LCG/EGEE CIC Meeting

"SC3 Operations "

James Casey, IT-GD, CERN

Cosener's House, Abingdon, 5th September 2005

Summary

- LCG Service Challenges
  - Aims and timescales

- Extra grid services in SC3
  - FTS
    - Services at T0, T1, clients at T0, T1, T2
  - LFC
    - Central catalogues + local catalogues (VO preference)
  - Dedicated SRM SEs (temp.)
- Support and Intervention Procedures

- How to move a service into the CIC
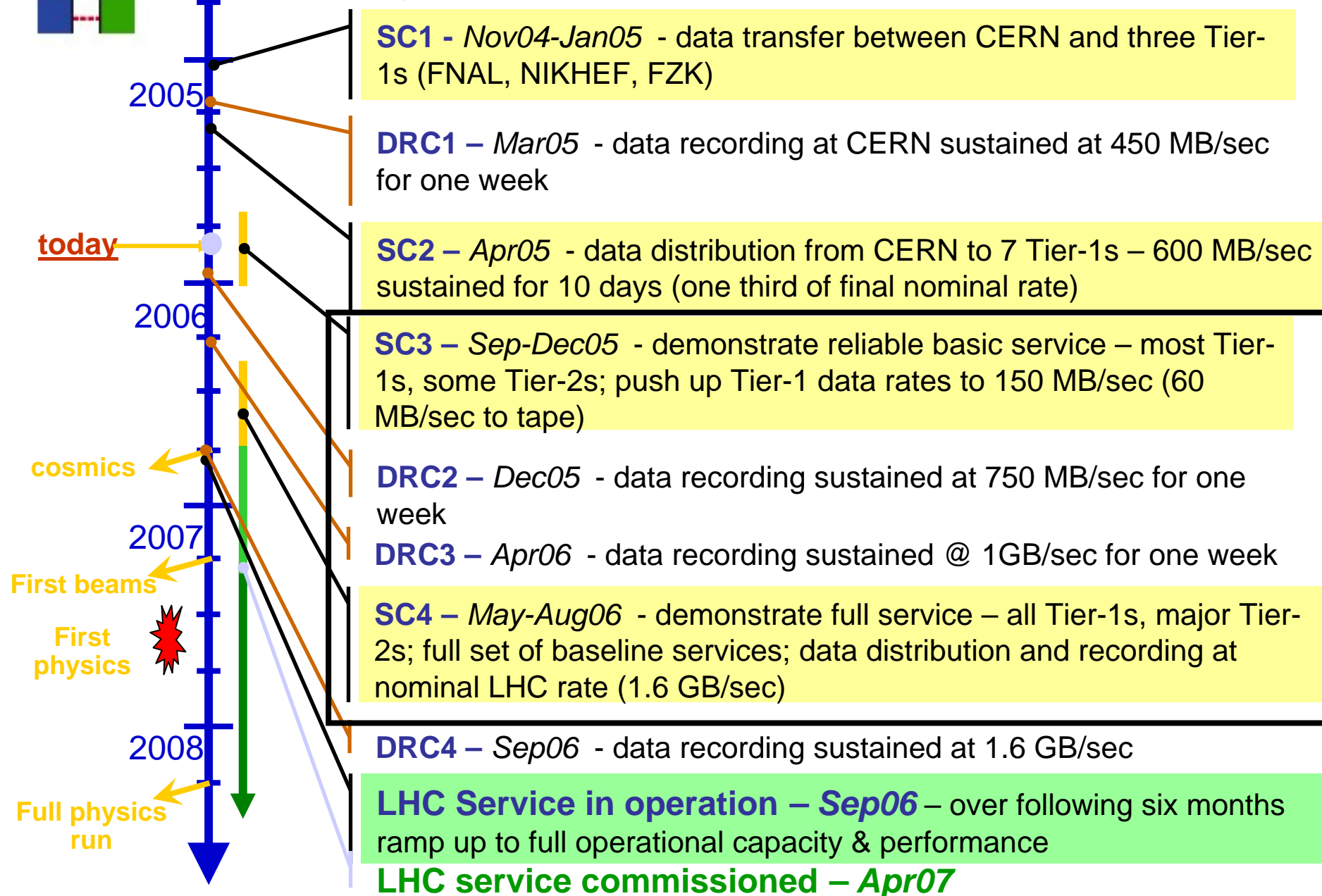 - Towards a general procedure

LCG Service Challenges

- Purpose of LCG Service Challenges
  - Get the essential grid services
    - storage, networks, computing, monitoring
    - ramped up to target levels that match LCG's requirements
      - reliability, availability, scalability, end-to-end performance
  - Trigger/encourage the Tier1 & large Tier2 planning
    - move towards real resource planning
    - based on realistic usage patterns (hardware, support)
  - Understand what it takes to operate a real grid service
    - run for days/weeks at a time
    - providing a defined amount of resources
- NB: This is focussed on Tier 0 – Tier 1/large Tier 2
  - Data management, batch production and analysis

Building the Service

LCG

SC1 - *Nov04-Jan05* - data transfer between CERN and three Tier-1s (FNAL, NIKHEF, FZK)

2005

DRC1 – *Mar05* - data recording at CERN sustained at 450 MB/sec for one week

today

SC2 – *Apr05* - data distribution from CERN to 7 Tier-1s – 600 MB/sec sustained for 10 days (one third of final nominal rate)

2006

SC3 – *Sep-Dec05* - demonstrate reliable basic service – most Tier-1s, some Tier-2s; push up Tier-1 data rates to 150 MB/sec (60 MB/sec to tape)

cosmics

DRC2 – *Dec05* - data recording sustained at 750 MB/sec for one week

2007

DRC3 – *Apr06* - data recording sustained @ 1GB/sec for one week

First beams

First physics

SC4 – *May-Aug06* - demonstrate full service – all Tier-1s, major Tier-2s; full set of baseline services; data distribution and recording at nominal LHC rate (1.6 GB/sec)

2008

DRC4 – *Sep06* - data recording sustained at 1.6 GB/sec

Full physics run

LHC Service in operation – *Sep06* – over following six months ramp up to full operational capacity & performance

LHC service commissioned – *Apr07*

SC3 – Future Schedule

- Service Schedule shown below
- On-going work with experiments to:
  - Obtain precise resource requirements by site
    - CPU, disk, tape, inter-site bandwidth
    - LHCb numbers already available…
- Basic goals of experiments
  - Try, test then stress-test core (DM) services
  - By exercising key offline production Use Cases

Sep	Sep	Oct	Oct	Nov	Nov	Dec	Dec
ALICE	ALICE						
				ATLAS	ATLAS		
	CMS	CMS			CMS	CMS	
		LHCb	LHCb				

SC4 Timeline

- October 2005: SRM 2.1 testing starts; FTS/MySQL; target for post-SC3 services

- January 31st 2006: basic components delivered and in place

- 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

Grid Services

- We added new services to the standard LCG stack
  - LCG File Catalog (LFC)
    - This is now used instead of the RLS by many VOs in LCG-2
  - SRM SEs at all Service Challenge Sites
    - Mostly dCache and LCG DPM
    - Start of the move away from the "classic" SE
  - gLite File Transfer Service (FTS)
    - First new service from gLite to be added to LCG-2
- Focus on the FTS...

gLite FTS

- FTS – first component from gLite added into LCG-2
  - Not fully integrated into the stack
    - Installation via gLite installer, not yaim
    - No integration with lcg_util/GFAL
    - No BDII integration (pending)
  - For use by VO Data Movement frameworks
    - (e.g. Don Quixote, Phedex, …) not by users
    - We don't expect a user to do on a WN 'glite-transfer-submit XXX'
  - Currently FPS is not used since it only interfaces with gLite FireMan, but we will have a FPS version compatible with the LFC in the near future

Operational support in SC3

- CERN built a support team for SC3
  - First level support by normal site sysadmin procedures
    - An additional SC contact email per Tier-1 was provided
  - Second level support handled at CERN
    - Consists of monitoring all central SC services
    - Co-coordinating resource usage with the experiments
  - Third Level support handled by software development teams
    - gLite JRA1-DM for FTS
    - Glite JRA1-UK for R-GMA
    - CERN IT-GD for LCG/DPM
  - Tier-2 support handled through Tier-1 sites
  - Information passed via LCG Twiki at CERN
    - http://uimon.cern.ch/twiki/bin/view/LCG/LCGServiceChallenges

Procedures - 1ˢᵗ Level

- All Level Three support teams provided procedures
  - For first level support
    - How to detect if service is running
    - How to restart service if it is down
    - How to contact second level support and what to report

- Normally the operator sees the problem first through their monitoring
  - They can contact 2ⁿᵈ level support via phone or email (sms)
  - We see very few calls from operator level support
   - The automatic restart procedures work well

Procedures – 2nd Level

- For second level support
    - 3rd level experts provide smoke test procedures to isolate the problem to that component
        - Tries to remove network, database causes
        - Simple steps using the log files and client tools to diagnose in more detail what is wrong
        - Procedures to fix common problems
            - CA certs expiring
            - Rogue client needs blocked to return service level
            - ...
        - How (and when) to contact 3rd level support
            - Some teams provide 24x7
            - some provide working hours "best effort"
    - They should provide a guarantee compatible with the LCG MOU for response time

Monitoring for FTS

- Currently no hourly/daily tests
  - But we data mine the logs on a daily basis to measure
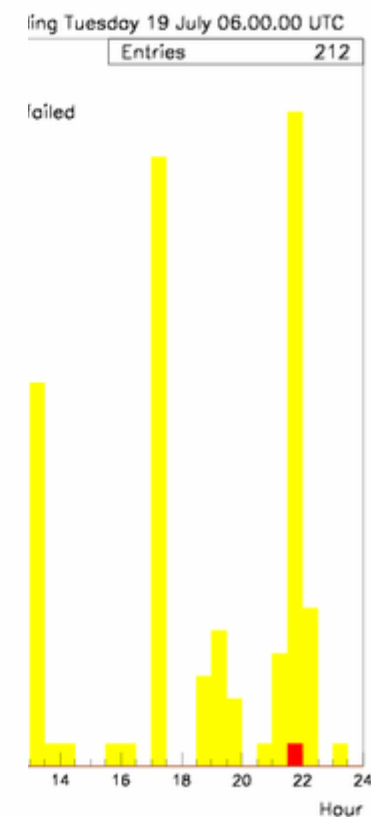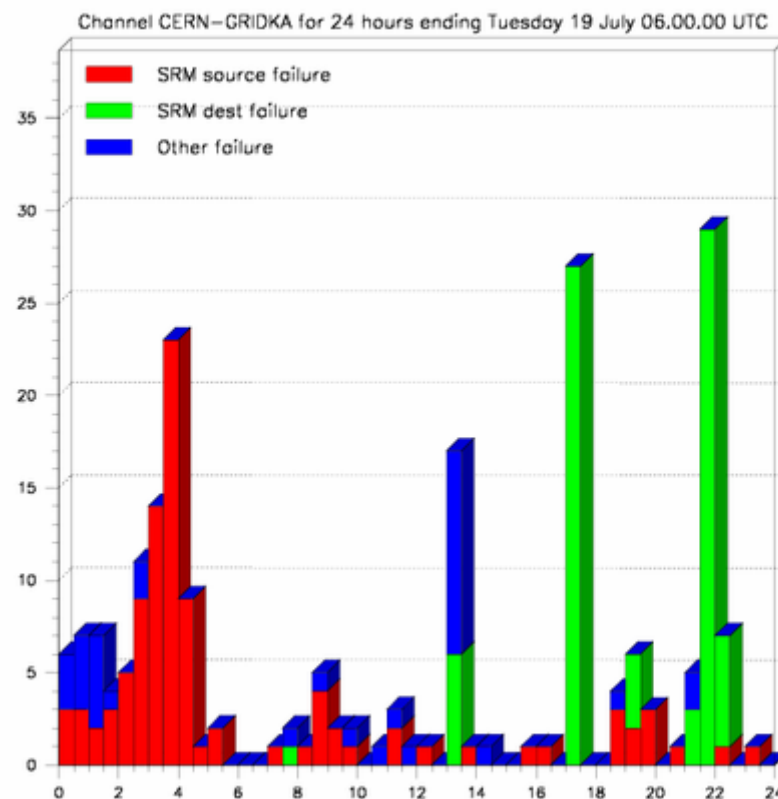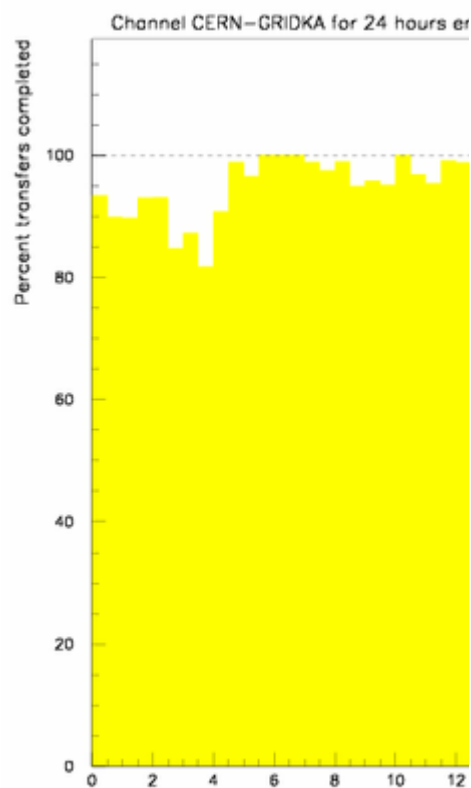
CIC Specifics ???

- What should be provided (and by who) to put a service under CIC control
  - How to monitor service …

  - How to contact responsibles…

  - Criticality and scope of service problems
    - Local or global effect
    - Stops all jobs/stops all new jobs/not much…

  - Escalation procedures, priorities…

  - … what else ? …

- We should create a draft procedure for ratification at the Operations Workshop…
- Can be applied to Pre-Production service