

# Fermilab Site Report Fall 2012 HEPiX

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# Outline

Facilities

Network and Virtual Services

ISO20000 Certification Status

Managed Services

Tape Drives, Robots & Storage

HPC & Lattice QCD

FermiGrid

FermiCloud

# Facilities

The berm behind Grid Computing Center was removed in May 2012.

Helped some, less heat on condenser pad.

Still had to load shed at 30% for 426 hours but no total shutdown

2012 was record hot summer (95F/35C).

LQCD used ACPI to throttle all machines to lower cpu frequency.

Coming—more cold aisle containment

2012 purchases begin re-using GCC A, originally built in 2004, with fewer, deeper racks.

# Networking and Virtual Services

288-Fibre ring completed around site, major buildings

Metropolitan network transitioning to 100Gbit/s 'ChiExpress'

Establishing 100G testbed and infrastructure

Main Web and Email services met IPv6 mandate on schedule

Migration of main Fermilab web pages to Sharepoint under way

VMWare Core IT: 281 physical servers thus far replaced by 8 core servers.

# ISO20000 Certification

- External certification readiness assessment completed on 13-Sep 2012
  - 15 of 320 ISO 20000 requirements currently being remediated
  - On schedule to complete certification by end of December.

# Managed Services

Dell's Managed Services Contract with Fermilab is now operational.

The set of managed services include:

- Service Desk Support Personnel,
- “Deskside” Support Services (including PC/MAC refresh),
- Printer Support & Services (including printer supplies and printer refresh),
- Logistic services (hardware service, moves, adds, changes),
- Network cable installation.
- Network Node Registration.

# Tape Robots, Drives & Storage

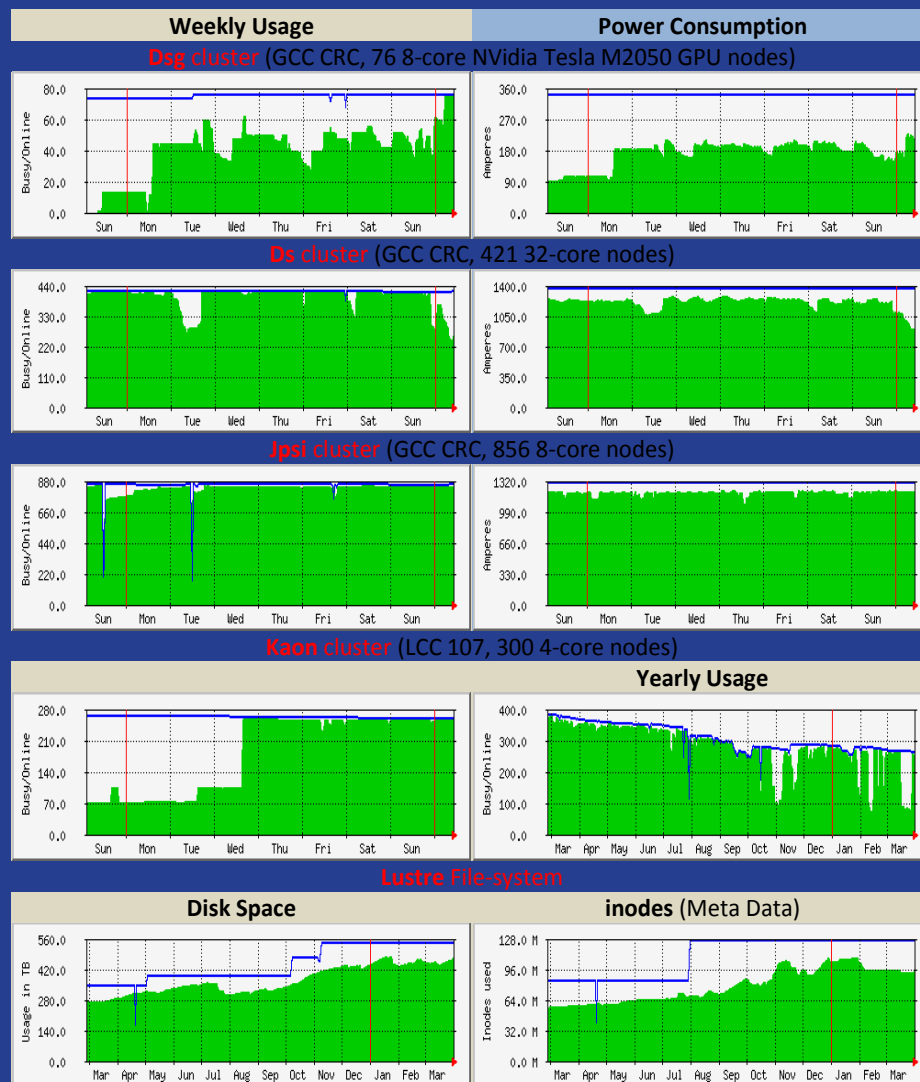
- T10KC Tape drives are in full production,
- Migration of LTO-3 tapes almost complete
- Migration of LTO-4 tapes in progress
- Small file aggregation now supported for Enstore and dCache
  - Key technology for Intensity Frontier
  - Key part of Data Preservation efforts for Run II (CDF and D0)

# HPC & Lattice QCD

Existing HPC & Lattice QCD [Ds, J/Psi, Kaon, Wilson] clusters are running well.

Kaon and J/Psi gradually shrinking as hardware is decommissioned.

Expect new cluster acquisition in 2013

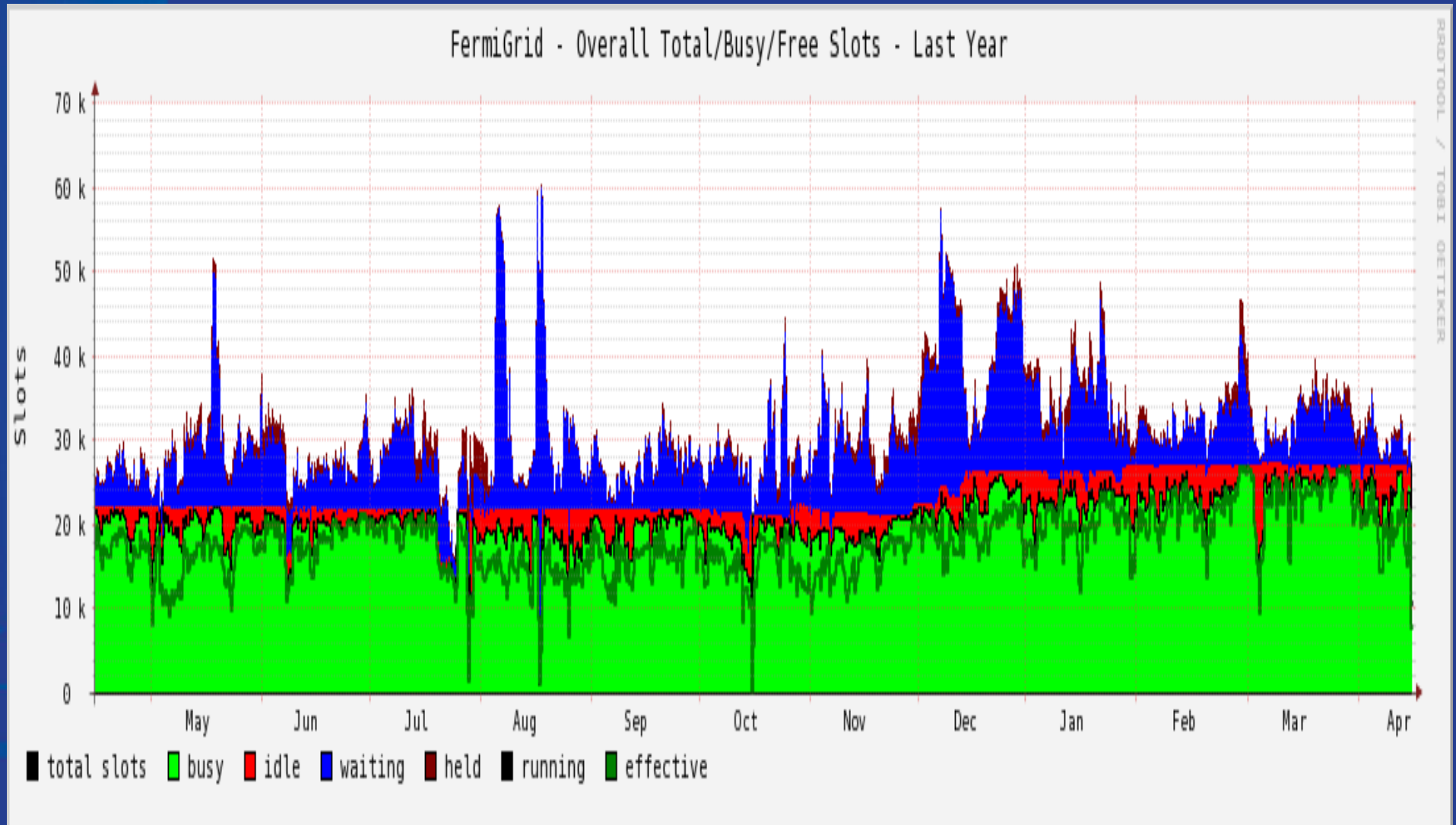




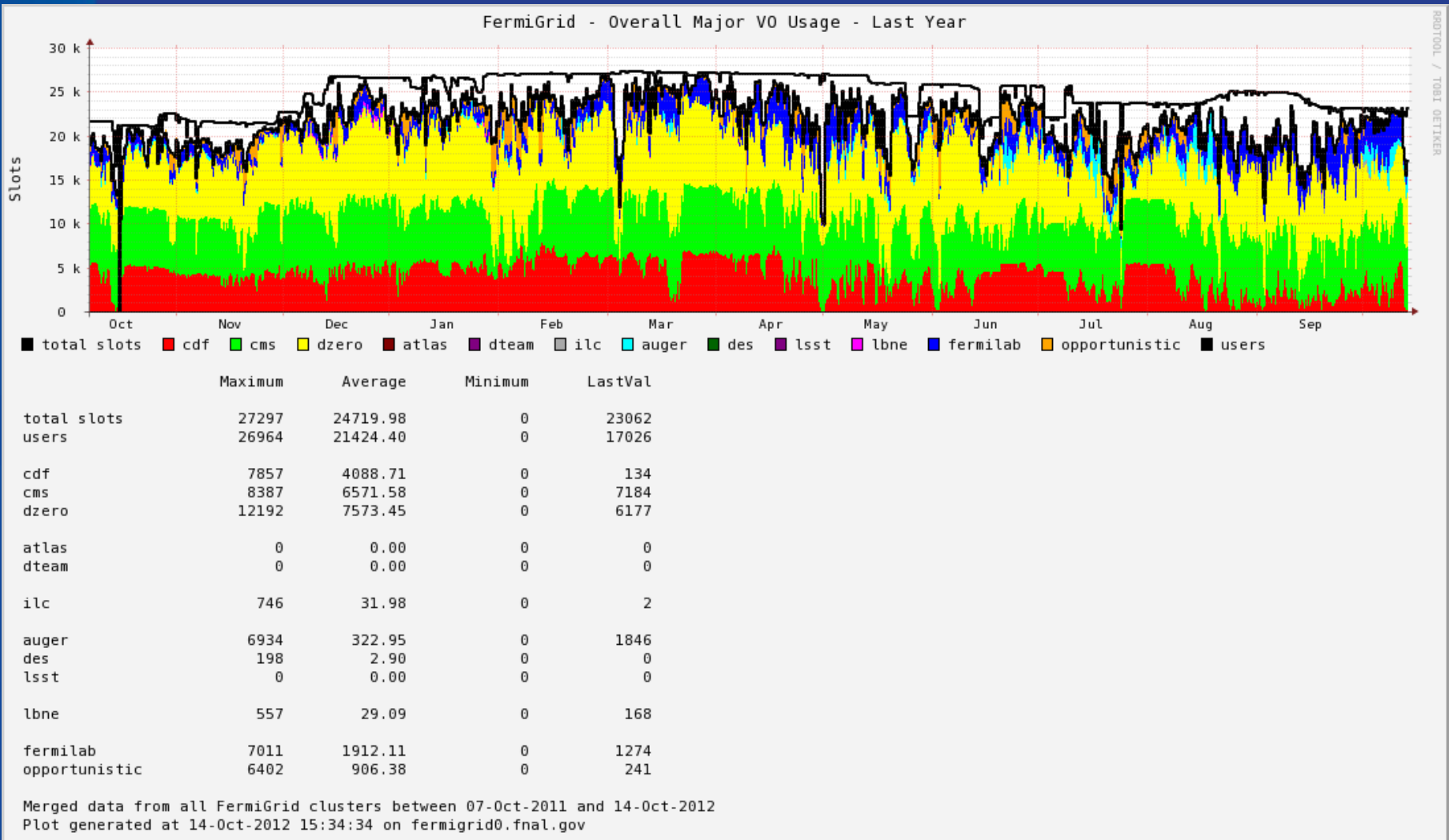
# Current FermiGrid Statistics (as of October 2012)

Cluster(s)	Batch System	Job Slots	Raw Occupancy	Effective Utilization
CDF (Merged)	Condor	5468	89.9	77.4
CMS T1	Condor	7248	93.6	85.3
D0 (Merged)	PBS	6000	82.4	67.1
GP Grid	Condor	4346	84.1	73.7
_____		_____	_____	_____
Overall- Today		23070	89.4	75.8

# FermiGrid Overall Usage



# Usage by Community



# FermiGrid Services

FermiGrid-HA2 Services deployment continues to operate well, significant events include:  
Decommissioning of VOMRS for all our Virtual Organizations except the Fermilab VO.

Upgrade of GUMS to GUMS 1.3.18 to support multiple Certificate DN's per user in VOMS  
Expected complete by Oct. 31.

Will decommission last VOMRS then.

Requires cleanup of all client side software to use XACML-profile.

Significant testing of SHA-2 and IPv6 compatibility of Grid middleware

SHA-2—Many applications using jGlobus (dCache, BeSTMan, SAZ) were affected.

Fixes are underway

IPv6—Current versions of Squid don't support, Also LVS (Piranha heartbeat/pulse doesn't support).

CVMFS deployment now being planned.

Distribute experiment code off-site more reliably.

Fermilab and Open Science Grid migrating to commercial CA, Digicert, replacing DOEGrids

Expect all new host and personal certs to be coming from Digicert in March, 2013.

# FermiGrid Service Availability (measured over the past year)

Service	Raw Availability	HA Configuration	Measured HA Availability	Minutes of Downtime
VOMS – VO Management Service	99.667%	Active-Active	99.90%	540
GUMS – Grid User Mapping Service	99.663%	Active-Active	100.00%	0
SAZ – Site AuthoriZation Service	99.622%	Active-Active	100.00%	0
Squid – Web Cache	99.663%	Active-Active	100.00%	0
MyProxy – Grid Proxy Service	99.374%	Active-Standby	99.62%	1,980
ReSS – Resource Selection Service	99.779%	Active-Active	100.00%	0
Gratia – Fermilab and OSG Accounting	99.195%	Active-Standby	100.00%	0
MySQL Database	99.785%	Active-Active	100.00%	0

# FermiGrid “Core” Service Metrics (measured over the past year)

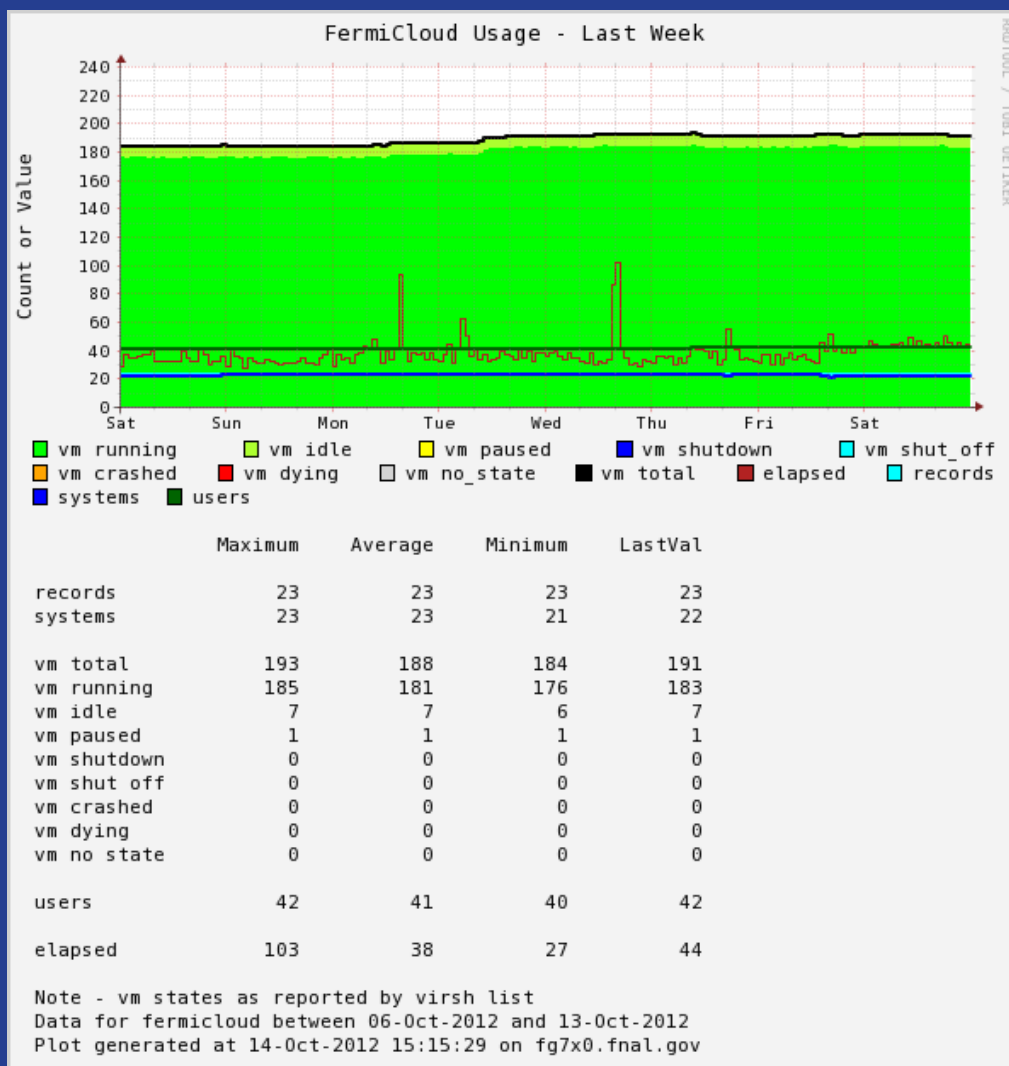
Service	Calls per Hour Average / Peak	Calls per Day Average / Peak
VOMS – VO Management Service	500 / 5500	5.6K / 56K <i>UP 3X in last yr</i>
GUMS – Grid User Mapping Service	20K / 114K	490K / 1.25M
SAZ – Site AuthoriZation Service	18K / 150.3K	400K / 1.23M
Squid – Web Cache	-not measured-	8.9M / 92M
MyProxy – Grid Proxy Service	867 / 8.5K	18.1K / 83.7K

# FermiCloud

We are in the process of deploying distributed & replicated SAN hardware, together with the software deployments to allow VM live migration between buildings,

Good progress on monitoring, accounting, high availability

See my talk on Thursday



# Openings!

Fermilab has a number of positions open:

- System Administrators,
- Computing Services Specialists,
  - CSS III in the Grid and Cloud Computing Department
- Database Administrators,
- Developers/System Analysts
- Network architects
- Scientist

If you are interested, please visit:

- <https://fermi.hodesiq.com/>



# Thank You!

## Any Questions?