


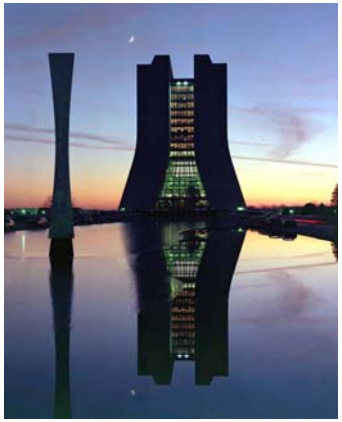


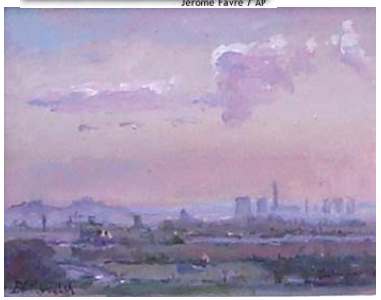




SC4 Planning

Planning for the Initial LCG Service

Jamie.Shiers@cern.ch

September 2005

Introduction

- The LCG Service Challenges are about preparing, hardening and delivering the production LHC Computing Environment
- The date for delivery of the production LHC Computing Environment is 30 September 2006
- Production Services are required as from 1 September 2005 (service phase of Service Challenge 3) and 1 May 2006 (service phase of Service Challenge 4)
- This is not an exercise.

pp / AA data rates (equal split)

Centre	ALICE	ATLAS	CMS	LHCb	Rate into T1 (pp)	Rate into T1 (AA)
ASCC, Taipei	0	1	1	0	**118.7**	**28.2**
CNAF, Italy	1	1	1	1	**205.0**	**97.2**
PIC, Spain	0	1	1	1	**179.0**	**28.2**
IN2P3, Lyon	1	1	1	1	**205.0**	**97.2**
GridKA, Germany	1	1	1	1	**205.0**	**97.2**
RAL, UK	1	1	1	1	**205.0**	**97.2**
BNL, USA	0	1	0	0	**152.2 (all ESD)**	**11.3**
FNAL, USA	0	0	1	0	**46.5 (expect more)**	**16.9**
TRIUMF, Canada	0	1	0	0	**72.2**	**11.3**
NIKHEF/SARA, NL	1	1	0	1	**158.5**	**80.3**
Nordic Data Grid Facility	1	1	0	0	**98.2**	**80.3**
Totals	6	10	7	6		

N.B. these calculations assume equal split as in Computing Model documents. It is clear that this is not the 'final' answer…

pp data rates – 'weighted'

Centre	ALICE	ATLAS	CMS	LHCb	Rate into T1 (pp)
ASCC, Taipei	-	8%	10%	-	**100**
CNAF, Italy	7%	7%	13%	11%	**200**
PIC, Spain	-	5%	5%	6.5%	**100**
IN2P3, Lyon	9%	13%	10%	27%	**200**
GridKA, Germany	?	?	?	?	**200**
RAL, UK	-	7%	3%	15%	**150**
BNL, USA	-	22%	-	-	**200**
FNAL, USA	-	-	28%	-	**200**
TRIUMF, Canada	-	4%	-	-	**50**
NIKHEF/SARA, NL	3%	13%	-	23%	**150**
Nordic Data Grid Facility	6%	6%	-	-	**50**
Totals	-	-	-	-	**1,600**

Full AOD & TAG to all T1s (probably not in early days)

Data Rates

- 2 years before data taking can transfer from SRM at CERN to DPM at T1 at ~target data rate
- Stably, reliably, days on end
- Need to do this to all T1s at target data rates to tape
- Plus factor 2 for backlogs / peaks
- Need to have fully debugged recovery procedures
- Data flows from re-processing need to be discussed
  - New ESD copied back to CERN (and to another T1 for ATLAS)
  - AOD and TAG copied to other T1s, T0, T2s (subset for AOD?)

Services at CERN

- Building on 'standard service model'

1. First level support: operations team
   - Box-level monitoring, reboot, alarms, procedures etc

2. Second level support team: Grid Deployment group
   - Alerted by operators and/or alarms (and/or production managers…)
   - Follow 'smoke-tests' for applications
   - Identify appropriate 3rd level support team to call
   - Responsible for maintaining and improving procedures
   - Two people per week: complementary to Service Manager on Duty
   - Provide daily report to SC meeting (09:00); interact with experiments
   - Members: IT-GD-EIS, IT-GD-SC (including me)
   - Phone numbers: 164111; 164222

3. Third level support teams: by service
   - Notified by **2nd level** and / or through operators (by agreement)
   - Should be called (very) rarely… **(Definition of a service?)**

Service Challenge 4 – SC4

- SC4 starts April 2006
- SC4 ends with the deployment of the **FULL PRODUCTION SERVICE**

➢ **Deadline for component (production) delivery: end January 2006**

- Adds further complexity over SC3 – 'extra dimensions'
  - Additional components and services, e.g. COOL and other DB-related applications
  - Analysis Use Cases
  - SRM 2.1 features required by LHC experiments **← have to monitor progress!**
  - MostTier2s, all Tier1s at full service level
  - Anything that dropped off list for SC3…
  - ➢ **Services oriented at analysis & end-user**
  - What implications for the sites?

- Analysis farms:
  - Batch-like analysis at some sites (no major impact on sites)
  - Large-scale parallel interactive analysis farms and major sites
  - (100 PCs + 10TB storage) x N

- User community:
  - No longer small (<5) team of production users
  - 20-30 work groups of 15-25 people
  - Large (100s – 1000s) numbers of users worldwide

Analysis Use Cases (HEPCAL II)

- Production Analysis (PA)
  - **Goals in Context** *Create AOD/TAG data from input for physics analysis groups*
  - **Actors** *Experiment production manager*
  - **Triggers** *Need input for "individual" analysis*
- (Sub-)Group Level Analysis (GLA)
  - **Goals in Context** *Refine AOD/TAG data from a previous analysis step*
  - **Actors** *Analysis-group production manager*
  - **Triggers** *Need input for refined "individual" analysis*
- End User Analysis (EA)
  - **Goals in Context** *Find "the" physics signal*
  - **Actors** *End User*
  - **Triggers** *Publish data and get the Nobel Prize :-)*

SC4 Timeline

- Now - September: clarification of SC4 Use Cases, components, requirements, services etc.
- October 2005: SRM 2.1 testing starts; FTS/MySQL; target for post-SC3 services
- January 31st 2006: basic components delivered and in place
  - This is not the date the s/w is released – it is the date production services are ready
- February / March: integration testing
- February: SC4 planning workshop at CHEP (w/e before)
- March 31st 2006: integration testing successfully completed
- April 2006: throughput tests
- May 1st 2006: Service Phase starts (note compressed schedule!)
- September 30th 2006: Initial LHC Service in stable operation
- Summer 2007: first LHC event data

SC4 Use Cases (?)

Not covered so far in Service Challenges:

- T0 recording to tape (and then out)
- Reprocessing at T1s
- Calibrations & distribution of calibration data
- HEPCAL II Use Cases
- Individual (mini-) productions (if / as allowed)

Additional services to be included:

- Full VOMS integration
- COOL, other AA services, experiment-specific services (e.g. ATLAS HVS)
- PROOF? xrootd? (analysis services in general…)
- Testing of next generation IBM and STK tape drives

Remaining Challenges

- Bring core services up to robust 24 x 7 standard required
- Bring remaining Tier2 centres into the process
- Identify the additional Use Cases and functionality for SC4
- Build a cohesive service out of distributed community
- Clarity; simplicity; ease-of-use; functionality

➢ **Getting the (stable) data rates up to the target**