Report from Working Group 2
"Resources" WG

Vicky White
U.S. Regional Representative

Mandate (in brief)

1. Recommend how resource allocations process should be implemented. *(policies, fair allocations, funding agency guidelines)*
2. Determine common metrics for allocating and accounting usage of various resources
3. Recommend services and resources to be provided *by each site*
4. Boundary of *site* and LCG responsibilities
   Recommend responsibilities for operation of common services
5. Recommend an overall rollout schedule

Mandate (in better order)

(6) Recommend an overall rollout schedule

(5) Recommend responsibilities for operation of common services

(4) Boundary of *site* and LCG responsibilities

(3) Recommend services and resources to be provided *by each site*

(2) Determine common metrics for allocating and accounting usage of various resources

(1) Recommend how resource allocations process should be implemented. *(policies, fair allocations, funding agency guidelines)*

(6) Overall rollout schedule

- Started on this last item – to get concrete and start the discussion. Document produced by Ian Bird
  - Based on Alberto's resources table
  - Suggests a draft timetable for bringing in sites
  - Immediately brings up some questions and issues

(6) Overall rollout strategy and schedule (Ian Bird – proposal)

- Incremental addition of resources to LCG-1
- Start with Cluster at CERN
- Add Tier 1 regional centers one at a time – 1 per month until June
  - CERN fabric Pilot 1 (Feb 2003)
  - CERN fabric Pilot 2 (mid March 2003)
  - Add CNAF (All expts) 28-Feb-03
  - Add FNAL(CMS) 30-Mar-03
  - Add Tokyo (ATLAS) 15-Apr-03
  - Add Karlsruhe (All) 30-Apr-03
  - Add IN2P3 (All) 7-May-03
  - Add RAL (all) 15-May-03
  - Add BNL (ATLAS) 21-May-03

(6) Overall rollout strategy and schedule (Ian – proposal)

- This gets to milestone of “First Global Initial Availability” by July 2003
- Then the proposal adds many other centers in July and August including Nikhef, Taiwan, INFN Tier 2, UK Tier 2, Ohio, Russia Tier 2, California and Florida Tier 2s, GSI Tier 2 and others
- Proposal states “July-October integrate LXBATCH into CERN cluster” ?
- LCG-1 Full Service start – November 2003

Issues we need to clarify for (6) (and the plan for getting this clarification)

- What is LCG-1?
  - Our WG to discuss further at next meeting (today) and see if the current (updated?) definition from WG3 does meet our needs

Issues we need to clarify for (6) (and the plan for getting this clarification)

- Is center/site really the unit that "joins" LCG-1? Is this orthogonal to emerging Experiment-specific testbed grids?
  - Can the aggregate of several sites provide the guaranteed regional resource contribution to GDB?
  - If Regional/Experiment Grids join LCG-1 how would it be different to each site joining LCG-1?
  - Can a "site" be considered a degenerate Grid?
  - Is LCG-1 a collection of Grids or a collection of Sites?
  - Needs discussion here in GDB
  - Our WG to poll experiments and to learn about their internal plans for experiment-specific integration and test Grids and their schedules.

Proposed Initial Deployment Schedule

Date	Centre
Feb 1	CERN (Pilot 1)
Feb 28	RAL, CNAF
Mar 15	CERN (Pilot 2)
Mar 30	FNAL
Apr 15	Tokyo
Apr 30	Karlsruhe, IN2P3
May 7	BNL
May 15	Nikhef
May 21	Taiwan

Issues we need to clarify for (6) (and the plan for getting this clarification)

- Need to discuss contents of Alberto's resource table with each Regional representative and Experiment/Region person to
  - Ensure that distinction between resources available for LHC and resources dedicated to LCG-1 really has been understood
  - To add various attributes for the center and for the resources such as
    - Available all the time or on request
    - Minimum guaranteed available
    - Same resources switching between Experiment non-LCG use and LCG-1?
    - Allocation % by experiment if resource full conflict – how implemented (administratively or by batch queues?)
    - Opportunistic max availability
    - Restriction on which experiments can use
    - … and several other detailed parameters

Issues we need to clarify for (6) (and the plan for getting this clarification)

- Does staged addition of Tier 2 centers starting only after July 2003 hurt because
  - Allocations process in region may have been triggered – need to use resource if available – sooner rather than later ?
  - Delay in incorporating could allow non-LCG1-compatible use of resources to become difficult to change ?
  - Some are ready to participate and have time/energy to do so
  - Experiment specific test grids will incorporate some of these sites sooner – again risk of incompatibility – limited ability to cope with small staffing levels
- What is the GDB's opinion on this?
- Also ask each center/experiment

(5) Recommend responsibilities for operation of common services

- Common service implies shared by all in LCG-1
  - Does this mean you need only one such service for LCG-1, in principle, but might want more for robustness?
  - Do current Grid middleware products even allow for such replication of a “singleton” service for robustness/failover purposes?
  - Is WG1 going to define the list of common services that go along with the recommended products?
  - Is WG3 going to define a list of security and VO management services that must be operated?
  - Overlap with WG4? Do they think this is “Operations” ?
  - Grid Operations Center? Single center?
  - Call center and helpdesk? Single center?
  - Our WG will make some recommendations – may not be currently implementable (for LCG-1)

(4) Boundary of *site* and LCG responsibilities

- Is the word project missing here after LCG?
- Is this an operational question – responsibility for making it all work? Overlap with WG4?
- If LCG is a collaboration of sites, experiments, CERN – question is one of "agreements" or MOUs on who will do what to operate LCG-1
- Or is this some other responsibility?

(3) Recommend services and resources to be provided *by each site*

- WG2 Plan already discussed for item (6) will update resource table with fine grained detail and attributes and will allow such a recommendation to be formulated.
- Clarification of what is LCG-1 and what "joins" LCG-1 may modify the phrase "by each site"

(2) Determine common metrics for allocating and accounting usage of various resources

From Ian's draft document (lots of discussion needed here)

1. CPU
   a. Specint 2000 and number of processors available/used
   b. Fraction of capacity delivered – graph over time (by week)
2. Disk
   1. TB, no. disks available/used (cache for storage system, permanent, scratch?)
   2. Network bandwidth to disk
3. Tape
   1. TB available/used (what about total bandwidth? Caching?)
4. FTE (are these are valid metrics?)
   1. Available for support (services)
   2. Available for user support
5. WAN network bandwidth
   1. Available (for whom?)
   2. Used (??)

Issues we seek to clarify for (2) (and the plan for getting this clarification)

- What metrics are actually in use and available for use at various centers
  - WG2 will request information from each center on this in table/questionnaire format

(1) Recommend how resource allocations process should be implemented.

- *Recommend policies?*
- *Fair allocations*
- *Consistency with funding agency guidelines*

Issues we seek to clarify for (1) (and the plan for getting this clarification)

- Procedures for allocating resources between experiments in each of the regions, and at CERN.
- Model of how all those who request, fund and provide resources to the LHC experiments interact.
  - WG2 wants to hear about CERN Cocotime process
  - WG2 wants to hear about process in each Region and center and how it is related to funding request process
  - GDB's opinion of whether a global Cocotime-like process to schedule resources across all 4 experiments makes any sense?
  - Dynamic allocation/re-allocation of resources by resource broker – how? (administratively?, enough features in grid software?)

Summary of Dec/Jan Plan for WG2

- December 9 – Get answers/clarification from full GDB
- December 9 - Meeting of WG2 to
  - Discuss LCG-1 definition and WG4 document
  - Formulate table of attributes for resources
  - Formulate questionnaire on metrics – send out
- December 10-11 – Discussions with Experiments and Centers
  - on resource table and model of resource funding and allocation
  - On plans for experiment-specific grid testbeds
- December ? - Receive Lists of Common Services from WG1 and WG3
- December 14 – Summarize resources and model – send out to WG and GDB
- December 17 or 18 – Meeting of WG2 to
  - Make table of services to be filled out – send out Dec 18 or 19
  - Discuss and analyze metrics responses
  - Update outline of report, discuss, and assign work on sections
- January 8 – 1st draft of full report – circulate for comments to GDB
- January 18 – 2nd draft of report – circulate further
- February – more work will be needed on metrics and allocations process

Word of Warning

- Keep hearing that this is for LCG-1 only – short term issues and decisions
  - Not sure that makes sense to answer all the questions for LCG-1 or to address policy and metrics issues.
  - May leave some issues for a future WG if it is clear that the functionality provided by current grid “middleware” and its state of integration with the center’s information is so primitive that no metrics are possible and no allocation, other than administrative, is possible
  - This is a dangerous thing to do – to NOT discuss the fundamental models, policies and procedures early on – even if the tools and capabilities are not there yet.