User Management Views

Views: Web Gateway



<http://connect.usatlas.org/>

The screenshot shows the ATLAS Connect web gateway interface in a browser. The browser tabs include 'ATLAS Connect - main', 'Sign In | CI Connect (Globus)', and 'Sign In | CI Connect (Globus)'. The address bar shows 'connect.usatlas.org'. The page features the ATLAS logo and the word 'CONNECT' in large blue letters. A navigation bar includes links for 'Support', 'Resources', 'Connect', and a 'Sign In/Sign Up' button. A dropdown menu is open from the 'Sign In/Sign Up' button, showing options: 'Sign in with your campus ID', 'Sign in with Globus ID', and 'Sign up as a new user'. The main content area has a large heading 'Welcome to ATLAS Connect' followed by a paragraph: 'ATLAS Connect is a set of computing services designed to augment existing tools and resources used by the US ATLAS physics community, focusing on batch-like analysis processing familiar to Tier3 users.' Below this, there are two sections: 'ATLAS Connect User Service' and 'ATLAS Connect Cluster Service'. The 'User Service' section describes a single sign-on service providing access to the US ATLAS Computing Facility, potentially using campus network identity if the institution participates in the InCommon identity federation. It mentions a login host, login.usatlas.org, and lists current job submission locations: the Midwest Tier2 Center, the Tier3 center at Fresno State University, and the UChicago Computing Cooperative campus grid. The 'Cluster Service' section is titled 'The Remote Cluster Connect Factory' and includes a diagram showing the 'CONNECT user' and 'CONNECT cluster' flows. The 'CONNECT user' diagram shows a user interacting with 'connect.usatlas.org', 'FAXbox', and 'portal', leading to 'login.usatlas.org' and then to 'Panda', 'Tier1, Tier2, Tier3', 'Amazon cloud', and 'Campus Grids'. The 'CONNECT cluster' diagram shows a user interacting with 'connect.usatlas.org', 'FAXbox', and 'portal', leading to 'RCC Factory' and 'rccf.usatlas.org', which then connects to 'Tier1', 'Tier2s', 'Amazon cloud', and 'Campus Grids'.

ATLAS Connect User Service

A single sign-on service provides direct institutional and working group access to the US ATLAS Computing Facility, potentially using your campus network identity if your institution participates in the InCommon identity federation. A login host, login.usatlas.org, currently allows HTCondor job submission to: the Midwest Tier2 Center, the Tier3 center at Fresno State University, and the UChicago Computing Cooperative campus grid.

ATLAS Connect Cluster Service

The Remote Cluster Connect Factory

Views: Profile Management



<http://connect.usatlas.org/> ► Connect ► My Profile

The screenshot shows a web browser window with the URL <https://portal.ci-connect.net/account/UpdateProfile>. The page header includes the 'ci connect' logo and navigation links: Support, Resources, CI Connect, Transfer, and dgc. Below the header is a tabbed interface with 'Update Profile' selected. The form contains the following fields:

User Name	dgc
Full Name	David Champion
E-Mail Address	dgc.globus@bikeshed.us
City	Chicago
First Name	David
Last Name	Champion
Current Project	ATLAS
Field of Science	Medium Energy Physics
Institution	University of Chicago
Contact Phone Number	-
Department	CI
Organization	from time to time

At the bottom of the form are two buttons: 'Update Account' and 'Reset Profile Data'. The footer of the page includes the copyright notice '© 2013 University of Chicago' and the text 'Powered by:' followed by the Globus and Open Science Grid logos.

Views: Key Management



<http://connect.usatlas.org/> ► Connect ► My Profile ► Manage Identities

The screenshot shows the 'Manage Identities' page in the ci connect portal. The browser address bar shows <https://portal.ci-connect.net/account/ManageIdentities>. The page has a navigation bar with links for Support, Resources, CI Connect, Transfer, and dgc. Below this is a tabbed interface with options: Update Profile, Change Password, Account Privacy, Group Membership, Subscriptions, and Manage Identities (which is active). Under the 'Manage Identities' tab, there are links to 'Add External Identity', 'Add X.509 Certificate', and 'Add SSH Public Key'. A table lists the following identities:

Alias	Type	Authentication Provider	View Details	Update	Delete
openid - google	openid	google.com			
ssh2 - dgc@go	ssh2	SSH Public Key			
OSG OIM DigiCert	x509	/DC=com/DC=DigiC...			
x509 - tutorial	x509	CN=DemoGrid CA, ...			
x509 - dgc@globusonline.org	x509	/C=US/CN=dgc@glo...			

Below the table, there are again links to 'Add External Identity', 'Add X.509 Certificate', and 'Add SSH Public Key'. At the bottom left, it says '© 2013 University of Chicago'. At the bottom right, it says 'Powered by:' followed by the logos for 'globus' and 'Open Science Grid'.

Views: User's Groups



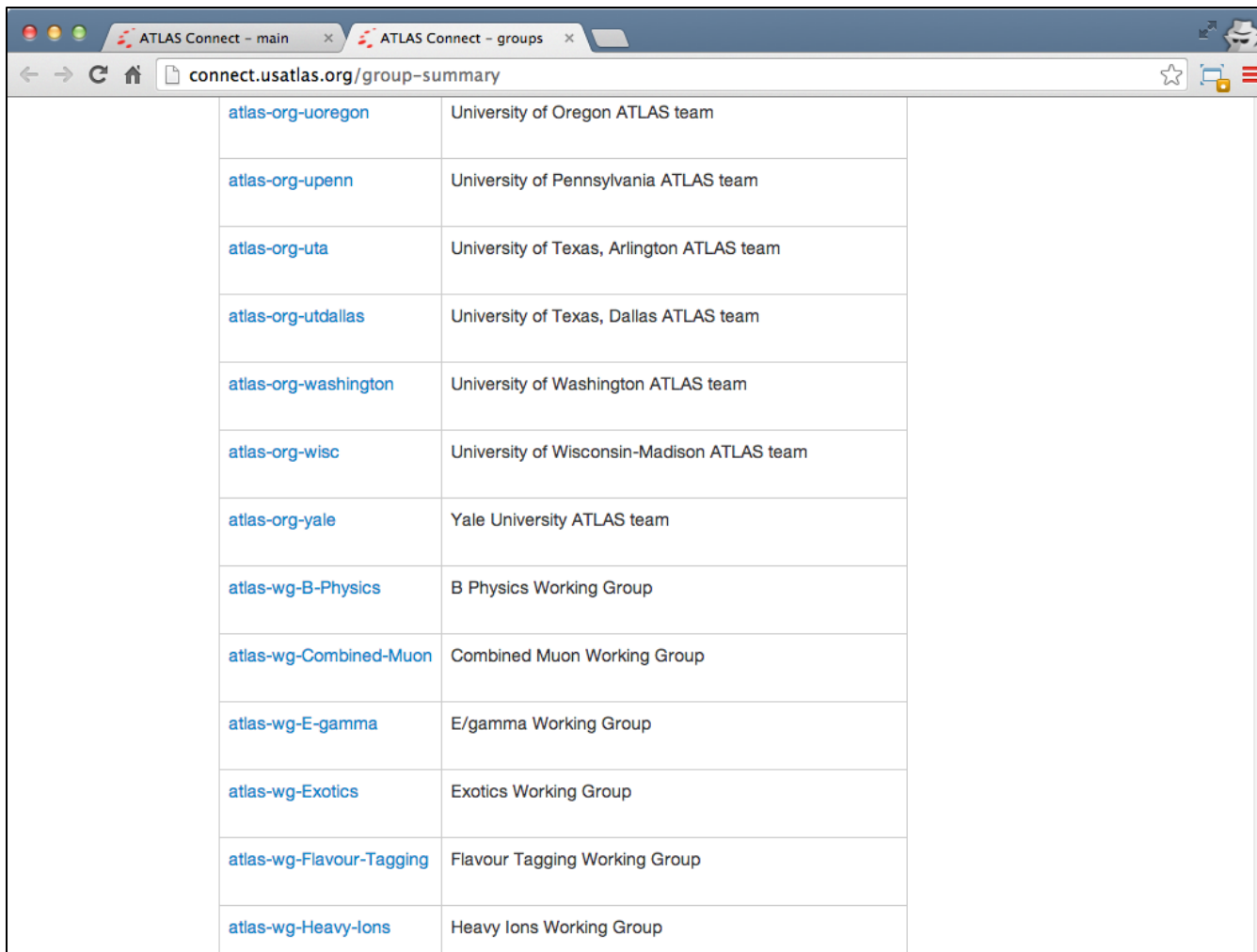
<http://connect.usatlas.org/> ► Connect ► My Profile ► My Groups

The screenshot shows a web browser window with the URL <https://portal.ci-connect.net/Groups#id=7df178e6-5ca4-11e3-8406-12313809f035>. The page header includes the 'ci connect' logo and navigation links: Support, Resources, CI Connect, Transfer, and dgc. The main content area is titled 'My Groups' and features a 'Search' bar. Below the search bar, there are two sections: 'MANAGER OF' and 'MEMBER OF'. The 'MEMBER OF' section is expanded, showing a list of groups: 'atlas.org.uchicago' (highlighted) and 'UC3 Support'. To the right of the group list, there is a card for 'atlas.org.uchicago' with tabs for 'Home' and 'Members'. Below the tabs, it shows the breadcrumb 'connect > atlas > atlas.org.uchicago' and the description 'University of Chicago ATLAS team'. At the bottom of the page, there is a footer with the copyright notice '© 2013 University of Chicago' and logos for 'Powered by: globus' and 'Open Science Grid'.

Views: All ATLAS Groups



<http://connect.usatlas.org/group-summary>



atlas-org-uoregon	University of Oregon ATLAS team
atlas-org-upenn	University of Pennsylvania ATLAS team
atlas-org-uta	University of Texas, Arlington ATLAS team
atlas-org-utdallas	University of Texas, Dallas ATLAS team
atlas-org-washington	University of Washington ATLAS team
atlas-org-wisc	University of Wisconsin-Madison ATLAS team
atlas-org-yale	Yale University ATLAS team
atlas-wg-B-Physics	B Physics Working Group
atlas-wg-Combined-Muon	Combined Muon Working Group
atlas-wg-E-gamma	E/gamma Working Group
atlas-wg-Exotics	Exotics Working Group
atlas-wg-Flavour-Tagging	Flavour Tagging Working Group
atlas-wg-Heavy-Ions	Heavy Ions Working Group

Analytics



- CycleServer
 - Adobe Flash-based utilization metrics & graphing
- Accounting Summart (Gratia)
 - Job breakdown by project, institution, user

Analytics: CycleServer



<http://connect.usatlas.org/> ► Resources ► ATLAS Connect User

CycleServer | Welcome x ATLAS Connect - main x

login.usatlas.org:8080/home.s


Logged in as guest | Log Out

CycleServer Usage Jobs

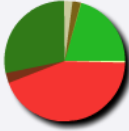
Welcome

Pool Summary


Pool	Total Slots	Running	Idle	Owner	Status	Detailed View
CSU Fresno Factory	0	0	0	0		Usage Jobs
Great Lakes Tier 2 Factory	0	0	0	0		Usage Jobs
Midwest Tier 2 Factory	0	0	0	0		Usage Jobs
University of Chicago Computing Cooperative	528	69	459	0		Usage Jobs
Total	528	69	459	0		Usage Jobs




Jobs by State



Jobs by Owner



Slots by State



Slots by Owner

Would you like to view...

- [Slot Usage](#)
- [Current Usage](#)
- [Scheduler Load](#)
- [Current Jobs](#)

In the News...

Welcome to Cycle Server!

June 13, 8:54 p.m.

CycleServer makes it easy to perform grid related tasks like job submission, job management, usage viewing, and reporting.

Some of the new features in version 4.0 include:

- Greatly improved plugin support to extend CycleServer's abilities in different ways.
- Improved performance with large amounts of data.
- Graphs and tables use new formatter plugins to make interpreting data easier.

Please [contact us](#) if you have any questions or if you run into any problems using the site.

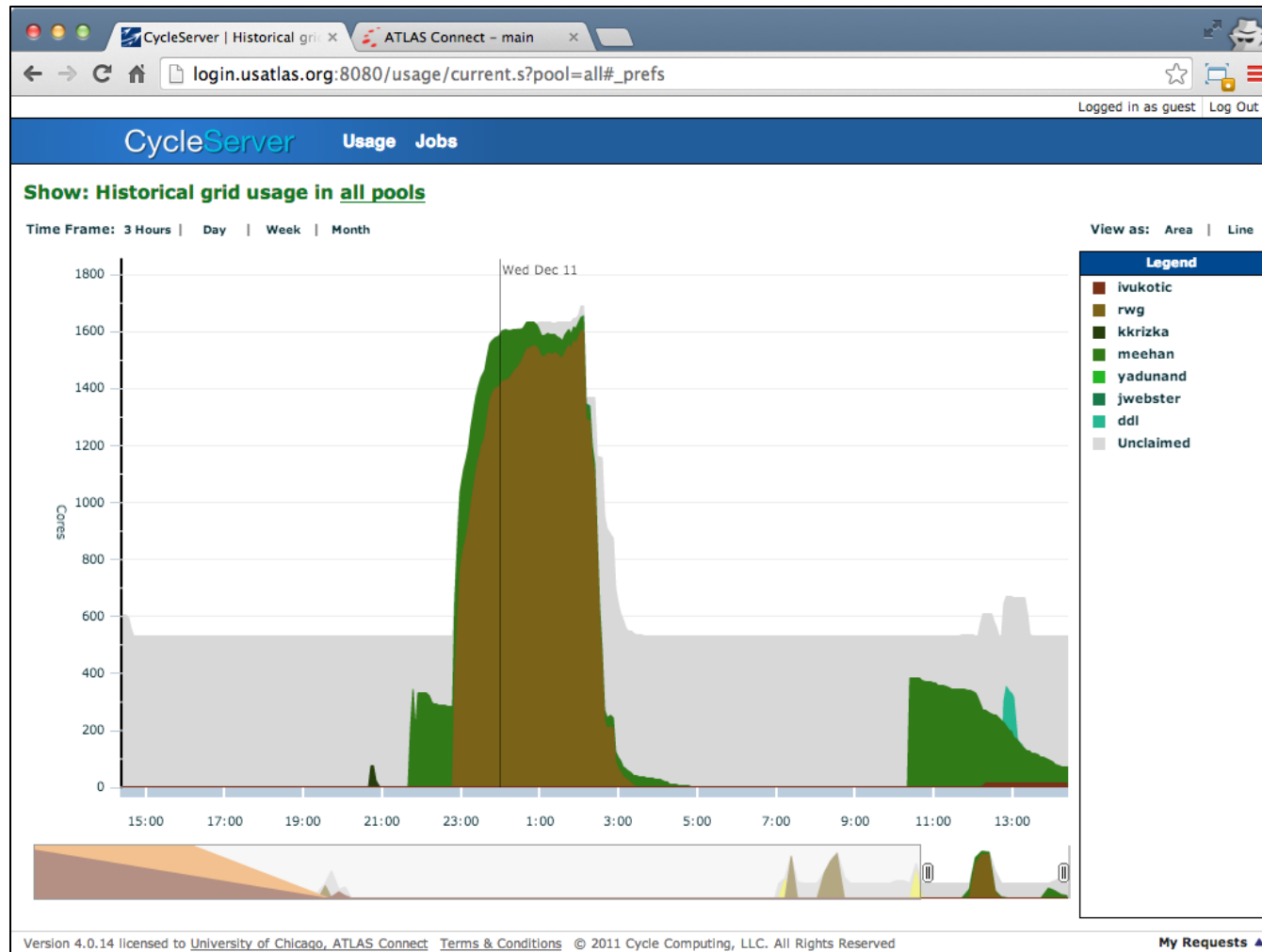
Version 4.0.14 licensed to University of Chicago, ATLAS Connect Terms & Conditions © 2011 Cycle Computing, LLC. All Rights Reserved

My Requests ▲

Analytics: CycleServer



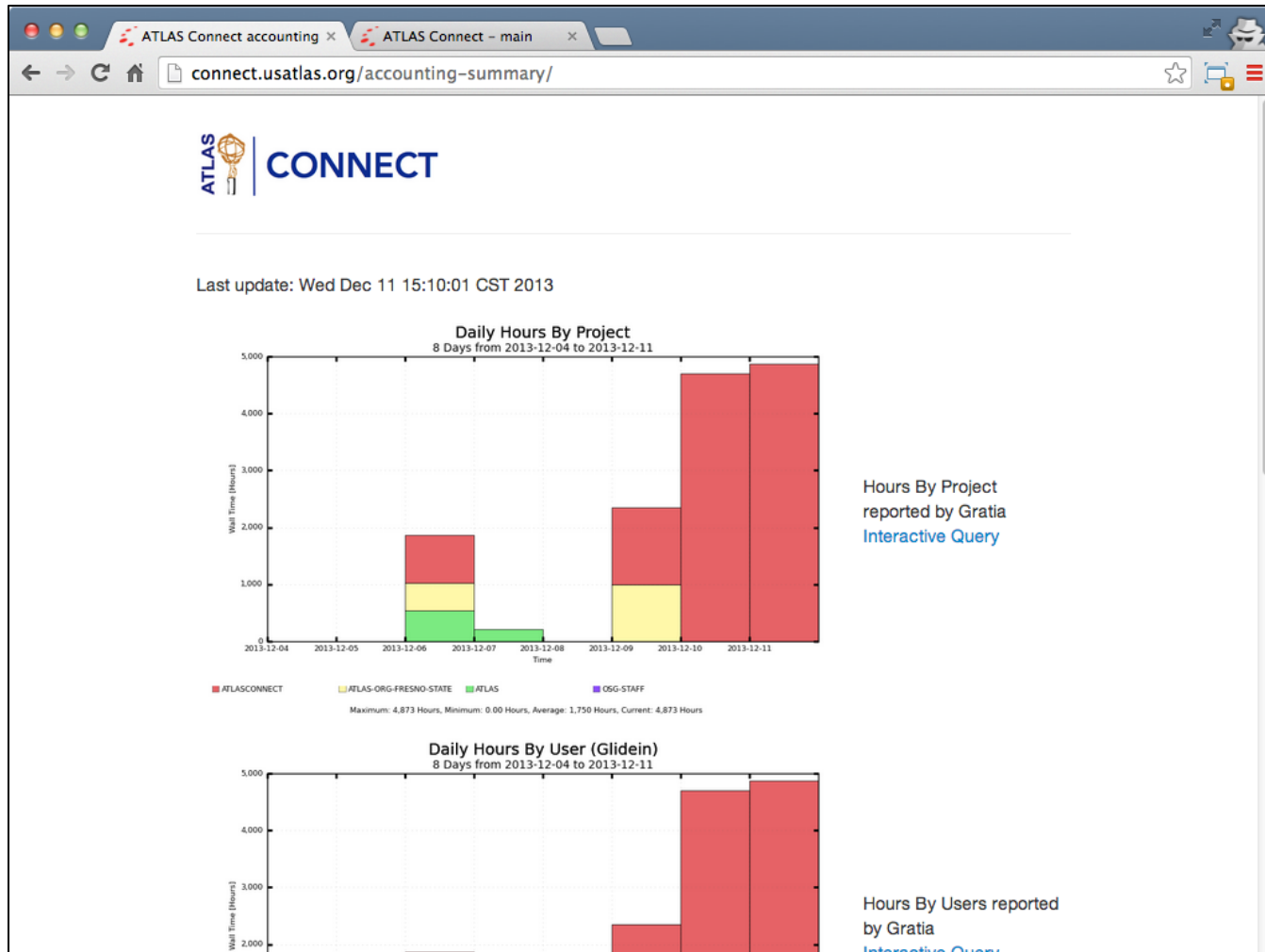
<http://connect.usatlas.org/> ► Resources ► ATLAS Connect User



Analytics: Accounting Summary



<http://connect.usatlas.org/> ► Resources ► Accounting Summary



Questions?

Appendix

Signup Workflow



Support ▾ Resources ▾ Connect ▾

Sign In/Sign Up ▾

Sign in with your campus ID

Sign in with Globus ID

Sign up as a new user

Welcome to ATLAS Connect

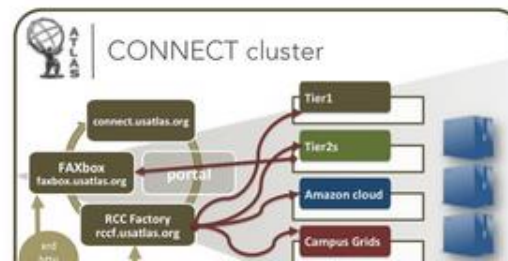
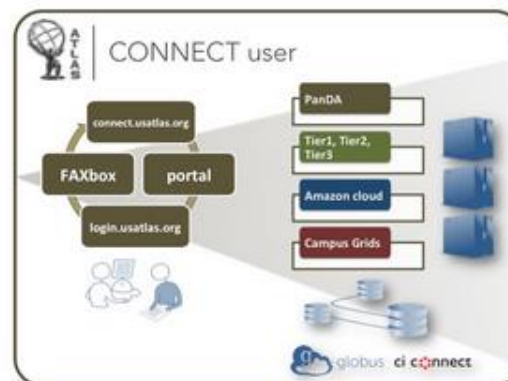
ATLAS Connect is a set of computing services designed to **augment** existing tools and resources used by the US ATLAS physics community, focusing on batch-like analysis processing familiar to Tier3 users.

ATLAS Connect User Service

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ATLAS Connect Cluster Service

The Remote Cluster Connect Factory





Acceptable Use Policy

Your use of ATLAS Connect shall imply acceptance of the following agreement:

I have read and agree to the terms and conditions of the WLCG Computing Grid and the ATLAS VO Acceptable Use Policy.

WLCG Terms of Use and Acceptable Use Policy

By registering with the Virtual Organization (the "VO") as a GRID user you shall be deemed to accept these conditions of use:

1. You shall only use the GRID to perform work, or transmit or store data consistent with the stated goals and policies of the VO of which you are a member and in compliance with these conditions of use.
2. You shall not use the GRID for any unlawful purpose and not (attempt to) breach or circumvent any GRID administrative or security controls. You shall respect copyright and confidentiality agreements and protect your GRID credentials (e.g. private keys, passwords), sensitive data and files.
3. You shall immediately report any known or suspected security breach or misuse of the GRID or GRID credentials to the incident reporting locations

I Accept

3.

Now you will see a page entitled **Need to Make a Connection**. This links your campus network ID to a ATLAS Connect account. If you already own a Globus account, that will also be your ATLAS Connect account: sign in with your Globus credentials here, then move ahead to step 5.



Sign up for ATLAS Connect

You can sign up for ATLAS Connect in a few basic steps.

If you have problems during these steps, please contact us at support@connect.usatlas.org.

1. Visit the **ATLAS Connect signin portal** (this will open in a new tab or window). This will appear as a **CI Connect** site.
2. Click **Proceed** to authenticate with your campus network ID. Your browser will redirect you to a **cilogon.org** site.
 - In the **Select an Identity Provider** area, find your institution's name and select it. You may also search the list using the search text box.
 - **Note:** If your institution is not an **InCommon member**, or it is a member but does not have a Shibboleth IdP that interoperates with **CILogon**, it will not appear in this list. In this case, go back to **the ATLAS Connect signin portal** and select **alternate login**, then **Globus**. If you have a Globus account, sign in; otherwise, skip to step 4.
 - Check the **remember this selection** box, then click **Log On**. Your browser will redirect you to institution's authentication page. It should look familiar to you. *If you have recently signed in, you may not need to re-authenticate.*
 - Sign in as you normally would, using your campus network ID and password. Your browser will take you briefly past **cilogon.org** again, before returning you to the signin portal. *These steps allow you to sign in to the web portal any time using your home credentials.*
3. Now you will see a page entitled **Need to Make a Connection**. This links your campus network ID to a ATLAS Connect account. If you already own a Globus account, that will also be your ATLAS Connect account: sign in with your Globus credentials here, then move ahead to step 5.

Signup Workflow

InCommon

Efficiently connect your science to cycles and data

CI Connect offers users simple access to distributed high throughput computing resources, and reliable, high-performance file transfer services.

Sign In

[Sign Up with Globus](#)

Using your [InCommon](#) / [CILogon](#) login.

[alternate login](#)

Click PROCEED to authenticate with InCommon / CILogon.

Proceed

"Globus Online" requests that you select an Identity Provider and click "Log On". If you do not approve this request, do not proceed.

Site Name: Globus Online
Site URL: https://www.globusonline.org
Service URL: https://portal.ci-connect.net/service/graph/authenticate_oauth_callback

Select An Identity Provider:

Michigan State University

University of Chicago

University of Illinois at Chicago

University of Michigan

Search:

Remember this selection: ☐

Log On

By selecting "Log On", you agree to CILogon's privacy policy.



CILogon

Sign In

You are logging in to: **CILogon**

CILogon facilitates secure access to CyberInfrastructure (CI).

CNetID:

Hospital Employee?

Password:

[Forgot your password?](#)

Login

Signing in allows you to access multiple University of Chicago web applications while entering your CNetID and password only once. To end your session, simply close your browser.

Questions? Contact the IT Services Service Desk by phone at 2-5800 (773-702-5800), via email at itservices@uchicago.edu, or get walk-in help at the TECHB@R on the first floor of Regenstein Library during reference desk hours <http://hours.lib.uchicago.edu/>.

Alumni account holders may contact alumni-support@uchicago.edu or call 1-877-292-3945 between 9 AM and 3 PM CST with any questions.



Signup Workflow

InCommon

existing Globus account

Efficiently connect your science to cycles and data

Need to Make a Connection

Your account needs to be linked to a Globus account to make file transfer possible. You will only have to do this once.

If you don't have one, [create a new Globus account](#).

Sign in to your existing Globus account

Username

Password

Sign In

Forgot password?



Efficiently connect your science to cycles and data

Need to Make a Connection

Your account needs to be linked to a Globus account to make file transfer possible. You will only have to do this once.



Your Globus account is now linked to your Globus account.

You can now use your Globus account or your Globus account to sign in to this website.

Redirecting in 1 second

Proceed

Signup Workflow

InCommon

no Globus account

Efficiently connect your science to cycles and data

Need to Make a Connection

Your account needs to be linked to a Globus account to make file transfer possible. You will only have to do this once.

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Sign in to your existing Globus account

Username

Password

Sign In

[Forgot password?](#)



Efficiently connect your science to cycles and data

Need to Make a Connection

Your account needs to be linked to a Globus account to make file transfer possible. You will only have to do this once.

If you already have one, [user your existing Globus account](#).

Create new Globus account

Full Name

Email

Username

✓ Available

Your username can only contain lower case letters and must begin with one. It may contain numbers.

Password

Strong

Better passwords are longer, use mixed case letters with punctuation and numbers.

☐ Show Password

☒ I have read and agree to the Globus [Terms of Service](#) and [Privacy Policy](#).

☐ Please email me updates about Globus

[Register](#)

Efficiently connect your science to cycles and data

Need to Make a Connection

Your account needs to be linked to a Globus account to make file transfer possible. You will only have to do this once.

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Create new Globus account

Creating Account



Efficiently connect your science to cycles and data

Need to Make a Connection

Your account needs to be linked to a Globus account to make file transfer possible. You will only have to do this once.



Email validation is required.

Please confirm your e-mail address by clicking on the link in your registration e-mail. Check your email inbox and proceed to the location provided, and we'll have you on your way.

Can't find your validation email?

Confirm your e-mail address:

[Re-send Validation Code](#)



⌂ dgc — ec2-user@ip-10-123-67-46:~ — 140x58 — №1

N= 15581: support@globus.org [0.6K] [atlasuser4] Globus - Confirm Email Address

Date: Wed, 11 Dec 2013 18:52:20 +0000

From: support@globus.org

To: dgc.atlasuser4@bikeshed.us

Subject: Globus - Confirm Email Address

Message-ID: <00000142e300a6b6-d940ce80-ee6e-49d4-9cbf-5cdabf26f73a-0000000@email.amazonses.com>

X-SES-Outgoing: 2013.12.11-54.240.8.57

[-- Attachment #1 --]

[-- Type: multipart/alternative, Encoding: 7bit, Size: 0.4K --]

Dear David Champion,

Thank you for registering for Globus. Please confirm your email address by following this link:

https://portal.ci-connect.net/ValidateEmail?validation_code=f749c2fa-48b3-4256-8cc9-c130e34c5d4b

All the best,

The Globus Team

Signup Workflow

No InCommon

Efficiently connect your science to cycles and data

CI Connect offers users simple access to distributed high throughput computing resources, and reliable, high-performance file transfer services.

Sign In

[Sign Up with Globus](#)

Using your [InCommon / CILogon](#) login. [alternate login](#)

Select Identity Provider

- | | |
|--|----------------------------------|
| InCommon / CILogon | Google |
| Globus | LRZ |
| Argonne LCF | NCSA |
| Argonne MCS & LCRC | NCSA Blue Waters |
| BIRN | NERSC |
| CLI Transition | UChicago CI |
| EGI | UChicago iBi |
| ESG ANL | UK NGS |
| Exeter | WestGrid |
| | XSEDE |

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Click PROCEED to authenticate with InCommon / CILogon.

Proceed

Efficiently connect your science to cycles and data

Sign Up

[Already a member? Sign In](#)

Full Name

Email

Username

Your username can only contain lower case letters and must begin with one. It may contain numbers.

Password

Better passwords are longer, use mixed case letters with punctuation and numbers.

- ☐ Show Password
- ☐ I have read and agree to the Globus [Terms of Service](#) and [Privacy Policy](#).
- ☐ Please email me updates about Globus

Efficiently connect your science to cycles and data

Join Group

Before we complete authentication this site requires that you join the group named "connect".
This group requires additional information before you can be admitted to the group. Please fill out and submit the following form:

Full Name	<input type="text" value="David Champion"/>
E-Mail Address	<input type="text" value="dgc.atlasuser4@bikeshed.us"/>
Field of Science	<input type="text"/>
Contact Phone Number	<input type="text"/>
Department	<input type="text"/>
Institution	<input type="text"/>

Submit Request

Signup Workflow

Joining ATLAS Connect



CONNECT



THE UNIVERSITY OF
CHICAGO

ci.uchicago.edu
connect.usatlas.org

- Update Profile
- Change Password
- Account Privacy
- Group Membership
- Subscriptions
- Manage Identities**

[Add External Identity ⓘ](#) [Add X.509 Certificate ⓘ](#) [Add SSH Public Key ⓘ](#)

Alias	Type	Authentication Provider			
openid - google	openid	google.com	View Details	Update	Delete
ssh2 - dgc@go	ssh2	SSH Public Key	View Details	Update	Delete
OSG OIM DigiCert	x509	/DC=com/DC=DigiC...	View Details	Update	Delete
x509 - tutorial	x509	CN=DemoGrid CA, ...	View Details	Update	Delete
x509 - dgc@globusonline.org	x509	/C=US/CN=dgc@glo...	View Details	Update	Delete
Globus linked at sign in	oauth	cilogon.org	View Details	Update	Delete

[Add External Identity ⓘ](#) [Add X.509 Certificate ⓘ](#) [Add SSH Public Key ⓘ](#)



CONNECT

Support

Resources

Connect

Sign In/Sign Up

My Groups

Join a Group

Web Connect (shell)

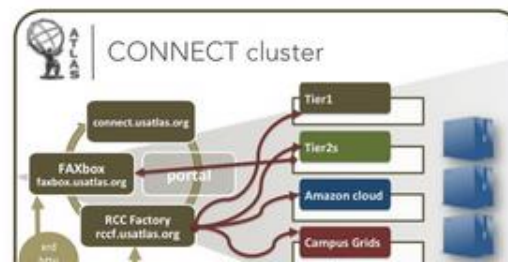
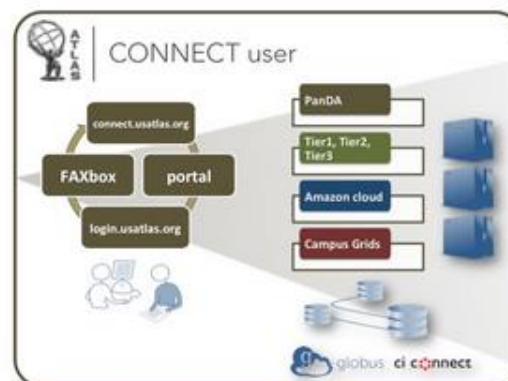
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ATLAS Connect Cluster Service





Groups in ATLAS Connect

The following groups are defined in ATLAS Connect. You may click on a group's name to request membership.

Project Name	Description
atlas-org-albany	State University of New York at Albany ATLAS team
atlas-org-anl	Argonne National Laboratory ATLAS team
atlas-org-arizona	University of Arizona ATLAS team
atlas-org-bnl	Brookhaven National Laboratory ATLAS team
atlas-org-brandeis	Brandeis University ATLAS team
atlas-org-bu	Boston University ATLAS team
atlas-org-columbia	Columbia University ATLAS team

My Groups

Search

MANAGER OF

MEMBER OF

atlas.org.uchicago

UC3 Support

atlas.org.stonybrook

Home

connect > atlas > atlas.org.stonybrook
State University of New York at Stony Brook ATLAS team



Create New Group » ● admin action required

My Groups

Search

MEMBERSHIP APPROVAL PENDING

atlas.org.stonybrook

MANAGER OF

MEMBER OF

atlas.org.uchicago

UC3 Support

Create New Group » ● admin action required

atlas.org.stonybrook

Home

connect > atlas > atlas.org.stonybrook

You've successfully requested membership in atlas.org.stonybrook

Check your email inbox regularly for updates and any further actions that may be required of you to complete the registration process.

[hide](#)