GridPP36: New directions from ATLAS

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Introduction

• What does ATLAS need from GridPP?

• Compute

• Storage

• Network

• ATLAS remains agile and is capable of using a diverse range of resources, giving options to sites
Non-Grid growth

FTE for 2015
A rainbow of VM activity

Mix of stable, ad-hoc, and experimental

- BOINC
- HLT
- Commercial
- Agile
- VAC
- Openstack
CPU capacities

- AWS - 40,000 (transient)
- BOINC - 10,000 (growing)
- HLT - 10,000 (stable)
- IAAS - 1500 (growing +6500 this year)
- CERN AI - 1000 (stable)
- IN2P3-CC - 700 (stable)
- VAC - 500 (growing)

Grid ~ 160k
HPC ~ 20k
Cloud ~ 20k

in 2015
ATLAS Vac sites

Slots of Running Jobs
730 Hours from 2016-03-08 to 2016-04-08 UTC

Maximum: 442.88, Minimum: 0.00, Average: 112.06, Current: 25.50

Last month
ATLAS Event Service

- Pilot runs either normal job or AES job
- Input staged locally or read directly
- Event objects and logs sent to objectstore whilst job running
- Pilot continues to process additional event range
- Once all events done a merge job runs locally or on different resource
Event Service implications

- Enables sites to provide pre-emptable slots
- Useful for opportunistic resources and backfilling existing resources
- Requires access to Object Store
- Configured in UK, running at RAL and MAN, watch this space
Storage

- Nucleus model to help improve task throughput
- Utilize network to better use large T2 sites and move further away from the tiered model
- Satellite sites move towards cached storage and invest more into CPU
- Sites with <400TB advised to only procure CPU, <1PB to be used in more of a cache-like way
Objectstores

• Used for storing log files and Event Service output

• All via S3 interface

• ATLAS currently using Objectstores at BNL, CERN, RAL, LANCS
FTS testing with OS

- RAL guys testing FTS with objectstores
- Transferring from Grid storage into OS
Objectstores and cloud

- Openstack dominating private cloud deployment
- Ceph becoming preferred block storage
- Expect to see more Objectstore deployment coming with Openstack deployments
- [http://superuser.openstack.org/articles/openstack-users-share-how-their-deployments-stack-up](http://superuser.openstack.org/articles/openstack-users-share-how-their-deployments-stack-up)
Network

- Defer to Duncan’s talk
- ATLAS network use (WAN) increasing over Run II
- Tier2 sites at 10Gbit/s and larger T2 20Gbit/s
- Getting smarter with network usage, in a dynamic way using various analytics techniques
- Important to review usage given difficult to predict and long lead times for deployment
Google engineering for the rest of us
This stuff is very attractive
Azure Cloud Platform
Conclusions

• ATLAS has embraced technologies beyond Grid

• Actively delivering resources at the 10% level

• Little risk for sites to deploy new technologies (helps with new VOs)

• ATLAS continues to be agile and is keen to use all resources