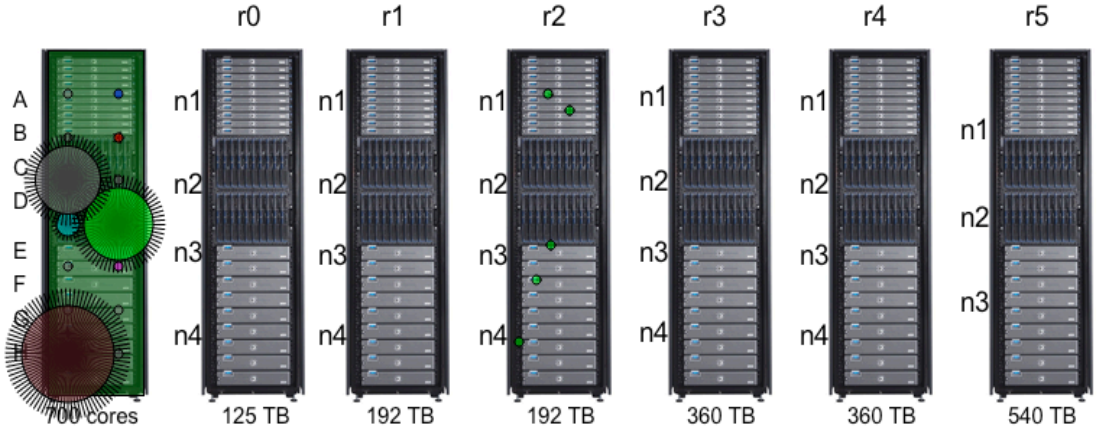
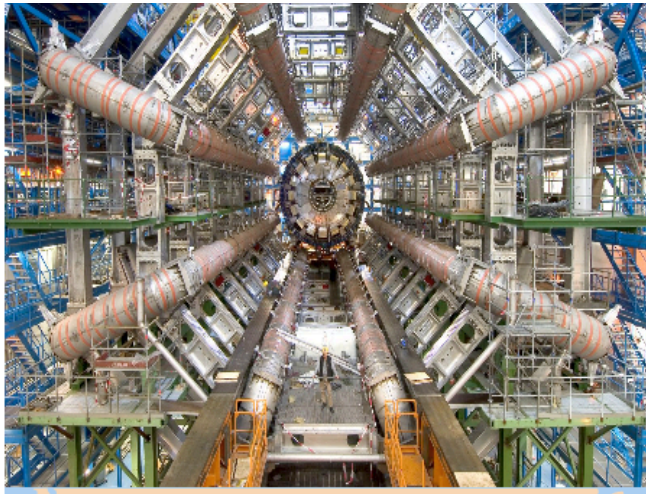
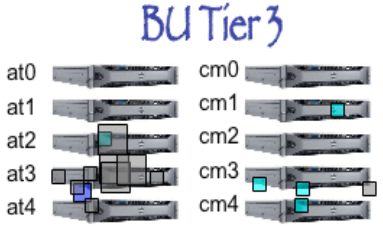
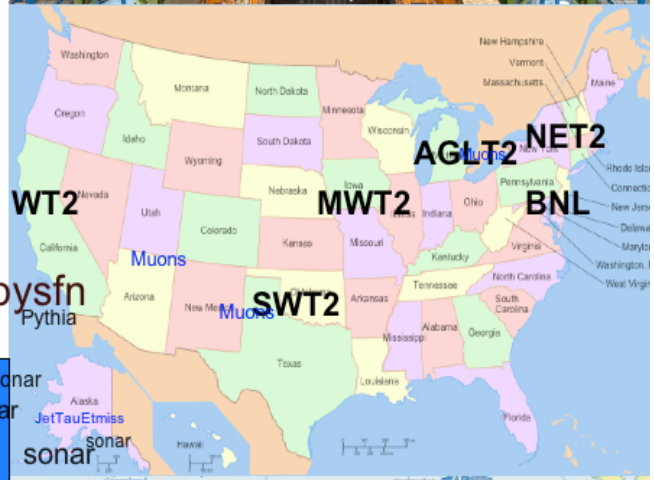
US ATLAS Northeast Tier 2 Center



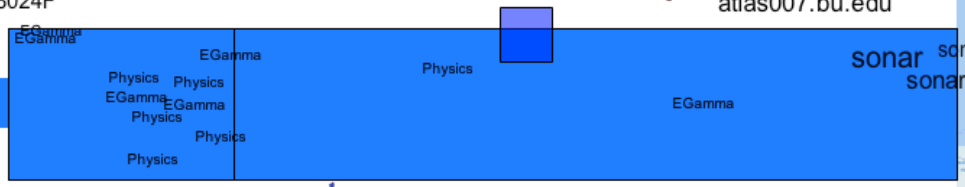


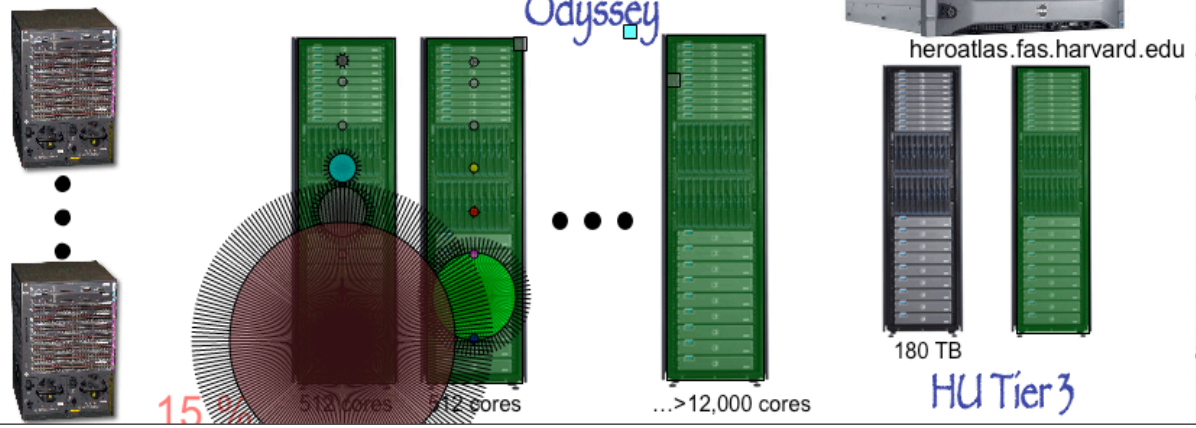




Boston University

Harvard University





U.S. ATLAS Northeast Tier 2 Center (NET2)

Saul Youssef
Boston University

Boston University

BU research computing:
Augustine Abaris, Mike Dugan, Manny Ruiz, Wayne Gilmore, Glenn Bresnahan, + …

BU Networking: Chuck von Lichtenberg,+…

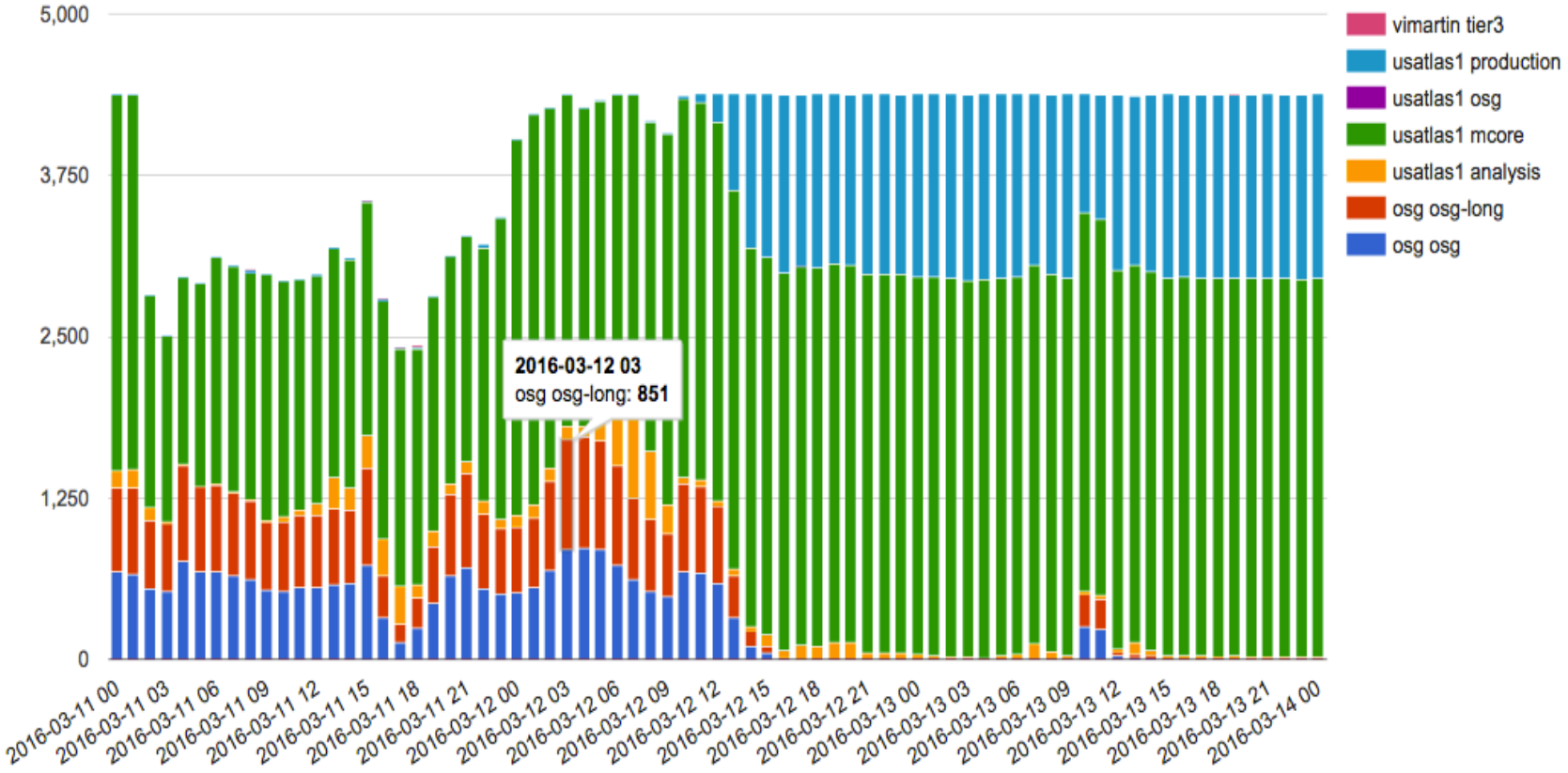
Harvard University

James Cuff

HU research computing: Dan Caunt, + ,…

HU Networking: Nick Amato, + ,…

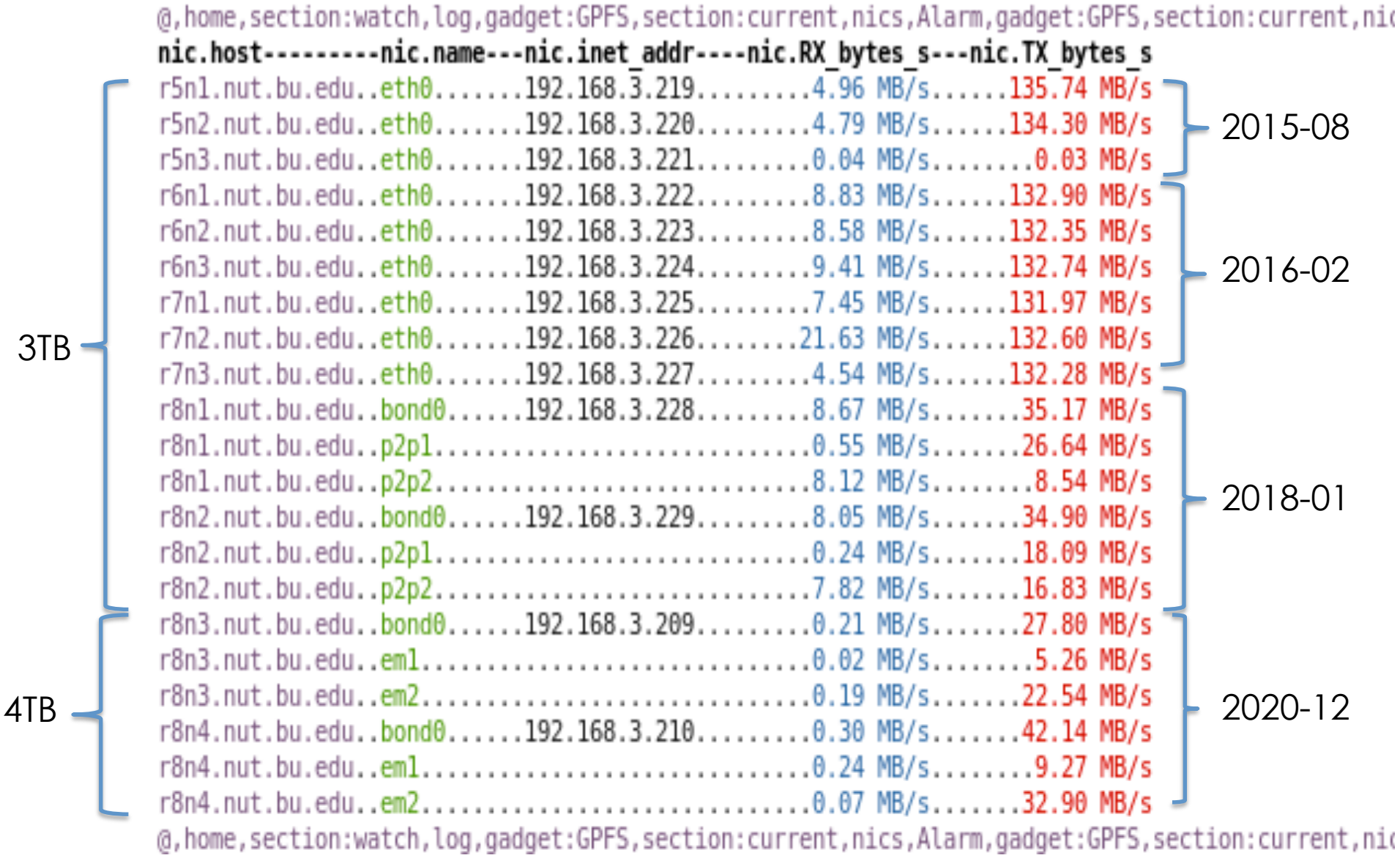
NET2/BU SGE



4500

+1500 HU cores

Warranty



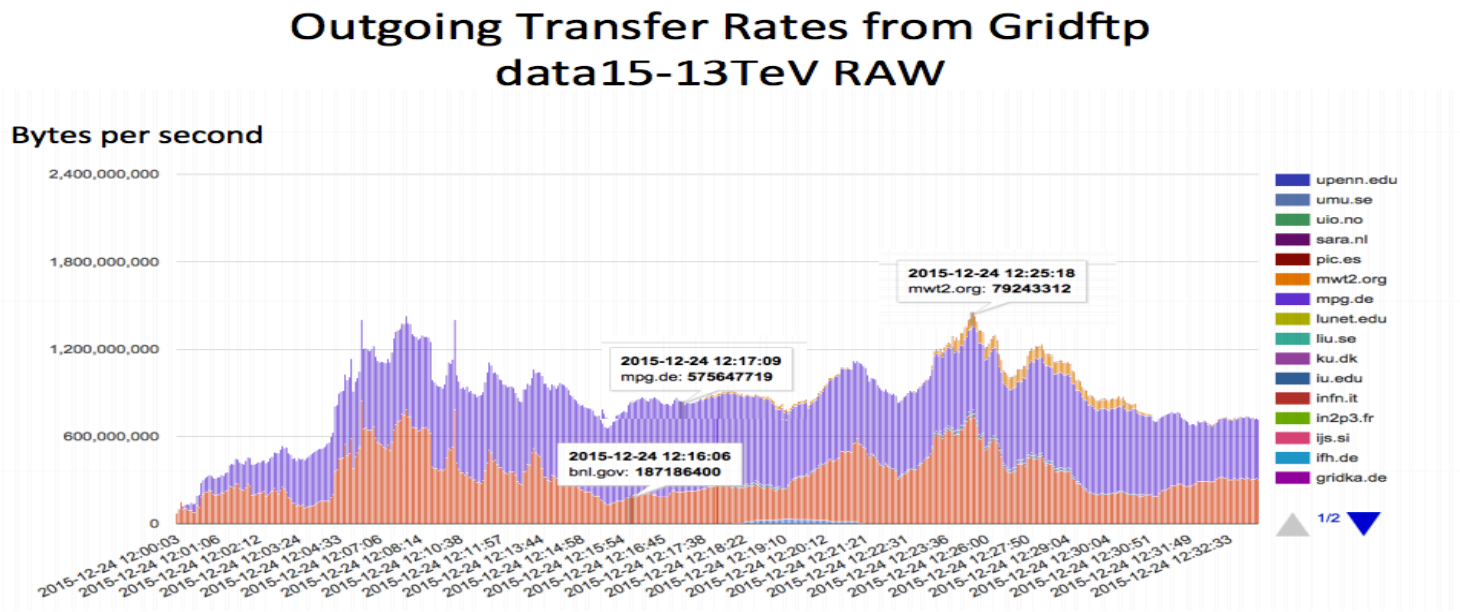
22 MB/s total bandwidth, 3.2 PB total storage

Networking

S4810, 48 x 10GigE, 4 x 40 GigE uplinks

2 x 10GigE dedicated fibers to Harvard worker nodes

Reach internet 2 via “NoX” (now at 100Gb/s at MGHPCC)



Priorities:

1. Upgrade WAN to 40 or 80 Gb/s ASAP
2. Join LHCONE

We make extensive use of “egg”

- Alarms
- Browsing
- Monitoring
- Logs
- Trouble shooting
- Histories and accounting
- Analytics
- Pings/Functional tests
- Maintenance operations
- Hardware inventory

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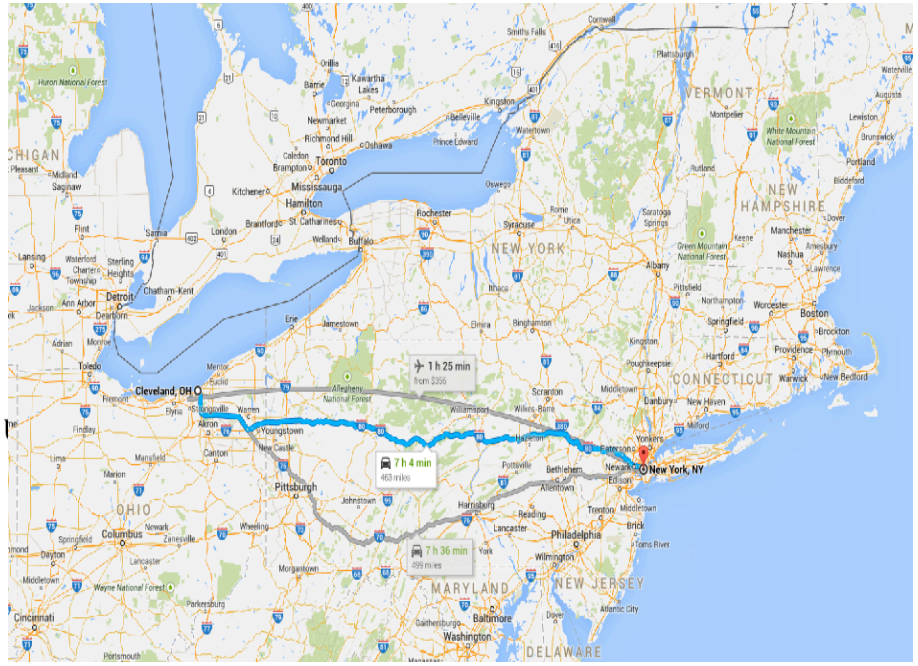
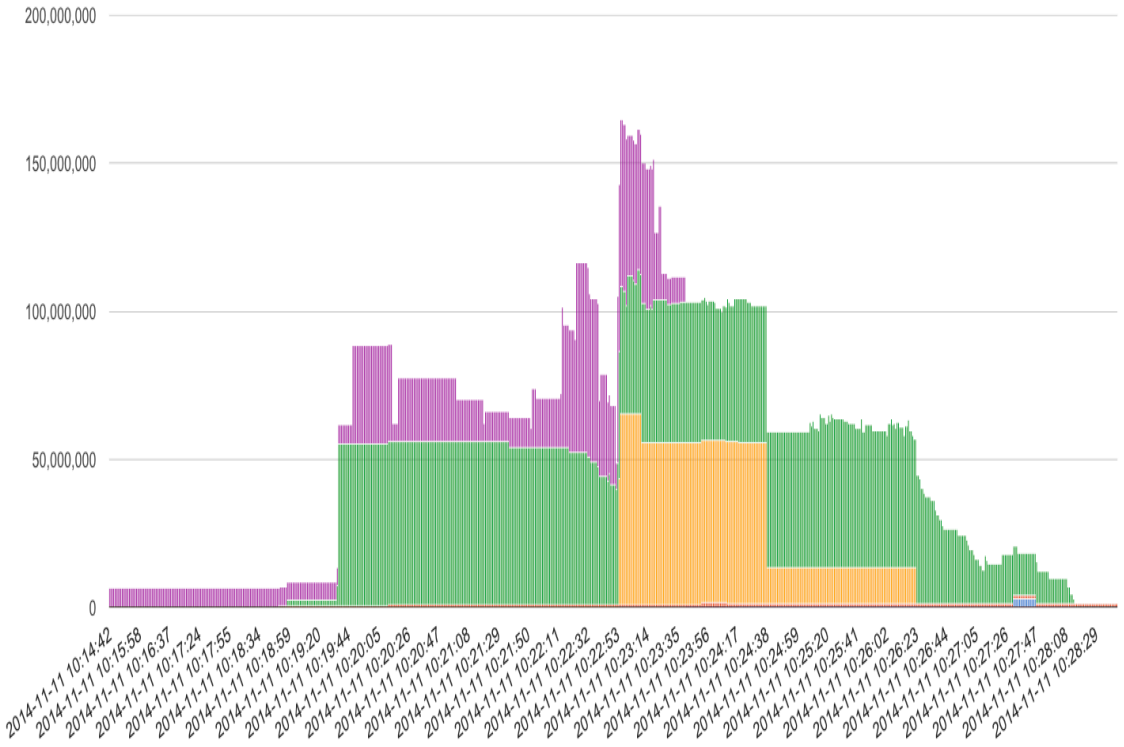
Maintenance
Report
Watch
Action
Closet
Client
Certs
Current
Cron
Ping
Log
@,home,Alarm,NET2
```

Expanding to the world-wide infrastructure allows computation amazing things…



10 minute ATLAS traffic on et-10-0-0.307.rtr.clev.net.internet2.edu to et-10-0-0.402.rtr.newy32aoa.net.internet2.edu: 2014-11-18 17:00:17 U

Vertical axis is bytes transferred pre second



ATLAS data flowing from Cleveland, OH to New York, NY through one particular IP link.

NET2 ⇔ MGHPCC

The bulk of research computing for

- Boston University
- Harvard University
- MIT
- Northeastern University
- UMASS

Industrial partners

- Cisco
- EMC

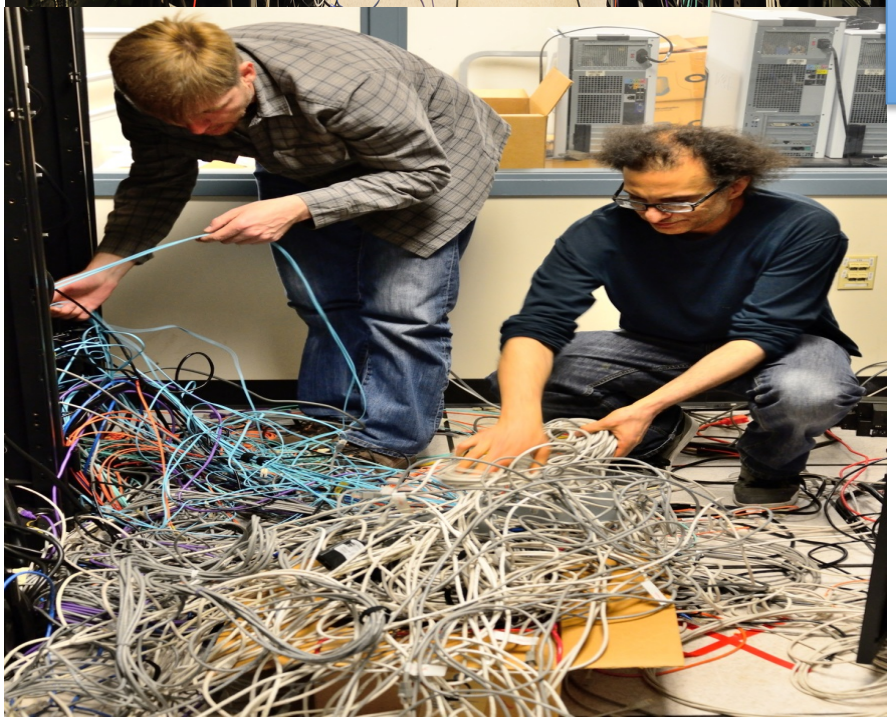
is on the MGHPCC computing floor. Space and power for approximately 1000 racks is available.

How Big is the Facility?

The facility size is 90, 300 square feet, with 10 Megawatts of power available for computing and another 5MW available for other functions such as cooling and lighting. The site is 8.6 acres, with land and utility power feeds to more than double the capacity of the current facility. The machine room floor has built-out capacity that can house roughly 10,000 high-end computers with hundreds of thousands of processor cores, and expansion capabilities in the building for a further 10,000 computers.

Who Paid For It?

Project funding was provided by the five MGHPCC universities, the Commonwealth of Massachusetts, Cisco, EMC, and the Federal New Markets Tax Credit program. The universities will fund its ongoing operation. MORE



Northeast Futures

- Co-location with BU, Harvard, MIT, Northeastern and UMASS research computing is very significant.
- Collaborate with the "Mass Open Cloud" project, HaaS expansion of NET2 ATLAS nodes.
- Starting a series of consortium proposals for building northeastern U.S. regional computing.
- Expanding the scope of MGHPCC, joining with NoX and other institutions in the northeast.
- Next step is storage, consortium is planning for an up to 50PB shared object store.
- Plan to use this store as the main NET2 storage.
- Next generation "egg" looks much smaller, more powerful and may have wide application.