egee

Enabling Grids for E-sciencE

Services Required for SC4 and Pilot WLCG Service

Markus Schulz
CERN

www.eu-egee.org

Information Society and Media

SOURCES

- **The experiments task forces**
  - https://uimon.cern.ch/twiki/bin/view/LCG/TaskForces

- **Flavia Donno's summary of open issues**
  - Including the comments/corretions of the BaselineServiceWorkGroup
  - https://uimon.cern.ch/twiki/bin/view/LCG/SummaryOpenIssuesTF

- **The TCG's draft for "LCG-gLite-Convergence"**
  - http://agenda.cern.ch/askArchive.php?base=agenda&categ=a057329&id=a057329/moreinfo

- **Summary of the FTS Developer Workshop**
  - http://agenda.cern.ch/askArchive.php?base=agenda&categ=a056842&id=a056842/minutes

Enabling Grids for E-sciencE

- **Data Base Project Milestones as discussed in the LCG-MB**
  - https://uimon.cern.ch/twiki/pub/LCG/MbMeetingsMinutes/LCG_Management_Board_2005_12_06.htm

- **LCG-2_7_0 Status**
  - https://uimon.cern.ch/twiki/bin/view/LCG/LCG-2_7_0

- **Michael Ernst: Status of Data Management Services**
  - http://agenda.cern.ch/fullAgenda.php?ida=a056628

Enabling Grids for E-sciencE

- **Last release of the LCG-2_7_0 flavour**

- **Contains already some gLite components**
  - VOMS, R-GMA, FTS

- **Checkpoint release**
  - Summarizes latest updates (FTS, R-GMA, DPM, LFC, VO-BOX..)
    - Releases implementing fine grained access control for DPM, LFC
    - LFC performance improvements
    - Configuration scripts and documentation
    - Improved client tools (jobMonitoring, GridPeeK)
    - Support for new releases of the batch systems

- **Target release date for deployment testing 20th January**
  - Public release end of January

Enabling Grids for E-sciencE

- **First release of the converged middleware stack**

- **Contains LCG-2_7_0 components (+upgrades)**
- **Contains additional gLite-1.5.0 components**
  - gLite Work Load Management (bulk submission,….)
  - DGAS (real-time accounting)

- **All components already present either in LCG-2-7-0 or gLite-1.5.0**

- **Preproduction service keeps additional gLite-1.5.0 components accessible until they have been integrated in the following releases**

Enabling Grids for E-sciencE

- **TCG proposed timeline:**

- **Integration: During January**
  - On component level (separate build systems)
  - Merging the service configuration tools
    - Taking into account outcome of the site manager's survey

- **Testing and Certification: During February**
  - Preproduction service as deployment test
  - Based on existing test suites
    - Very little time for merging the test frames

- **Public Release: End of February**
  - Deploying WLM in parallel on large sites
  - Small sites can afford just on gatekeeper

Enabling Grids for E-sciencE

- **Comments:**
- **This timeline is extremely aggressive**
  - Interference between LCG-2_7_0 and gLite-3.0.0
  - January and February are "short months"
    - We can't ignore CERN's Christmas break and CHEP

- **But:**
- **gLite-3.0.0 and LCG-2_7_0**
  - Components have been in a release already
  - Should work as they are
    - coexistence has been tested on the preproduction service

Enabling Grids for E-sciencE

- **TCG drives:**
  - Integration of additional packages from gLite-1.5.0
  - Adaptation of components to meet users needs
  - Introduction of missing functionality

- **Input: Task Forces, BaseLineServices WorkGroup, ….**

- **Based on Dirk Düllmann's report to the LCG-MB**

Proposed 2006 Setup Schedule

- November: h/w setup defined and plan approved by GDB

- January: h/w acceptance tests, RAC setup, experiment s/w integrates main sub-dectors

- Begin February: DB readiness workshop

- February: Apps and streams setup at Tier 0

- March: Tier 1 service starts

- End May: Service review -> h/w defined for full production

- September: Full LCG database service in place

LCG 3D Production Phase   Dirk Duellmann   4

egee

Test Status : 3D testbed

- Replication test progressing well
  - Offline->T1:
    - COOL ATLAS : Stefan Stonjek (CERN, RAL, Oxford)
    - COOL LHCb : Marco Clemencic (CERN, RAL, GridKA?)
    - FroNtier CMS : Lee Lueking (CERN and several t1/t2 sites)
    - ARDA AMGA: Birger Koblitz (CERN->CERN)
    - AMI : Solveig Albrandt (IN2P3->CERN - setting up)
  - Online->offline:
    - CMS Conditions : Saima Iqbal (functional testing)
    - ATLAS : h/w allocated, preparing test plan
    - LHCb : planning with LHCb online
- Coordination during weekly 3D meetings

LCG 3D Production Phase   Dirk Duellmann

Production Software Status

- CORAL public release done
  - Contains DB , monitoring, connection retry and service lookup
- POOL and COOL release on CORAL expected early January (validation builds soon)
  - Includes POOL/FroNtier production plug-in
  - Target for SC4 production
- Experiment condition models now integrating major sub-detectors
  - CMS POOL/FroNtier proof-of-concept test successful

LCG 3D Production Phase   Dirk Duellmann   6

Proposed Tier 1 Hardware Setup

- Propose to setup for first 6 month
  - 2/3 dual-cpu database nodes with 2GB or [more]
    - Setup as RAC cluster (preferably) per exper[iment]
    - ATLAS: 3 nodes with 300GB storage (after [mirroring])
    - LHCb: 2 nodes with 100GB storage (after mir[roring])
    - Shared storage (eg FibreChannel) proposed
  - 2-3 dual-cpu Squid nodes with 1GB or more
    - Squid s/w packaged by CMS will be provided
    - 100GB storage per node
    - Need to clarify service responsibility (DB or [...])
- Target s/w release: Oracle 10gR2
  - RedHat Enterprise Server to insure Oracle [...]

LCG 3D Production Phase   Dirk Duellmann

Production Service Setup Status

- Database server h/w ordered / already allocated at most sites
  - CERN, CNAF, BNL, GridKA, RAL, IN2P3
    - Not always the full requested service size
  - Follow up during weekly 3D meetings
- Squid installation/monitoring coordinated by CMS and progressing well
  - FNAL, CERN, Bari, UCSD, Purdue, RAL, PIC, CIEMAT, DESY, IN2P3

LCG 3D Production Phase   Dirk Duellmann   5

Enabling Grids for E-sciencE

Open Issues

- Squid support at tier 1
  - Tier 1 dba team or sysadmin team?
- Application server support at tier 0
  - FroNtier and ATLAS AMI
  - IT-DES provides J2EE hosting service
    - Is SLA: "medium-sized, non-critical apps " suitable?
- Oracle streams production setup for Tier 0
  - Goal: decoupling of production DB from tier 1/network problems
  - Test of alternative configs being prepared with Oracle
- Oracle licenses & support for Tier 1

LCG 3D Production Phase   Dirk Duellmann   7

Enabling Grids for E-sciencE

- **For all Services:**

- **Better:**

- # Availability

- # Reliability

- # Performance

eGee

Enabling Grids for E-sciencE

- **Storage Management: See Michael Ernst**
- **Data Management:**
  - FTS
    - Transfers between any two sites of the grid (central entry point)
    - Better integration with SRM
    - Priorities, reshuffling of queues
    - Plug-ins for interaction with experiment specific components
    - FPS with higher level operations (routing, replication,..)
  - File Catalogue(s)
    - Global, local and read only local copies
    - LFC extensions:
      - replica attributes:
        - *tape, tape wth cache, pinned cache, disk,   archived tape, etc.*
    - Performance!!!!! (especially for read access)
  - Tools
    - POSIX file access based on LFNs
      - *"Best replica"*
      - *Multiple LFC instances for reliability*
    - Fast, reliable file/catalogue entry removal
    - Reliable registration service
    - Staging service

Enabling Grids for E-sciencE

- **Workload Management**
  - Most related to performance
    - Redundant services
    - Flexible load balancing/failover mechanisms (user config.)
    - Better WLM services discovery (information system)
    - Many jobs 10**6/day
    - Sandbox caching
    - Fast turnaround for short jobs
    - Priorities based on VOMS groups/roles
      - *With/without central queue*
  - Interactive access to running jobs
  - Direct access to CEs
  - Changing the identity (user) of a running job (agents)

Enabling Grids for E-sciencE

- **Information System**
  - Publishing experiment specific information
  - Stable and fast access to most common data
    - Static/dynamic split
    - Local cache
- **Security**
  - VOMS
    - User metadata
  - Automatic service proxy renewal
  - Automatic Kerberos credential renewal
- **Accounting**
  - site, user and group granularity
  - Aggregate by special job tags (MC, Reconstruction,…)
- **Monitoring**
  - Transfer traffic, Ses, RB LB access,……..
- **VO-BOX**
- **………….and…….and…..(Have a look at the links)**

Enabling Grids for E-sciencE

- **Many open issues**
  - Task forces, BSWG and TCG "collect" them
  - Not possible to address all until start of SC4
    - Quite some are already underway

- **Prioritization needed to stay focussed**
  - We need an iterative approach
    - Priorities might change when "cost" becomes clear

- **Should not forget that additional work is needed for:**
  - Improving operations
  - Finding solutions that are acceptable by the sites
  - Support of components required by non HEP VOs