Remote Batch Analysis Submission with Globus

- Summarize experience with remote analysis on Tier-A Batch systems from a “client” institute

- Goal: submit Beta Analysis jobs in a unifom way
  - …and get results
- Based on

  EU-DataGrid testbed0 infrastructure (RAL & ccin2p3)

  Globus 1.1.3 tools +add-hoc scripts

Players:

Stephane Plaszczynski (physicist – LAL-Orsay)

Serge Du (comp. – LAL-Orsay)

The Use Case

» By Stephane (from Roger Barlow's suggestion)

– See http://babar-hn.slac.stanford.edu:5090/HyperNews/get/BaBarGrid/10.html

– An analysis to be performed:
  - BetaApp and myAnalysis.tcl
    - » built and tested with some BaBar release/platform
    - » Here: Linux2 analysis-11
  - remote Data are well known: xxx_data.tcl
    - – How? … he knows! (remote login and skimData,…)
– Submit on a Tier-A-Batch the N analysis
    - – Here, target = RAL ***OR*** ccin2p3
– Get the n-tuples back when ready

Scenarios

- ONE SINGLE shell-script executed on Tier-A batch system (globusrun)
- for each dataset.tcl to be analyzed:
  - Setup a BaBar-SRT workdir environment on the scratch area of the Batch Worker.
  - Copy BetaApp and myAnalysis.tcl
    - Directly from user's ClientMachine?
    - From a pre-loaded area on Tier-A user's cache?
  - Execute BetaApp with dataset.tcl as input
  - Send the n-tuple back to the user's ClientMachine
    - Store them in remote cache on Tier-A user's cache?

It works (but…)

- Previous scenario basically work
  - Between Orsay and ccin2p3, Stephane made a 300K events Objy analysis
- Due to file transfert unreliability, the simplest scenario was unusable for RAL
  - A user cache was necessary on RAL Tier-A
  - I could made simple analysis test on 10 events with the same script on ccin2p3 and RAL.
- Proof of principle there. True Analysis coming soon.
  - Stephane will be back next week.

File transferts reliability (1)

- Analysis loading (BetaApp)
  - Tier-A does Globus-url-copy from a GassServer started on ClientMachine:
    - OK between Orsay and ccin2p3
    - Unreliable between Orsay/ccin2p3 and RAL for BetaApp (20 Go, even if compressed to 5 Go)
  - Pre-loading of analysis into a user cache area is needed (now) for RAL:
    - afs copy from ClientMachine to Tier-A
    - bbftp (tested, not packaged)

File transferts reliability (2)

- Returning Results
  - The results stored in workdir will be destroyed when batch job ends.
  - Globus-url-copy may fail if the Gass-Server is dead on the ClientMachine…
  - => Store results in user cache area on Tier-A
- … need monitoring, recovering tools!
  - Some exists . Too rudimentary.

Implementation:” GanaTools “

- Various shell-scripts into a CVS package
  - Gana = Global/Grid/Globus ANAlysis
  - acronym may change, CVS urgently needed.
- Provide an uniform interface to :
  - submit analysis jobs on Tier-A : not too bad
  - monitor jobs and get results: not good.
- Very preliminary but:
  - catalog of working solutions for current testbed0 situation. (as we understand it now).
  - Basis for improvements and migration to testbed1/ DataGrid components

“GanaSession”

- Parameters of a G-Analysis session:
  - platform: Architecture and Release
  - cpu Time 3 (!! to be converted BQS/PBS . NYI)
  - executable: BetaApp (BetaApp.gz)
  - tcl file myAnalysis.tcl
  - user cache yes|true
  - data type bdbMicro | kanga
  - Boot file analboot2 | “”
    - defined now in GANA_WISHLIST.csh file
    - (very preliminary as stated before!)

Prepare GanaSession (preliminary)

- cd SomeWhere;
- copy BetaApp an myAnalysis.tcl there.
  - (should NOT be necessary, to be improved…)
- structure all your dataset.tcl to store the outputs,errors and *results* of each analysis:
  - Stream16Kanga/run1/on/Stream16Kanga_1.tcl
  - Stream16Kanga/run1/on/Stream16Kanga_2.tcl

Start GanaSession (1/2)

- cvs co GanaTools; source GanaTools/setup
- *gana_init* –site ral –session TagMix11

- Customize session parameters:
  - vi GANA_WISHLIST.csh
- *gana_setup*
- *gana_load* ## if user cache wanted
- *gana_build* Stream16Kanga/run1/on/Stream16Kanga_1.tcl

Start GanaSession (2/2)

- "*gana_build*" generates:
  - Gana_Stream16Kanga_1.csh, single shell-script to be executed on Tier-A:
    - Env. setting (srtpath, setboot) on batch worker
    - Loading of Exec and Tcl (from client or user cache)
    - Run Exec, with Stream16Kanga_1.tcl for input def.
  - Gana_Stream16Kanga_1.rsl:
    - Globusrun command file (input,output,error,exec,..)

Running a session

- globusrun –b –r csf.rl.ac.uk/jobmanager-pbs \
- -f Gana_Stream16Kanga_1.rsl

- This was for a single data.tcl,
- To be extended to the whole data set (easy)
- Basic monitoring tools exist
- No automatic recovery
  - This was a first trial.
  - Waiting fo EU-DataGrid deliverables.

What we learned:

- Discover problems with true use cases and find solutions:
  - Shared librairies:
    - BetaApp built with both Objy and Kanga access
    - Objy shared librairies not correctly defined at RAL
    - FIXED in *gana_build* :
      - » The generated shell-script level checks/redefined LD_LIBRARY_PATH
  - Different usernames for same guy:
    - I am “du” at ccin2p3 and “sdu” at RAL
    - *gana_setup* executes “whoami” and send back the result

If you want to try:

- Get an account at RAL and ccin2p3
- Get a DataGrid certificate on one site
  - …and ask the other site to accept it.
    - We got first from ccin2p3
    - David Smith got first from RAL
- cvs co GanaTools
  - And look at README which will be more up-to-date than that talk.

Last News

- Everyone can install a *Globus client-only* 2.0.0 at SLAC (Linux) and submit jobs to both Tier-A
  - Takes 2’ (maybe 5’)
- Work in progress : is it enough to do a complete “G-Analysis-like” session?
  - I could do some globusrun and get back the result.
  - To be continued..

Summary

- Providing a uniform access to remote batch analysis is not very difficult. (with Globus)
  - True interesting results may come out soon
  - …eg same analysis on Objy and Kanga data
- Various solutions have been packaged
  - Very preliminary. *More use cases to be tested*.
- More efforts for Reliability & Recovery
  - Waiting for EU-DataGrid deliverables.