

BabarGrid

Gridpp8

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Bristol, September 22 2003

Outline

- BaBar Experiment
- BaBar Computing
- RAL TierA
- Development in UK
- Conclusions

BaBar as experiment

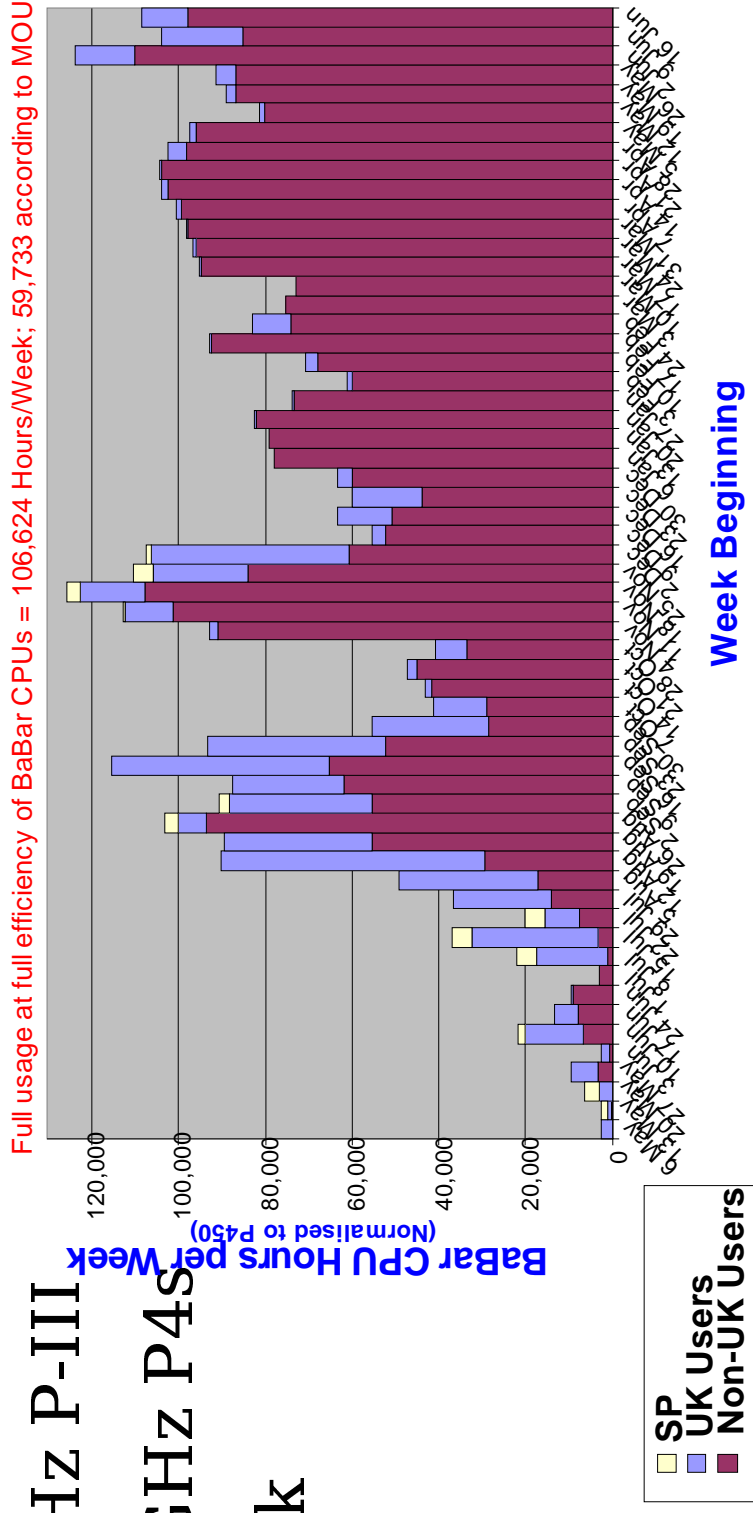
- Logged about 130fb-1
 - Billions of events
- Simulation production
 - Produces 3 times the hadronic rate
- ~600 physicist actively doing analysis
 - Want reliable system
 - Spot 1 missing run over 10000
 - Want tools behaving as they are use to
 - Would like a job manager but not too complicated

Computing in BaBar

- Currently BaBar has a largely distributed computing system
- 5 Tier-A sites
 - Sites that provide large resources for BaBar
 - Resources agreed to via MoUs
- ~20 Tier-C sites (universities)
 - Local analysis
 - Produce majority of BaBar Monte Carlo

RAI Tiera

- Third large analysis site
 - Only site for access to full ROOT based eventstore
- Produces Monte Carlo
- 200 1.4GHz P-III
- 160 2.66GHz P4s
- 45 TB Disk



Development in UK

- BaBar Replica Catalog
- BaBar WEB job submission
- BaBar job submission over AFS
- BaBar job submission with EDG
- Simulation production

BaBar Replica Catalog

- BaBar replica catalog is based on the mirroring of the production metadata catalog at each site. Each site knows what has been produced and what is the status of the local copies.
- To avoid queries at multiple sites last year the equivalent of the Replica Location Index was inserted to keep locally track of what was at other sites.

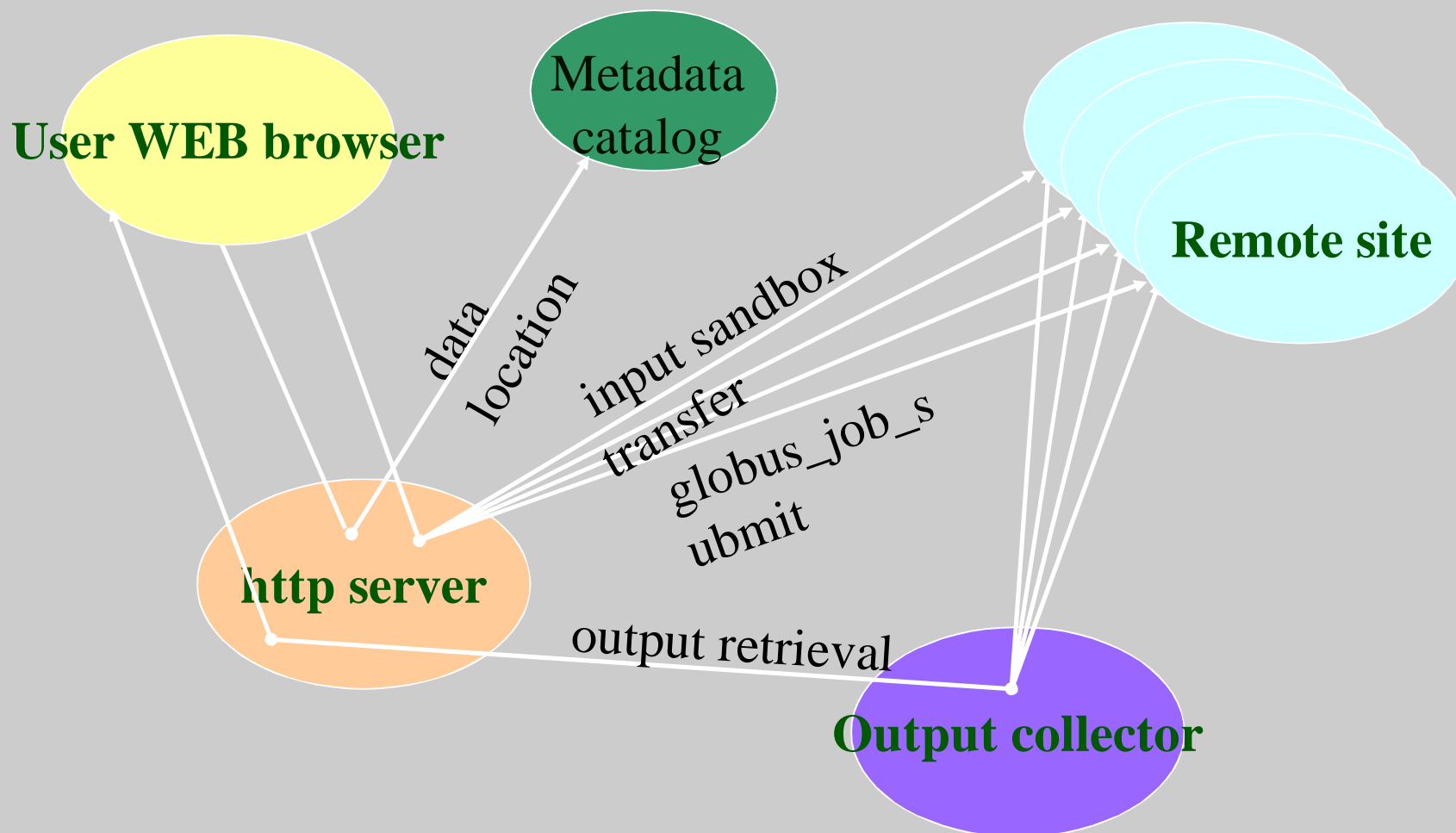
BaBar Replica Catalog

- The system returns the data tcl files needed by a standard babar job and an file index that maps each tcl with the site where it belongs.
- It worked fine in a test phase where there were a small number (few thousands) mapped in the RLI equivalent part of the catalog.
- It doesn't work anymore on production scale
- It needs total revision of the query that includes the RLI

BaBar WEB job submission

- BaBar first attempt of a distributed job submission was through the WEB
- The infrastructure it was based on was
 - BaBar VO
 - Generic Accounts
 - Globus Authentication and Authorization
 - globus command line tools
 - Data Location according to user specifications done with BaBar metadata catalog
- https

BaBar WEB job submission



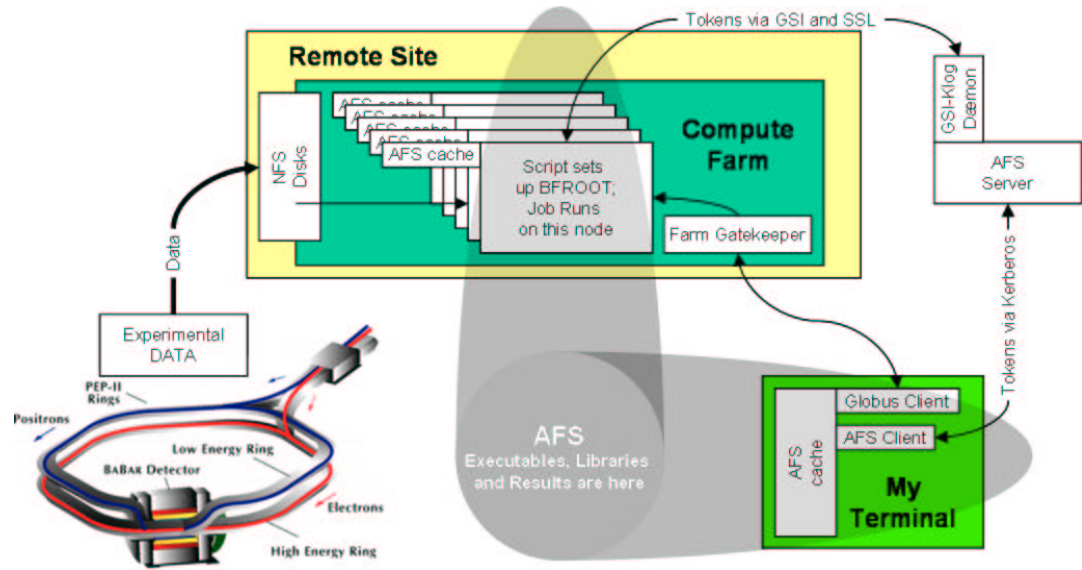
BaBar job submission with AFS

- Babar software installed on AFS at each site.
- Access to Data is via a link to local Data Store
- Access to Exes & Libs in virtual file system
- Physicist submits jobs to the Grid: doesn't need to know the ins and outs!
- Only needs Globus & AFS

From the workdir on AFS:

```
$ gsub [-site BABAR-SITE] MyApp My_tcl  
STDOUT and STDERR via gass  
ntuples are written to AFS. That's it!
```

The key here is that "gsub [-site blah] MyApp My_tcl" looks kind-of like "bsub MyApp My_tcl" and the physicist gets a response from the grid as if s/he was just using the local batch system.



BaBar job submission over AFS

- This type of system was thought to solve the input output sandbox for (light) users job.
- The infrastructure is the same as the WEB job submission but now a simple command line (`globus-job-submit`) is used instead of the WEB interface
- AFS clients are already required sw for BaBar, all BaBar TierAs and also some TierCs have AFS servers.
- Problems are encounter when WN are not opened to the Internet.

BaBar job submission with EDG

- Using the output index file of the extended metadata catalog it was possible also to split the job for an EDG type job submission.
- This worked nicely in the test phase with EDG1.4
- It has been now moved to GANGA but the recent upgrade to EDG2 has disrupted the tests.

Simulation production

- Monte Carlo runs at 25 sites
 - Includes all Tier-As
- Generate three times the hadronic rate
- MC Data is largest part of computing resources
 - Generation, analysis, disk/tape, ...
- Managed centrally
 - Allocations, modes, luminosity weighting

Simulation production

- A grid could reduce the manpower used to run Simulation Production
 - Each of 25 sites has ~ 0.5 FTE to keep system running
 - Go to great lengths to make sure everything is identical
- This is the direction the BaBar would like to take.

Conclusions

- BaBar has a lot of distributed computing power that could be exploited for the grid
- The requirements are somehow more severe than for LHC experiments.
- We are at a transition point in which we have to choose a direction or project to develop and drop the others.
- The effort of different developers must be organized and channeled in one direction
- In other words the left hand should know what the right is doing.