

US ATLAS Tier 3 Status

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Tier 3 overview

- ▶ **42 US ATLAS institutions, 44 potential Tier 3 sites**
 - ▶ One at ANL ASC (small) and One at a non US ATLAS institution
- ▶ **> 25 are already operational**
 - ▶ Many fetch data using dq2-get client
 - ▶ Will try to encourage more to setup gridftp server
 - ▶ Do not expect much gridftp usage until:
 - data volume to Tier 3 grows
 - dq2-get bandwidth is limited
 - Can get subscriptions to gridftp only end point
- ▶ **Expect another 10 sites to come on with 2 months or so**

Tier 3 overview(2)

- ▶ Tier 3 sites are varied
 - ▶ Several batch systems used
 - ▶ Torque/Maui
 - ▶ Condor
 - ▶ Proof (2 sites)
 - ▶ Various storage
 - ▶ Storage on work nodes
 - ▶ Storage in separate storage nodes
 - ▶ NFS
 - ▶ Xrootd
 - ▶ Local file systems
 - ▶ Since T3's are a local resource – need to adapt to their varied nature - implies support will be a challenge

Scale of Tier 3 sites

- ▶ Expect in the end ~ 40 Tier 3's in US
- ▶ Decent number of cores/ disk space available to analysis
 - ▶ 3476 cores (excluding SMU (1600 cores) Bell. U. (384))
 - ▶ 2394 TB (excluding SMU (440 TB) Bell. U. (376))
 - ▶ Average >133 cores and >92 TB
- ▶ WAN connectivity is all over the map.
- ▶ Amount of available support personnel is low
 - ▶ Some sites have access to dedicated system admin
 - ▶ Some sites the physicists are the system admin
 - ▶ Implications on physics productivity

Tools at Tier 3

- ▶ Strong reliance still on user tools for DDM transfers
 - ▶ Users like dq2-get
- ▶ ATLAS has modified the DDM client tools to aid in the Tier 3 sites
- ▶ Xrootd
 - ▶ Many Tier 3 sites are now using xrootd
 - ▶ Not clear how many will want to be federated initially
- ▶ Tier 3 Panda
 - ▶ New sites do not seem to be too interested in Tier 3 Panda
 - ▶ Not sure why? Guess- users do not see the need to connect to a central service to connect to local batch systems
- ▶ Tier 3 Monitoring
 - ▶ Effort established between ATLAS, US ATLAS and CERN IT
 - ▶ Will be useful beyond ATLAS. Initial plan documented
 - ▶ Need to use standard tools (like Dashboard) to make problem tractable
 - ▶ Do need to have local job monitoring (Proof or local batch)
 - ▶ Both Tier 3 Panda and Ganga could help here (We should officially support Ganga Frontend in US)
 - ▶ Should Drive towards a common frontend for grid/non grid usage

CVMFS status

- ▶ CVMFS has evolved beyond just a tool for Tier 3's
- ▶ Migrating to a production service within CERN IT
- ▶ Prior to migration:
 - ▶ Setting up test instances of CVMFS servers to server
 - ▶ software/DB releases
 - Software installed using Alessandro DeSalvo's scripts like the grid
 - ▶ All conditions data base flat files
 - Files in AFS straight forward
 - Files only DDM much harder do not have a solution yet
 - ▶ Nightly releases
 - ▶ Tier 3 UI (ATLASLocalRootBase)
 - ▶ Structure of CVMFS repositories being reorganized to follow existing ATLAS software structure on the grid
 - ▶ Expect to have results by April meeting.
DB coordinating with Asoka De Silva and DB is the worker bee

Tier 3's and analysis

- ▶ Analysis is continuing to ramp up in ATLAS
 - ▶ 2011 should be a banner year for ANALYSIS in the US
 - ▶ Rik Yoshida and Jim Cochran are actively reorganizing the analysis support effort in the US
 - ▶ Tier 3 sites are part of the analysis puzzle for most people
- ▶ Tier 3 configuration and design must continue to evolve make analysis easier for users
 - ▶ Proof farms are a good example (SLAC and BNL)
 - ▶ Need to make it easier for anyone to setup a proof cluster on top of their existing resources
 - ▶ Xrootd Federation
 - ▶ Data analysis drive data transfers

Conclusions

- ▶ Prediction 2011 – value of the Tier 3 sites will be apparent
- ▶ Increasing data implies increasing analysis
 - ▶ plots shown yesterday are proof of this
- ▶ Tier 3's must adapt to how people using the computing
 - ▶ For example the rise in the number of Proof clusters
- ▶ They must be efficient in analysis
 - ▶ Xrootd should help here a great deal
 - ▶ improved monitoring of jobs should also help