
User Support & Campus Grids

OSG area coordinators meeting 9/30/15
Bala Desinghu

Topics

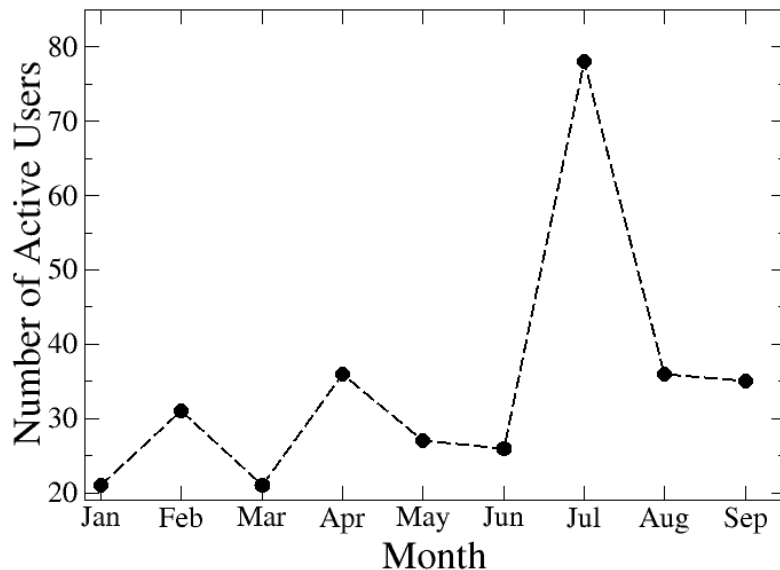


- Last Three Months:
 - Recent Users, Projects and Active users
 - Users supported
 - Joint OSG Software Carpentry Workshop at Duke University
 - Computational Neuroscience - Freesurfer
 - Connect Client updates
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New Users: July 1st 15 - Sept 29th 15



- 110 new users joined OSG Connect
- 60 from UserSchool15
- We had nearly 150 active users, during the last three months



New Projects: July 1st 15 - Sept 29th 15



- 19 projects created during the last three months
 - Approximately, six projects/month
 - From 15 universities:
 - Clemson University, Texas A&M University, University of Illinois at Urbana-Champaign, University of Wisconsin-Madison, University of Wyoming, Argon National Lab, MIT, University of Maryland Baltimore, National Research Council of Canada, University of Hawaii at Manoa, BNL, Florida State University, UCSD, University of Kentucky, University of Central Florida
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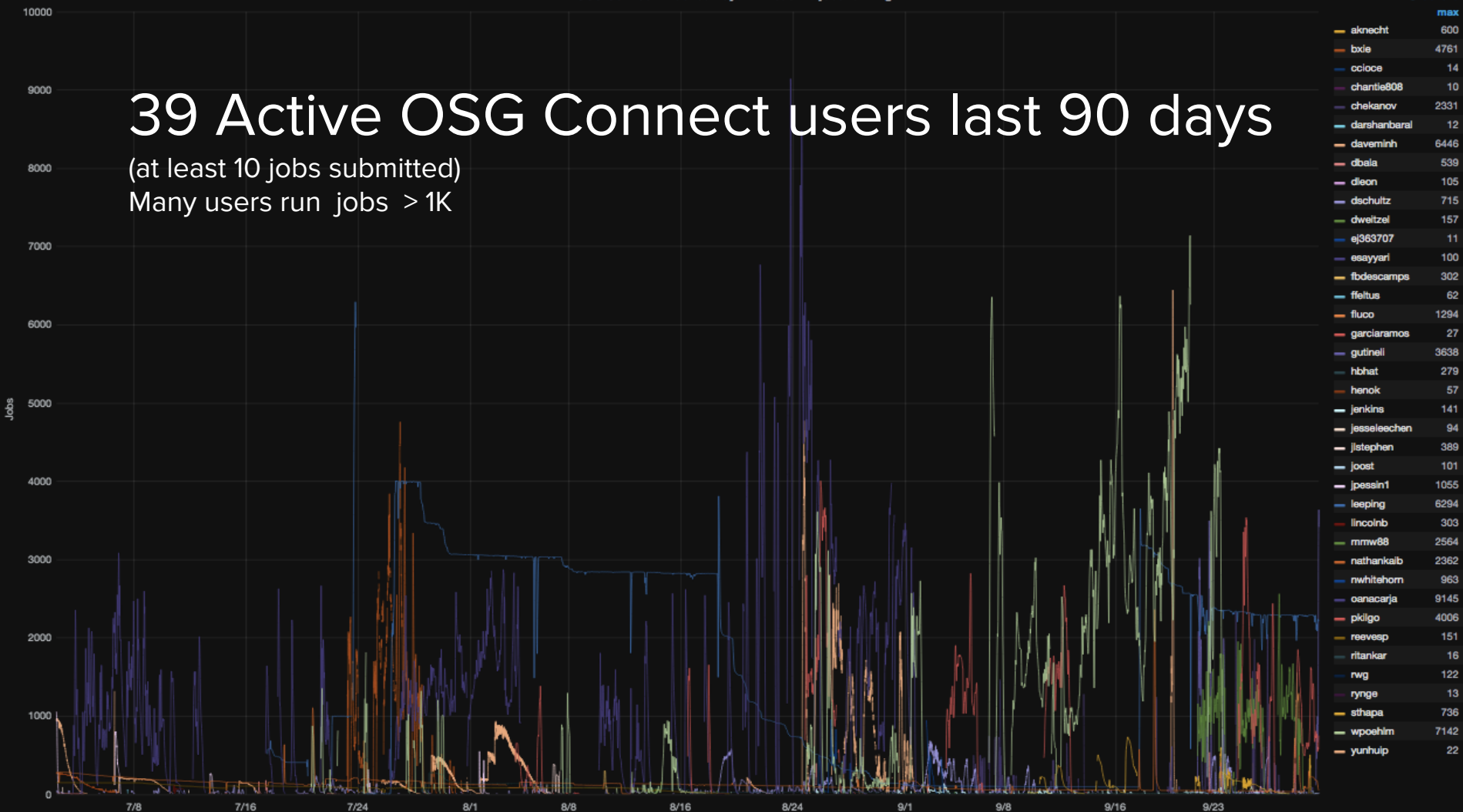
osg.BioGraph	Alex Feltus	Clemson Univ.	Bioinformatics	constructing gene interaction graphs
osg.MCP	C. S. Raman	Univ. of Maryland Baltimore	Structural Biology	finding molecular replacement solutions
osg.numfpi	Jerry Tessendorf	Clemson Univ.	Computer Science	Multiple Scattering volume renderer
osg.oclab	Dave OConnor	Univ. of Wisconsin Madison	Pathology	Cell Image Analysis
osg.DemandSC	Fernando Luco	Texas A&M Univ.	Economics	welfare under the different scenarios
osg.BGAgénomics	Sucheta Tripathy	Indian Institute of Chemical Biology	Bioinformatics	cyanobacteria genomics program
osg.ProbTracx	Bruce P. Hermann	Univ. of Wisconsin Madison	Neurology	Brain image analysis to understand idiopathic epilepsy
osg.EvolvingAI	Jeff Clune	Univ. of Wyoming	Computer Science	Evolving artificial intelligence mimicking natural systems
osg.FutureColliders	Sergei Chekanov	ANL	HEP	Simulations beyond LHC

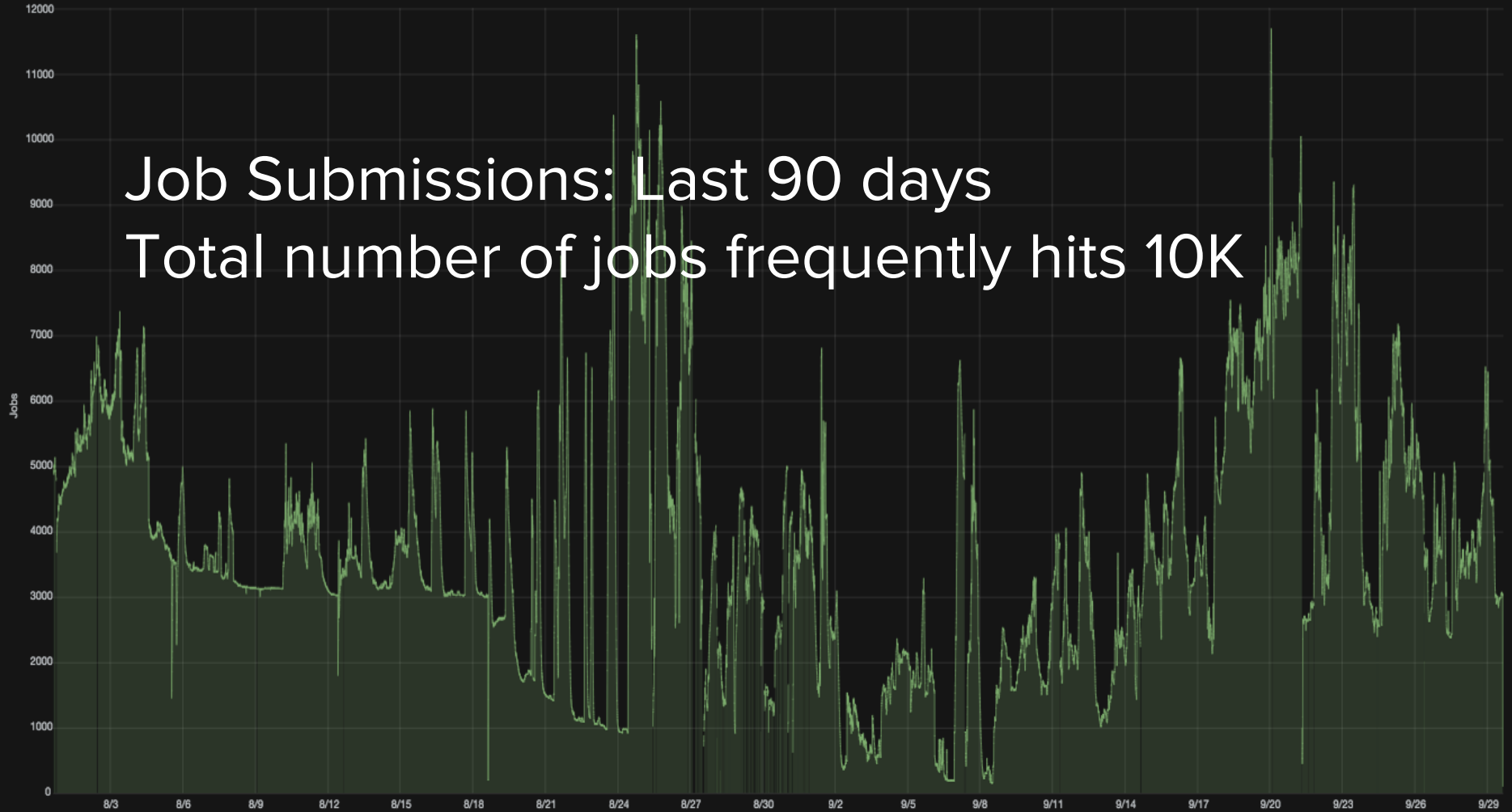
osg.Phylo	Siavash Mirarab	UCSD	Bioinformatics	Reconstructing tree of life
osg.NSLS2ID	Dean Hidas	BNL	HEP	Beamline simulation
osg.peers	Jessica Folsom	Florida State Univ.	Sociology	Quantitative analysis of student achievements
osg.ncidft	Alberto Roza	National Research Council of Canada	Chemistry	Modelling non-covalent interactions
osg.TextLab	James Evans	Univ. of Chicago	Sociology	Data analytics on text
osg.mab	Vivek Farias	MIT	Management	Multi-Armed Bandit problem
osg.QEvolBiol	Jeremy Cleve	Univ. of Kentucky	Biology	population dynamics under evolutionary forces
osg.NeoflAnnot	Petra Lenz	Univ. of Hawaii	Marine Biology	transcriptome for the flamingeri
osg.SciSim	Amit Goe	Univ. of Central Florida	Computer Science	Support for research computing
osg.EHEC	Chuck Kaspar	Univ. of Wisconsin Madison	Microbiology	transmission and evolution of pathogens

39 Active OSG Connect users last 90 days

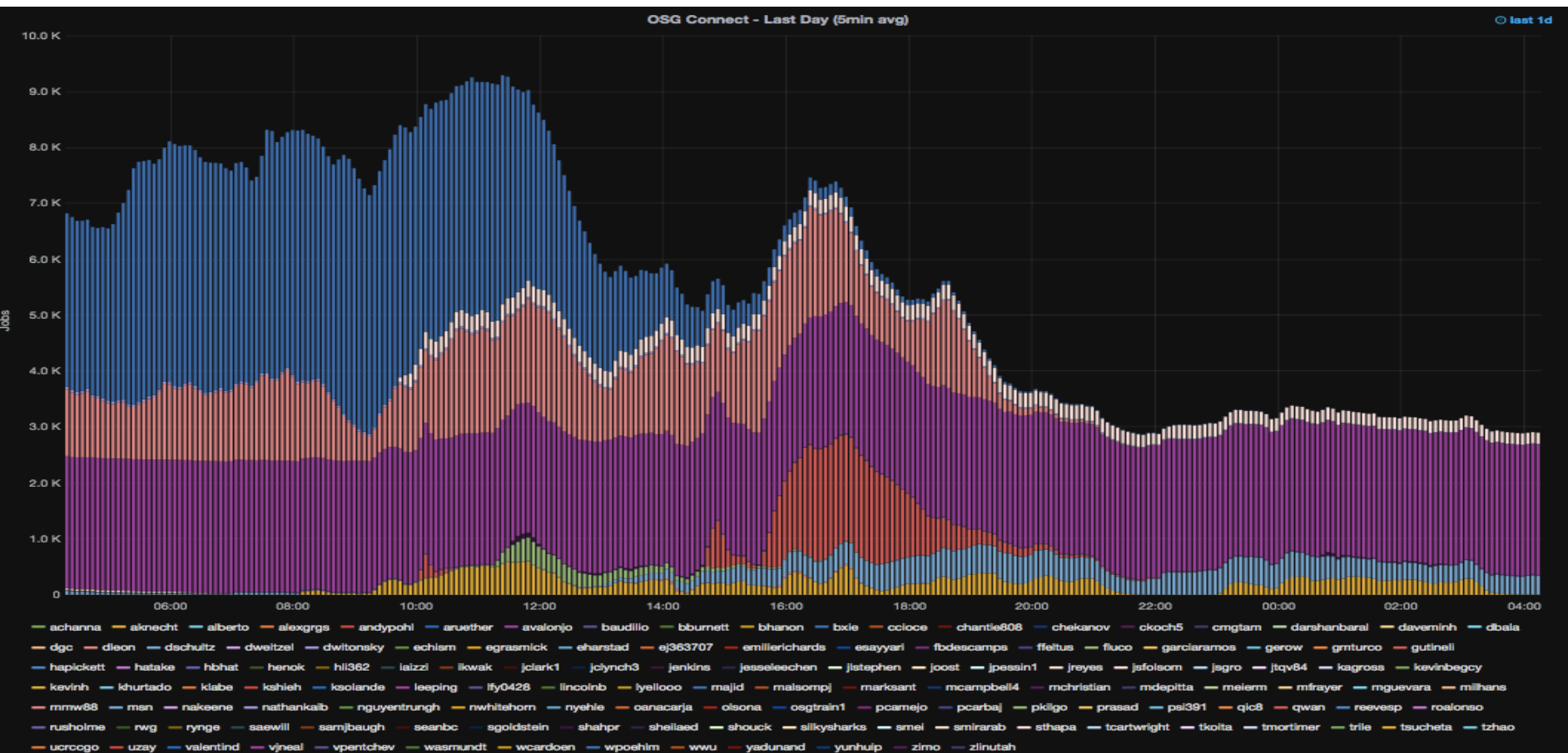
(at least 10 jobs submitted)

Many users run jobs > 1K






Job submission patterns - one day



Help Desk: July 1st 15 - Sept 29th 15



- Helped more than one user/day. This includes answering simple questions related job submission and all the way to set up their workflow towards production run
- On an average, a new user account was created within 1.5 hours from the sign-up time
- On-line chat opened recently
 - We find that new users like to use the chat service



opensciencegrid help desk OSG Helpdesk

Dashboard	Tickets	Social	Solutions	Forums	Customers	Reports	Admin
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Group ticket summary [Back to Reports](#)

1 Jul, 2015 - 28 Sep, 2015

Group	Tickets Resolved	On Time Resolution	First Contact Resolution	Average First Response Time	Average Response Time	Average Resolution Time
ATLAS Connect users	0	- (0)	- (0)	1 second	1 second	1 second
CMS Connect users	1	100% (1)	100% (1)	41 minutes 29 seconds	1 second	5 minutes 35 seconds
Duke CI Connect	0	-	-	1 second	1 second	1 second
OSG Connect	27	74% (20)	37% (10)	9 hours 10 minutes	6 hours 9 minutes	1 days 22 hours
OSG Connect Registration	16	100% (16)	75% (12)	1 hours 39 minutes	1 hours 25 minutes	5 hours 0 minutes
OSG User Support	89	74% (66)	56% (50)	8 hours 51 minutes	4 hours 34 minutes	1 days 7 hours
UChicago CI Connect	9	77% (7)	66% (6)	1 hours 27 minutes	44 minutes 22 seconds	14 hours 51 minutes
XSEDE users	0	-	-	1 second	1 second	1 second
Unassigned	47	72% (34)	78% (37)	17 hours 18 minutes	9 hours 30 minutes	1 days 7 hours

Solution Center: July 1st -Sept 29th



- Tutorials:
 - Matlab runtime examples
 - linear algebra solver
 - ordinary differential equation
 - optimization tool box
 - Pegasus-Blast for bioinformatic applications
 - Gromacs for molecular dynamics simulations
 - Forum article on re-trying failed jobs
 - Multicore and GPU jobs
-

OSG-Duke Workshop



- OSG-Duke Workshop front page: <http://swc-osg-workshop.github.io/2015-10-27-duke/index.html>
 - A three day workshop that covers shell scripting, version control, python programming and distributed high throughput computing
 - Special lecture and informal discussion on the evening of the second day
 - For each session, an average of 30 students registered out of 40 seats
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Freesurfer project - S.Thapa, D.Krieger



- Project to build a simple submission service for computational neuroscientists
 - Background: Freesurfer is a suite of image processing utilities that process MRI data. Since image processing is fully independent, this fits well with a DHTC environment.
 - This project aims to provide an easy to use web based gateway that will allow the Freesurfer community to process batches of MRI data using resources on OSG.
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Freesurfer, II



- Web piece by CS students at Pitt
 - User registration, upload of MRI images for processing, monitor jobs, and download results
 - Backend processing handled by OSG staff
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Freesurfer, III



- Replicated original workflow on COMET using Don Krieger's scripts
- Installed Freesurfer 5.3.0 on OASIS
- Set up Pegasus workflow and DAX generation scripts (https://github.com/OSGConnect/freesurfer_workflow/tree/master/python)
 - Supports both single job and diamond dag workflows
 - Supports using single and multicore jobs
- Currently testing workflows and middleware
- Requirements document for students

Connect Client status - Overview



David Champion

- Bug fixes based on user feedback
- Improvement: ClassAds to track the connect-client jobs
- Ongoing site deployment testing
 - on UChicago-RCC
 - on Palmetto-Clemson

Connect Client status



- several bug fixes and minor new features in release 0.5; nothing world-shifting
 - bug fixes in `tutorial` command
 - add `ConnectClient*` classads to submits:
 - `ConnectClientVersion`
 - `ConnectClientServer`
 - `ConnectClientUser`
 - `ConnectClientLocalUser`
 - `ConnectClientLocalNode`
 - `ConnectClientLocalDir`
 - add a `connect release` command.

Connect Client status



- connect status: pool names mapped to meaningful aliases — mapping in Gratia pending [tbi]

OLD

```
$ connect status
```

```
Summary of available resources for all HTCondor pools:
```

```
    Total  Owner  Claimed  Unclaimed  Matched  Preempting
```

```
=== rccf-osg.ci-connect.net:11012?sock=collector ===
```

```
    249      0    195      54      0
```

```
=== rccf-osg.ci-connect.net:11011?sock=collector ===
```

```
    646     29    510    105      2
```

```
=== osg-flock.grid.iu.edu ===
```

```
   5498      0   5424     74      0
```

```
=== uc3-mon.mwt2.org ===
```

```
    791      3    732     51      1
```

NEW

```
$ connect status
```

```
Summary of available resources for all HTCondor pools:
```

```
    Total  Owner  Claimed  Unclaimed  Matched  Preempting
```

```
=== Clemson Palmetto ===
```

```
    0    249      0    195     54      0
```

```
=== Syracuse OrangeGrid ===
```

```
    0    646     29    510    105      2
```

```
=== OSG Grid ===
```

```
    0   5498      0   5424     74      0
```

```
=== UChicago UC3 ===
```

```
    4    791      3    732     51      1
```

Connect Client status



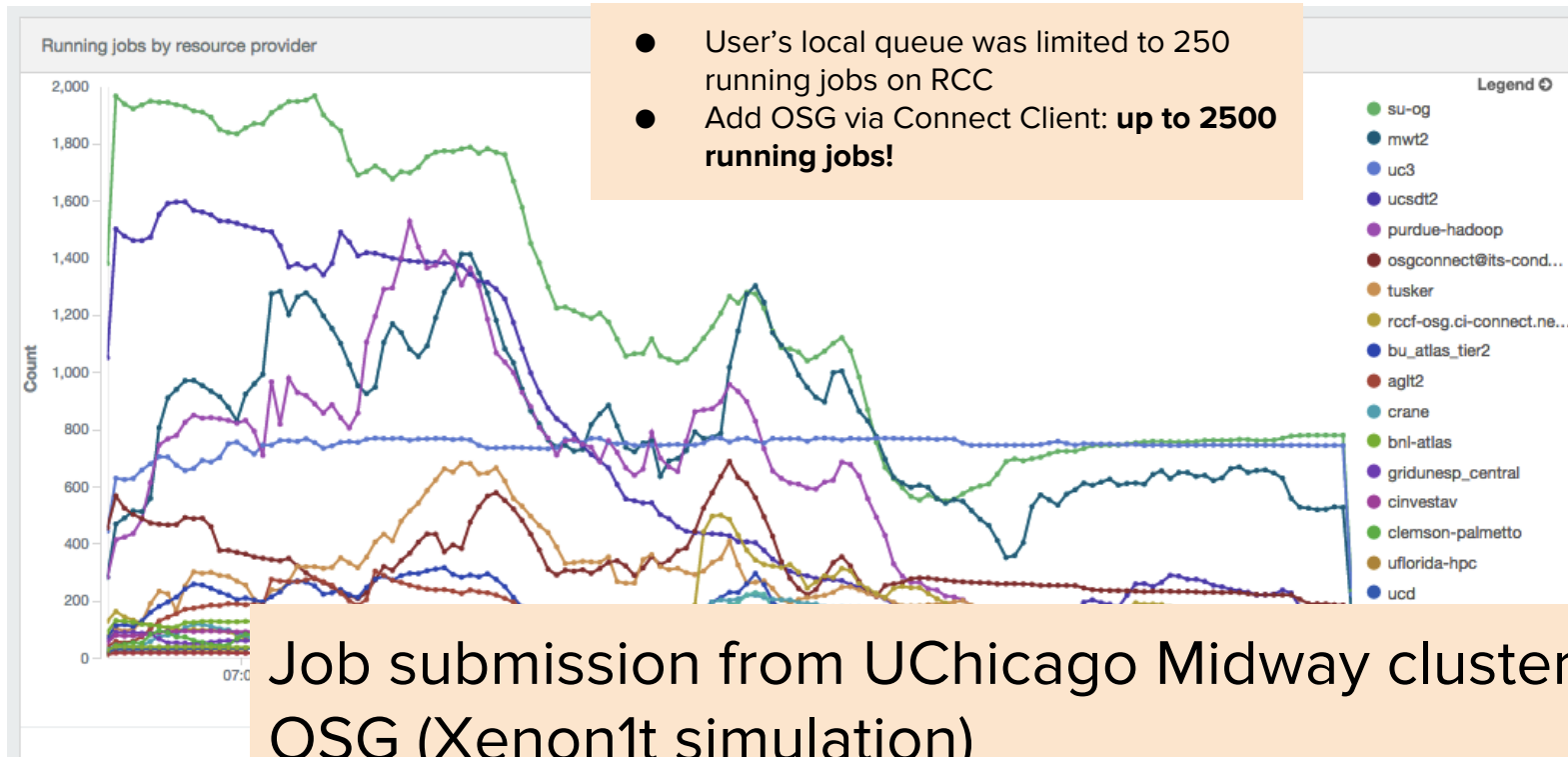
- various internal flow, config mgt changes
- allocate pty for server aliases
 - helps with some server-side commands that use keyboard interaction
- install: disable module "dependencies" by default
- install: Rename -site option to -oasis
- q, rm, history, and release act on own jobs
 - `connect q ~ condor_q $(whoami)`
- remove osgconnect-specific URL from setup directions

Deployments, testing & user feedback



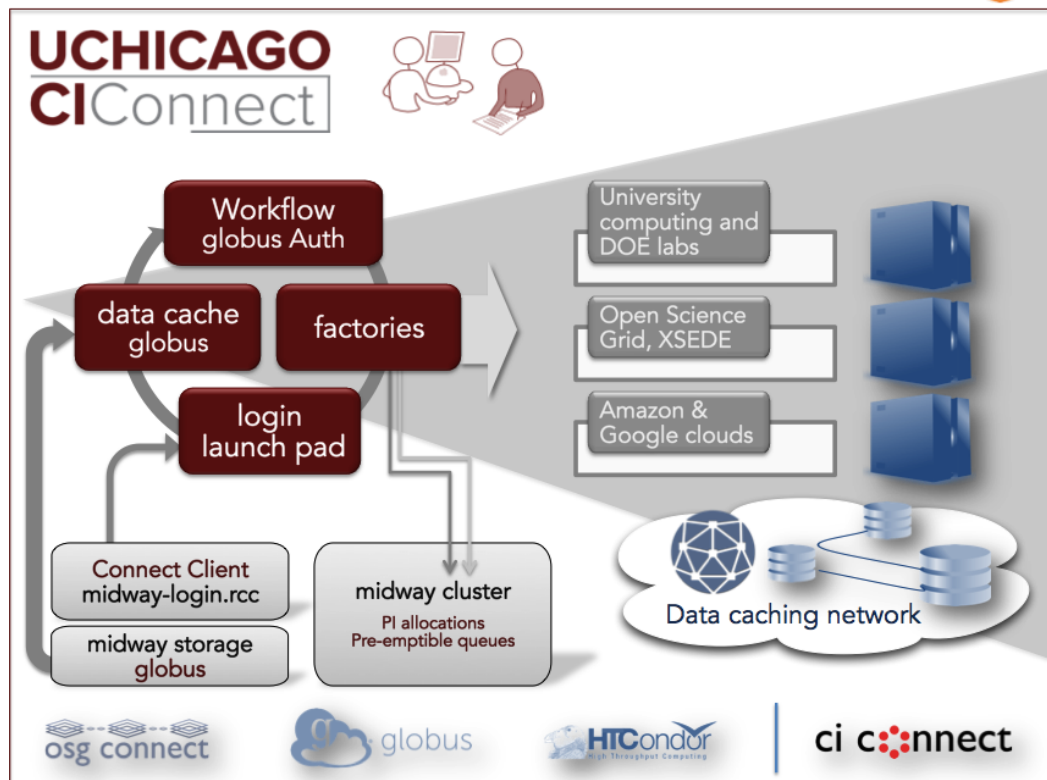
- UChicago RCC Midway
 - XENON1T (Dark Matter, Gran Sasso) testing
 - Geant4, ROOT installed in OASIS
 - Have run multiple successful test sequences:
 - 10k runs, 85-100k events each; 850m-1b events
 - ~1tb data output — working on data collection models
 - globus and xroot access methods in development
 - Next: local Midway allocation as resource target to UChicago CI Connect

Show users power of sharing

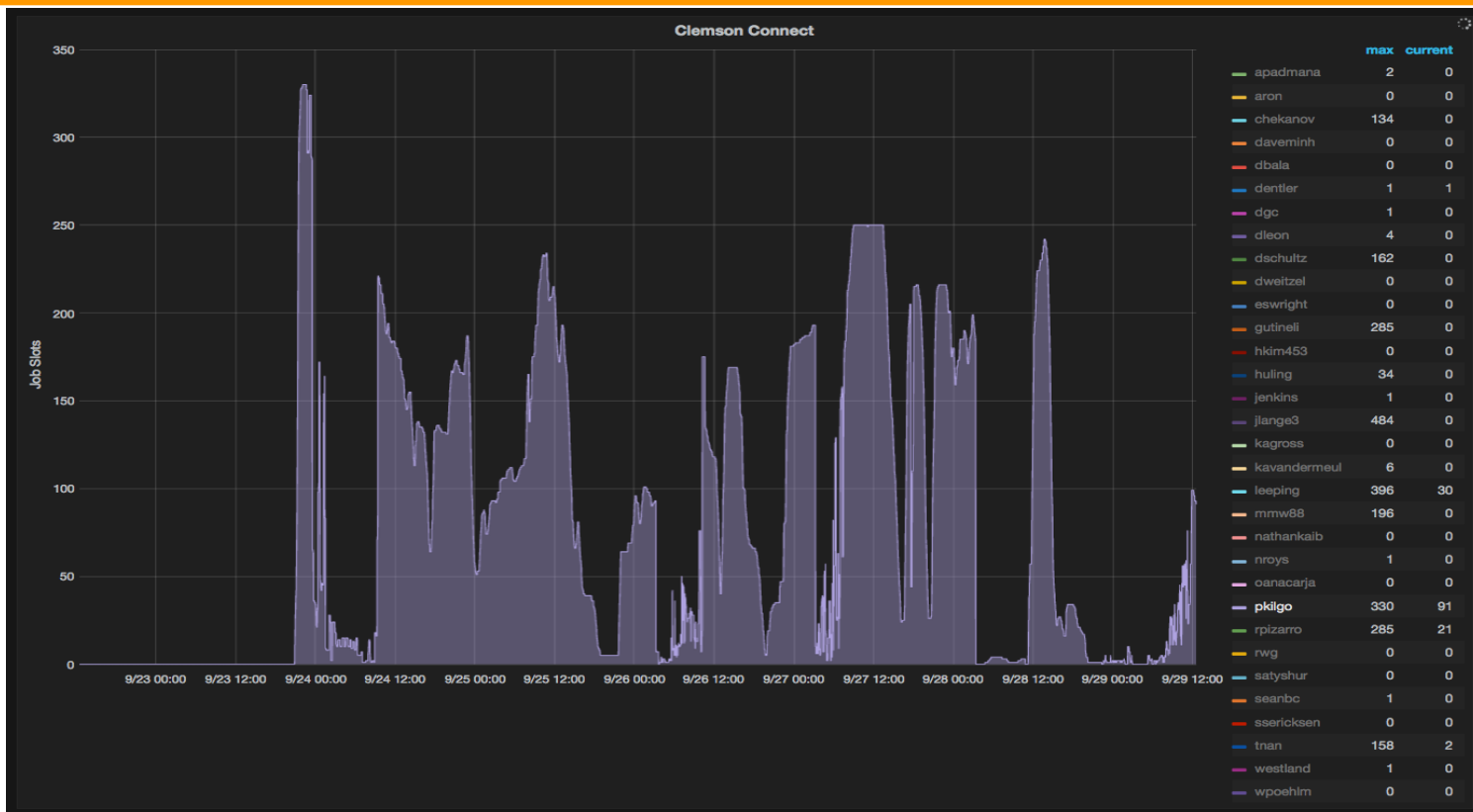


Pattern for Campus Grids

- Connect client installed locally
- OSG Connect (or CI Connect) to bring remote resources to the local cluster
- Potentially flocking back to campus (e.g. Palmetto)
- One campus-based queue



Connect Client from Palmetto & back



User: P.Kligo
Inst: Clemson
Project: numfpi

Started on login.
osgconnect.net

Moving to
connect-client on
Palmetto

Connect Client release schedule



- v0.5 released yesterday
- Next release foci:
 - Paul Kilgo's (Palmetto user) feedback
 - extensions/improvements to data transfer capability
 - automatability of Globus xfer for large datasets (e.g. xenon1t)
 - possible improvements to push/pull technique
- Will aim for incremental releases at 2-week intervals. Next: Oct 13.

Progress against goals

Will review comprehensively next time -- but overall good progress in all areas.

1. Ongoing
 - a. OSG Connect account and Project requests (Bala)
 - b. Respond to user forum "how-do-I?" questions, feature requests, errors (full team)
 - c. Software and packaging of user applications in the modules + OASIS service (Bala, Suchandra)
 - d. XD Program
 - Support users with XRAC allocations (Mats)
 - Attend quarterly XRAC allocations meetings (Rob, Mats)
 - e. Operation of user infrastructure
 - Maintenance of Cobbler build and Puppet configuration rules (Lincoln, Judith)
 - Maintenance of KVM-based virtual machine infrastructure (Lincoln, Judith)
 - login01.osgconnect.net (login service) (Lincoln)
 - i. schedd, collector, Gratia probe
 - login02.osgconnect.net (remote campus connect clients server) (Lincoln)
 - i. schedd, collector, Gratia probe
 - NSF file server for /home directories (Lincoln)
 - i. 50 GB/user quota
 - ii. Backup service
 - hosted campus factory services (Syracuse, Clemson, St. Louis resource targets) (Lincoln)
 - Ceph object store (750 TB usable capacity shared with ATLAS Connect users) (Lincoln)
 - i. GaneshaFS for Posix access to the Stash RBD (RADOS Block Device, variable capacity)
 - ii. 14 Xrootd doors at 20 Gbps to SciDMZ (100 Gbps to OmniPoP)
 - iii. 14 Gridftp doors at 20 Gbps to SciDMZ (100 Gbps to OmniPoP)
 - stash.osgconnect.net services (Lincoln)
 - i. http server
 - ii. xrootd origin server
 - iii. stash cache server
 - iv. Globus gridftp server endpoint
 - v. Management of user and project stash areas for quasi-transient job data
2. Lowering Barriers to Usability
 - a. Campus Connect Client (David, ongoing: bug support and progressive releases)
 - b. Create GitHub-backed help desk service (Rob, David, July 2015)
 - c. Create user community-focused website (Rob, Student, Aug 2015)
 - d. Create publication database and upload service (Rob, Student, Aug 2015)
 - e. Create domain specific HTC recipes (Bala, Mats, Emelie, on-going)
 - f. Provide NX server interface to login.osgconnect.net (Judith, July 2015)
 - g. Reducing friction between user data and resources (Rob, on-going)
 - i. Campus to Stash; Stash to Campus (Suchandra, on-going)
 - ii. Document and benchmark high priority data access use cases with StashCache (copy, "Posix", etc.) (Suchandra, Dec 2015)
 - iii. Development of stash-cp (Student, Lincoln, on-going)
 - h. Assessment of XSEDE user community application workflows, suitability for HTC (Mats, Bala)
 - i. Demonstrated HTC conversion and reach of traditionally HPC applications in MD (Molecular Dynamics) such as NAMD, GROMACS
 - Perform HTC analog to XRAC MPI scaling demonstrator to determine performance equivalent → common currency for XRAC proposals
 - ii. Same, bioinformatics (BLAST), docking (Auto Vina)
 - i. Support for the NIH community (Rob, Mats, Emelie, Bala)
 - i. Create Project and necessary software components to support users of FreeSurfer, an open source software suite for processing and analyzing human brain MRI images
 - ii. Adapt basic FreeSurfer tutorial modules to Condor, support in the OSG Connect tutorial collection
 - iii. Work with Don Krieger to identify a research group actively analyzing MRI data with FreeSurfer, potentially partnering with XSEDE ECSS, and explore issues of support on OSG
 - iv. Support BLAST applications
 - v. Support molecular docking applications (drug discovery)

3. Lowering Barriers to Sharing Resources (small campus integration) (Suchandra, Lincoln)
 - a. Hosted Bosco services (on-going)
 - b. Hosted HTCondor CE – ssh (when available)
 - c. Hosted data caching services (TBD)
 - d. Document, productize 'portable CVMFS' (Lincoln, Dave Lesny)

Progress against metrics



Campus and User Support Metrics			
OSG Connect	2015	2016	2017
Active users	50	100	150
Active projects	25	50	75
Avg (active users / week)	5	10	20
Avg (active projects / week)	3	6	12
Campus connect client users	2015	2016	2017
Downloads	10	50	100
Active users	5	10	50
Campuses	2	5	10
Avg (active users / week)	5	10	20
Avg (active projects / week)	3	6	12
OSG Quick Connect Campuses	2015	2016	2017
Campus as resource targets	3	5	10