

# CMS report on SC3

Short Introduction and general remarks – LATBauerdick

Detailed report on Tier-1 results and CNAF – Daniele Bonacorsi



# CMS in SC3 — Introduction

- ◆ SC3 major driver of CMS Integration work
- ◆ main goals:
  - ◆ integration test of next production-level system
  - ◆ establish the major use scenario of data transfer and data serving
    - ◆ test infrastructure for the realistic end-to-end use cases
    - ◆ in particular T0->T1->T2, with tape-tape, tape-in tape-out etc
    - ◆ Including testing the workload management components: the resource broker and computing elements
    - ◆ Bulk data processing mode of operation
  - ◆ important CMS goals regarding Data Management infrastructure
- ◆ major participation from all CMS T1s and some 10 CMS T2s
- ◆ Crucial step toward SC4, CMS DC06 and LHC
  - ◆ need to come out of SC3 with functional system with room to scale



# CMS SC3 Planning

Preparation	Throughput	Setup	Service I	Service II
June	July	August	September, October	November, December
<p><b>June 17:</b> PhEDEx ready, defined site configuration and fallbacks, server + other technical details determined.</p> <p><b>June 22:</b> Tier 0 buffer pre-loaded, last time for test transfers to start, full chain to Tier 1 tape, Tier 2 disk.</p> <p><b>June 29:</b> Logging, monitoring made available.</p>	<p><b>July 1:</b> Start disk-to-disk transfers, site tuning.</p> <p><b>July 11:</b> CMS sites to start PhEDEx transfers at latest.</p> <p><b>July 20:</b> Disk-to-disk phase ends. Report to GDB.</p> <p><b>July 21–25:</b> Disk-to-tape transfers phase.</p> <p><b>July 25–31:</b> Tier-2 to Tier-1 transfers phase.</p>	<p><b>Aug 1:</b> Gateway system installed with PhEDEx, PubDB, output file harvesting. Set up automatic software installs and UI for job submission.</p> <p><b>Aug 31:</b> Tested all the above.</p>	<p><b>Sep 1–18:</b> Seed data to Tier-1s and -2s. Skim and MC jobs tested.</p> <p><b>Sep 19 – Oct 2:</b> Seed data. Tier-1/2s processing data, one week sustained at each site. Skim jobs at Tier-1s, MC jobs at Tier-2s.</p> <p><b>Oct:</b> Phase II, FTS tests. Simulate Tier-1 failover. Retune, deploy.</p>	<p><b>Nov 1–13:</b> Deploy DBS, DLS. Test transfers among all Tier-1s. Test file harvesting.</p> <p><b>Nov 14–27:</b> Global service challenge goals: continuous file transfers with local data serving, shipping results to all destinations.</p> <p><b>Nov 28–Dec 11:</b> Reserve.</p> <p><b>Dec 15:</b> Deploy.</p>



# Running Jobs in SC3

Sites	Purpose	Job	Submission	Via
Tier-1s	Skimming	cloneAllDigis	CRAB @ CERN	SC3 resource broker
	Input load	Ex*Statistics	CRAB @ CERN	SC3 resource broker
LCG Tier-2s	MC	Min-bias	McRunjob @ Imperial	SC3 resource broker
	Input load	Ex*Statistics	CRAB @ CERN	SC3 resource broker
OSG Tier-2s	MC	Min-bias	McRunjob @ MOP	OSG Condor
	Input load	Ex*Statistics	CRAB @ FNAL	OSG Condor



# CMS SC3 State as of last week

- ◆ Phase I closed
  - ◆ Impressive amount of progress at many sites in recent weeks, but ...
  - ◆ For a variety of reasons we are still far from running the end-to-end scenario
  - ◆ Have been switching to targeted test schedule for each area:
    - ◆ transfers, publishing, job submission and monitoring, data access, monte-carlo jobs, etc.
- ◆ Issues
  - ◆ Transfers from CERN are not yet working properly, and difficulties elsewhere as well
  - ◆ CMS Software (ORCA 8.7.5) got there late
  - ◆ Job submission so slow that quite a bit of wrapper script work is required to manage the whole process at large scale; was late
  - ◆ CMS Monitoring dashboard is not yet there
  - ◆ Publishing data still a major struggle at many sites – CMS needs to fix until November



# CMS SC3 Conclusions So Far

- ◆ After “throughput phase”, first 2wks “service phase” completed
- ◆ Substantial test of end-to-end computing system
  - ◆ feeding back input into computing technical program, s/w project
- ◆ Many failures of underlying components and systems
  - ◆ difficult to stay on plan as we use fallback solutions
  - ◆ “trivial” bugs are being discovered very late → integration program
  - ◆ have been and will be continue CMS-specific tests on production systems while new SC3 systems being debugged -- e.g. FTS, Cstor2
- ◆ Result is already significant increase in real, tested services offered to CMS physicists
  - ◆ 7 Tier-1s, 14 Tier-2s to offer capacity to receive CMS data, jobs
  - ◆ many new sites making outstanding effort putting it all together
  - ◆ other sites outside SC3 beginning to establish themselves
- ◆ Continue the work beyond scheduled 2 wks to prepare for final phase in November