

# LHCb: CCRC'08 Update

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# Planned tasks

- Raw data distribution from pit → T0 centre
  - Use of rfcpl into CASTOR from pit - T1D0
- Raw data distribution from T0 → T1 centres
  - Use of FTS - T1D0
- Recons of raw data at CERN & T1 centres
  - Production of rDST data - T1D0
  - Use of SRM 2.2
- Stripping of data at CERN & T1 centres
  - Input data: RAW & rDST - T1D0
  - Output data: DST - T1D1
  - Use SRM 2.2
- Distribution of DST data to all other centres
  - Use of FTS - T0D1 (except CERN T1D1)

All tasks envisaged during data taking in 2008

# Activities across the sites

- Breakdown of processing activities (CPU needs)

<u>Site</u>	<u>Fraction (%)</u>
CERN	14
FZK	11
IN2P3	25
CNAF	9
NIKHEF/SARA	26
PIC	4
RAL	11

NB: Full production activities envisaged plus analysis activities

## Amount of data (per storage class)

<b>Storage (TB)</b>	<b>LHCb_RAW (T1D0)</b>	<b>LHCb_RDST (T1D0)</b>	<b>LHCb_M-DST (T1D1)</b>	<b>LHCb_DST (T0D1)</b>
<b>CERN</b>	84	6	16	0
<b>FZK</b>	10.5	4.5	1.7	14.3
<b>IN2P3</b>	24.5	10.5	4	12
<b>CNAF</b>	9.3	4	1.6	14.4
<b>NIKHEF</b>	25.4	10.9	4.2	11.8
<b>PIC</b>	4.2	1.8	0.7	15.3
<b>RAL</b>	10.5	4.5	1.7	14.3

## Amount of data/site

<b>Storage (TB)</b>	<b>T1D0</b>	<b>T1D1</b>	<b>T0D1</b>	<b>Tape</b>	<b>Disk</b>
<b>CERN</b>	90	16	0	106	16
<b>FZK</b>	15	1.7	14.3	16.7	16
<b>IN2P3</b>	35	4	12	39	16
<b>CNAF</b>	13.3	1.6	14.4	14.9	16
<b>NIKHEF</b>	36.3	4.2	11.8	40.5	16
<b>PIC</b>	6	0.7	15.3	6.7	16
<b>RAL</b>	15	1.7	14.3	16.7	16

# CPU Needs

1 event is ~2.4kSI2k.s to reconstruct

1 file  $\equiv$  50k events: 120 MSI2k.s

<b>CPU(kSI2k.days)</b>	<b>Recons</b>	<b>Stripping</b>	<b>Total</b>
<b>CERN</b>	10417	2026	12443
<b>FZK</b>	7739	1505	9244
<b>IN2P3</b>	18172	3534	21706
<b>CNAF</b>	6873	1337	8210
<b>NIKHEF</b>	18884	3672	22556
<b>PIC</b>	3096	602	3698
<b>RAL</b>	7739	1505	9244
<b>Total</b>	72920	14181	87101

No CPU efficiency factor of 0.85 included a la TDRs

# Nos of jobs/site

	<b>Total Jobs</b>			<b>Simultaneous jobs</b>		
	Recons	Strip	Total	Recons	Strip	Total
<b>CERN</b>	7500	2500	10000	268	90	358
<b>FZK</b>	5600	1900	7500	200	68	268
<b>IN2P3</b>	13100	4400	17500	468	158	626
<b>CNAF</b>	4900	1600	6500	175	58	233
<b>NIKHEF</b>	13600	4500	18100	486	161	647
<b>PIC</b>	2200	700	2900	79	25	104
<b>RAL</b>	5600	1900	7500	200	68	268
<b>Total</b>	52500	17500	70000	1875	625	2500

# Job Details

Job type	Duration (hrs on 2.2kSI2k)	i/p files (from tape buffer)
Recons	24	1x~1.6 GB
Strip	6	3x~1.0GB +3x~1.6 GB

# Cache for tape

<b>Cache(TB)</b>	<b>LHCb_RAW (T1D0)</b>	<b>LHCb_RDST (T1D0)</b>
<b><u>CERN</u></b>	1.8	0.5
<b><u>FZK</u></b>	1.3	0.4
<b><u>IN2P3</u></b>	3.1	0.8
<b><u>CNAF</u></b>	1.2	0.3
<b><u>NIKHEF</u></b>	3.2	0.8
<b><u>PIC</u></b>	0.5	0.2
<b><u>RAL</u></b>	1.3	0.4

This is for processing - CERN needs cache adding for pit transfer

CERN CASTOR cache for data taking

- Guaranteed 8 hour migration time
  - More likely 3 hours
- 2 TB cache

# SRM & Data Access

- Continue to be plagued with data access from SE's
  - Not in general an issue with SRM ...
  - ... seem more of an issue at dCache sites
    - Though CASTOR sites weren't immune to problems
- Question to be addressed:
  - Is data access directly from SE feasible?
    - Probably not currently
    - Fighting these issues for 2 years - data taking just around the corner
  - Test copying data locally in May phase
    - Timescale for other solutions too tight?
    - Estimate need 15 GB per core on the WN



# DIRAC3 & Feb CCRC08

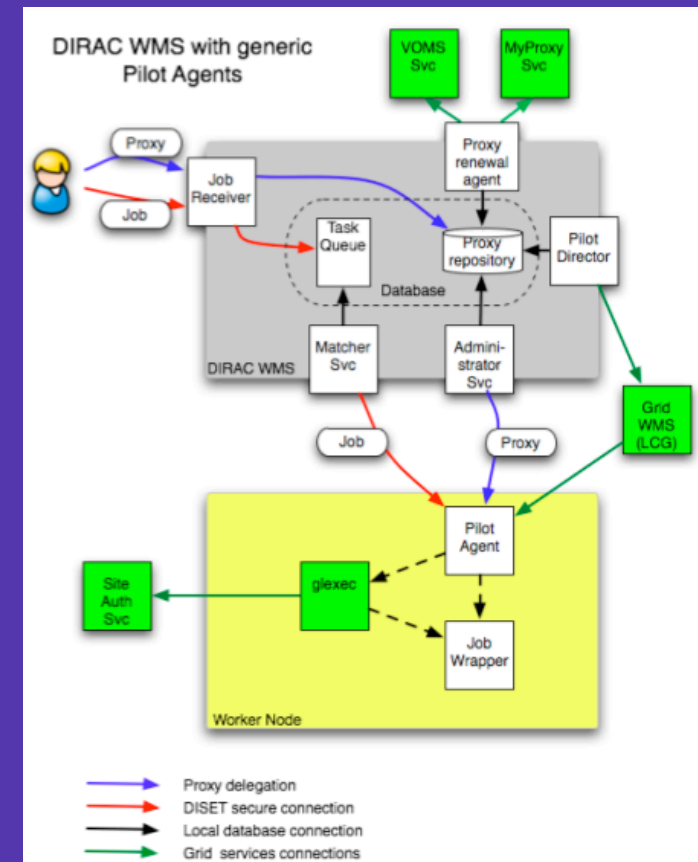
- CCRC08 will run under a new version of DIRAC
  - Major factorisation and upgrade of code
  - Major lessons learnt during Feb CCRC'08
- Critical items to fix/check
  - Data integrity checking
    - Problems with file size checkig lcg utils
  - Thorough checking of all space tokens @ all sites
  - Check nos of simultaneous connections to SE at sites
  - Production management tools
    - Including extensive testing of workflow definitions
  - Porting of stager service to DIRAC3
  - Failover request management
  - Improved error handling
  - Operation tools for non-experts
    - Monitoring: both production, services & site improved
  - Interface of GANGA to DIRAC3
- Timescale for testing - extremely tight!

# Summary of Feb'08 CCRC08

- Focus on what need to be improved
  - Pre-testing of whole chain
  - Better involvement of non-experts/production team
  - Data access remains major concern
  - Pro-active planning and better use of meetings
- Feb CCRC08
  - In the circumstances some notably successes
  - Data transfer pit-T0-T1
    - All went extremely smoothly
  - Last week of challenge recons ramped up to several 100's of jobs running concurrently across all Tier-1's

# Databases & Middleware

- Conditions DB at CERN & Tier-1 centres
  - For May want to use access to Conditions DB
- LFC
  - Wish to use local T1 instance at all T1 centres
- Glxec
  - Would like to test out during May phase at least some T1 centres
  - Mechanisms in DIRAC tested out during Feb with "production" role



# Calendar of Activities

	Week-2 (21st Apr)	Week-1 (28 <sup>th</sup> Apr)	Week0 (5 <sup>th</sup> May)	Week1 (12 <sup>th</sup> May)	Week2 (19 <sup>th</sup> May)	Week3 (26 <sup>th</sup> May)
Raw data distribution	Low scale full chain test					
Re-construction	Data copied to WN; conditions DB access					
Stripping		Castor sites dCache sites				
DST dist <sup>bn</sup>		(part of stripping tests)				
Analysis	Testing of GANGA/DIRAC3					

# Summary

- Resource requirements updated
- LHCb readiness
  - Plan to meet challenge as originally outlined in 2007
  - Very concerned about data access
  - Timescale extremely aggressive (again!)