LHC Computing Grid Project

Quarterly Status and Progress Reports

October - December 2009

31 January 2010

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12-Jan-10		WLCG High Level Milestones												
			Done (green)				Late < 1 month (orange)				Late > 1 month (red)			
ID	**Date**	**Milestone**	**ASGC**	**CC IN2P3**	**CERN**	**DE-KIT**	**INFN CNAF**	**NDGF**	**PIC**	**RAL**	**SARA NIKHEF**	**TRIUMF**	**BNL**	**FNAL**
		Pilot Jobs Frameworks												
WLCG-08-14	**May 2008**	**Pilot Jobs Frameworks studied and accepted by the Review working group** Working group proposal complete and accepted by the Experiments.	ALICE			ATLAS			CMS			LHCb Nov 2007		
		Tier-2 and VOs Sites SAM Reports												
WLCG-08-09	**Jun 2008**	**Weighted Average Reliability of the Tier-2 Federation above 95% for 80% of Sites** Weighted according to the sites CPU resources	**July 2009** **95% 40/63** 90% 48/63			**August 2009** **95% 36/60** 90% 47/60			**September 2009** **95% 27/60** 90% 43/60			**Oct-09**		

WLCG-08-11 — **VO-Specific Tier-1 Sites Availability**
Considering each Tier-0 and Tier-1 site (OPS and by VO?)

	ASGC	IN2P3	CERN	DE-KIT	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
October 2009												
OPS	99	99	100	95	99	72	98	83	94	99	98	99
ALICE	n/a	98	100	99	100	100	n/a	92	95	n/a	n/a	n/a
ATLAS	25	91	97	99	96	92	90	69	91	98	n/a	n/a
CMS	58	93	99	99	97	n/a	93	82	n/a	n/a	n/a	97
LHCb	n/a	97	97	100	100	n/a	98	98	98	n/a	n/a	n/a
November 2009												
OPS	100	97	100	94	79	90	100	99	97	99	82	99
ALICE	n/a	98	99	100	86	100	n/a	100	95	n/a	n/a	n/a
ATLAS	22	94	91	80	86	97	98	95	91	99	n/a	n/a
CMS	75	98	98	100	86	n/a	100	99	n/a	n/a	n/a	99
LHCb	n/a	98	99	99	78	n/a	98	99	96	n/a	n/a	n/a
December 2009												
OPS	99	99	98	97	100	91	98	99	97	98	99	98
ALICE	n/a					100	n/a			n/a	n/a	n/a
ATLAS	100	99	98	93	100	98	95	88	95	97	n/a	n/a
CMS	96	98	99	97	99	n/a	100	99	n/a	n/a	n/a	97
LHCb	n/a	98	98	97	81	n/a	99	97	96	n/a	n/a	n/a

WLCG High Level Milestones - 2009

ID	Date	Milestone	ASGC	CC IN2P3	CERN	DE-KIT	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
		SL5 Milestones												
WLCG-09-21	**Mar 2009**	**SL5 gcc 4.3 (WN 4.1 binaries)Tested by the Experiments** Experiments should test whether the MW on SL5	ALICE			ATLAS			CMS			LHCb		
WLCG-09-22	**Jul 2009**	**SL5 Deployed by the Sites (64 bits nodes)** Assuming the tests by the Experiments were successful. Otherwise a real gcc 4.3 porting of the WN software is needed.												
		Tier-1 Sites Procurement - 2009												
WLCG-09-01	Sept 2009	MoU 2009 Pledges Installed To fulfill the agreement that all sites procure they MoU pledged by April of every year												
		SCAS/glExec Milestones												
WLCG-09-17	**Jan 2009**	**SCAS Solutions Available for Deployment** Certification successful and SCAS packaged for deployment	**Done in March 2009**											
WLCG-09-18	**Apr 2009**	**SCAS Verified by the Experiments** Experiment verify that the SCAS implementation is working (available at CNAF and NL-T1)	ALICE n/a			ATLAS			CMS n/a ?			LHCb		
WLCG-09-19	**09-18 + 1 Month**	**SCAS + glExec Deployed and Configured at the Tier-1 Sites** SCAS and glExec ready for the Experiments.												
WLCG-09-20	**09-18 + 3 Month**	**SCAS + glExec Deployed and Configured at the Tier-2 Sites** SCAS and glExec ready for the Experiments.												
		Accounting Milestones												
WLCG-09-02	**Apr 2009**	**Wall-Clock Time Included in the Tier-2 Accounting Reports** The APEL Report should include CPU and wall-clock accounting	APEL											
WLCG-09-03	**Jul 2009**	**Tier-2 Sites Report Installed Capacity in the Info System** Both CPU and Disk Capacity is reported in the agreed GLUE 1.3 format	% of T2 Sites Reporting											
WLCG-09-04a	**Jul 2009**	**Sites publishing the User Level Accounting information**												
WLCG-09-04b	**Jul 2009**	**User Level Accounting verified and approved by the Experiments**	ALICE			ATLAS			CMS			LHCb		

ID	Date	Milestone		ASGC	CC IN2P3	CERN	DE-KIT	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
STEP 2009 - Tier-1 Validation															
WLCG-09-23	**Jun 2009**	**Tier-1 Validation by the Experiments**	**ALICE**	n/a						n/a			n/a	n/a	n/a
			ATLAS						n/a	n/a					n/a
			CMS						n/a			n/a	n/a	n/a	
			LHCb	n/a					n/a				n/a	n/a	n/a
CREAM CE Rollout															
WLCG-09-25	**Apr 2009**	**Release of CREAM CE for deployment**													
WLCG-09-26	**May 2009**	**All European T1 + TRIUMF and CERN at least 1 CE. 5 T2s supporting 1 CE**		n/a					n/a				n/a	n/a	n/a
WLCG-09-27	**Jul 2009**	**2 T2s for each experiment provide 1 CREAM-CE each.**			ALICE			ATLAS			CMS			LHCb	
WLCG-09-28	**Sep 2009**	**50 sites in addition to the ones above**													
Metrics and Monitoring Milestones															
WLCG-09-08	**Nov 2008**	**Experiments Dataflows clear for the Tier-1 Sites** Experiments should present the data flows they expect to reach at the Sites (a la LHCb)			ALICE			ATLAS			CMS			LHCb Nov 2007	
WLCG-09-09	**Removed**	**Tier-1 Sites Define Their MSS Metrics** Tier-1 Sites specify which metrics are going to be collected to demonstrate the dataflow supported													
WLCG-09-10	**June 2009**	**Tier-1 Sites Publish Their MSS Metrics in SLS** Tier-1 Sites make their current MSS metrics available via SLS													
WLCG-09-11	**TDB**	**Automatic Alarms (SAM, etc) at the Tier-1 Sites** Tier-1 Sites should be able to automatically send, receive and handle alarms and problem notifications													
WLCG-09-12	**TDB**	**Monitoring of the Storage Systems** The Storage systems used provide monitoring information to Sites and Experiments			CASTOR			dCache		DPM		StoRM		BestMan	
WLCG-09-13	**TDB**	**Performance Metrics?** User Response, Services Dowtimes Operations KPI													
CPU Benchmarks/Units Milestones															
WLCG-09-14	**Dec 2008**	**CPU New Unit Working Group Completed** Agreement on Benchmarking Methods Conversion Proposal and Test Machines		CPU New Benchmarking Unit Working Group											
WLCG-09-15	**Feb 2009**	**Sites Pledges in HEPSPEC-06** Pledged from the Sites should be converted to the new unit		LCG Office											
WLCG-09-16	**Apr 2009**	**New Experiments Requirement in HEPSPEC-06** Experiments should convert their requirements to the new unit (or by LCG Office)			ALICE			ATLAS			CMS			LHCb	
WLCG-09-24	**May 2009**	**Sites Benchmark their Capacity in the HEPSPEC-06** Resources from the Sites should be converted to the new unit													

ID	Date	Milestone		ASGC	CC IN2P3	CERN	DE-KIT	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
Completed / Cancelled High Level Milestones															
		VOBoxes Support													
WLCG-07-04	**Apr 2007**	**VOBoxes SLA Defined** Sites propose and agree with the VO the level of support (upgrade, backup, restore, etc) of VOBoxes		Aug 2008	Aug 2008					Aug 2008		Jan 2009			
WLCG-07-05	**May 2007**	**VOBoxes SLA Implemented** VOBoxes service implemented at the site according to the SLA		Aug 2008	Aug 2008				Jan 2009	Aug 2008		Jan 2009			
WLCG-07-05b	**Jul 2007**	**VOBoxes Support Accepted by the Experiments** VOBoxes support level agreed by the experiments	**ALICE**	n/a						n/a			n/a	n/a	n/a
			ATLAS						n/a	n/a					n/a
			CMS						n/a			n/a	n/a	n/a	
			LHCb	n/a					n/a				n/a	n/a	n/a
		24x7 Support													
WLCG-07-01	**Feb 2007**	**24x7 Support Definition** Definition of the levels of support and rules to follow, depending on the issue/alarm													
WLCG-07-02	**Apr 2007**	**24x7 Support Tested** Support and operation scenarios tested via realistic alarms and situations					Apr 2008	June 2008							
WLCG-07-03	**Jun 2007**	**24x7 Support in Operations** The sites provides 24x7 support to users as standard operations					July 2008	June 2008		Apr 2008		July 2008			
		3D DB Milestones													
WLCG-07-09	**Mar 2007**	**3D Oracle Service in Production** Oracle Service in production, and certified by the Experiments													squid frontier
WLCG-07-10	**May 2007**	**3D Conditions DB in Production** Conditions DB in operations for ATLAS, CMS, and LHCb. Tested by the Experiments.													squid frontier
		Site Reliability - June 2007													
WLCG-07-12	**Jun 2007**	**Site Reliability above 91%** Considering each Tier-0 and Tier-1 site (Note: orange means > 90% of target)	**Apr 88%**												
			May 88%												
			Jun 91%												
			Jul 91%												
			Aug 91%												
			Sept 91%												
WLCG-07-13	**Jun 2007**	**Average of Best 8 Sites above 93%** Eight sites should reach a reliability above 93%		**Averages of the 8 Best sites Apr-Sept 2007** **Apr 92 - May 94 - Jun 87 - Jul 93 - Aug 94 - Sept 93**											
		Procurement													
WLCG-07-16	**1 Jul 2007**	**MoU 2007 Pledges Installed** To fulfill the agreement that all sites procure the 2007 MoU pledged by July 2007													
		FTS 2.0													
WLCG-07-18	**Jun 2007**	**FTS 2.0 Tested and Accepted by the Experiments** In production at CERN and accepted tested by each Experiment			ALICE			ATLAS			CMS			LHCb	
WLCG-07-19	**Jun 2007**	**Multi-VO Tests Executed and Tested by the Experiments** Scheduled at CERN for last week of June		(will be part of CCRC in February and May 2008)											
WLCG-07-20	**Sept 2007**	**FTS 2.0 Deployed in Production** Installed and in production at each Tier-1 Site													
		BDII													
WLCG-07-21	**Jun 2007**	**BDII Guidelines Available** On how to install BDII on a separated node			EGEE - SA1 (not requested)										
WLCG-07-22	**Jun 2007**	**Top-Level BDII Installed at the Site** For each Tier-1 site													
		glexec													
WLCG-07-24	**Jul 2007**	**Decision on Usage of glexec and Guidelines to Follow**			GDB										
		Accounting													
WLCG-07-08	**Mar 2007**	**Accounting Data published in the APEL Repository** The site is publishing the accounting data in APEL. Monthly reports extracted from the APEL Repository.													

ID	Date	Milestone		ASGC	CC IN2P3	CERN	DE-KIT	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
		MSS Main Storage Systems													
WLCG-07-25	Jun 2007	**CASTOR 2.1.3 in Production at CERN** MSS system supporting SRM 2.2 deployed in production at the site		CERN Tier-0											
WLCG-07-26	Nov 2007	**SRM: CASTOR 2.1.6 Tested and Accepted by the Experiments at all Sites** From the SRM Roll-Out Plan (SRM-16 to -19)		ALICE n/a			ATLAS Nov 2007			CMS Nov 2007			LHCb Nov 2007		
WLCG-07-27	Nov 2007	**SRM: dCache 1.8 Tested and Accepted by the Experiments** From the SRM Roll-Out Plan (SRM-16 to -19)		ALICE n/a			ATLAS Nov 2007			CMS Nov 2007			LHCb Nov 2007		
WLCG-07-30b	May 2008	**SRM Missing MoU Features Implemented** With full features agreed in the HEP MoU (srmCopy, etc).		CASTOR			DCache			DPM					
		CAF CERN Analysis Facility													
WLCG-07-40	Oct 2007	**Experiment provide the Test Setup for the CAF** Specification of the requirements and setup needed by each Experiment		ALICE			ATLAS May 2008			CMS June 2008			LHCb May 2008		
		MSS Main Storage Systems													
WLCG-07-28	Sept 2007	**Demonstrated Tier-0 Performance (Storage, DM)** Demonstration that the highest throughput (ATLAS 2008) can be reached.		CERN Tier-0											
WLCG-07-28b	Sept 2007	**Demonstrated Tier-0 Export to Tier-1 Sites** Demonstration that the highest throughput (ATLAS 2008) can be reached.		CERN Tier-0											
WLCG-07-29	Feb 2008	**SRM: CASTOR 2.1.6/dCache in Production at T1** From the SRM Roll-Out Plan (SRM-20 to -21a)													
WLCG-07-30	Dec 2007	**SRM Implementations with HEP MoU Features** With features agreed in HEP MoU (srmCopy, etc).		CASTOR			DCache			DPM					
		WN and UI													
WLCG-07-31	Jun 2007	**WN Installed in Production at the Tier-1 Sites** WN on SL4 installed on each Tier-1 site, with the configuration needed to use SL4 or SL3 nodes							n/a				n/a		
WLCG-07-32	Jun 2007	**UI Certification and Installation on the PPS Systems**		EGEE - SA1-PPS done: Jul 2007											
WLCG-07-33	Aug 2007	**UI Tested and Accepted by the Experiments**		ALICE			ATLAS			CMS			LHCb		
		xrootd													
WLCG-07-41	Jul 2007	**xrootd Interfaces Tested and Accepted by ALICE**		ALICE											
		SAM Vo-Specific Tests													
WLCG-07-39	Sept 2007	**VO-Specific SAM Tests in Place** With results included every month in the Site		POSTPONED TO 2008 AND REPLACED BY A NEW MILESTONE (WLCG-08-08)											
		Site Reliability - Dec 2007													
WLCG-07-14	Dec 2007	**Site Reliability above 93%** Considering each Tier-0 and Tier-1 site (Note: orange means > 90% of target)	Aug 91%												
			Sept 91%												
			Oct 91%												
			Nov 91%												
			Dec 93%												
			Jan 93%												
			Feb 93%												
WLCG-	Dec	**Average of Best 8 Sites above 95%**		**Averages of the 8 Best sites Sept 2007 - Jan 2008**											
		Tier-1 Sites Reliability - June 2008													
WLCG-08-06	Jun 2008	**Tier-1 Sites Reliability above 95%** Considering each Tier-0 and Tier-1 site	Jan 93%					70	92		92	57		91	
			Feb 93%					20	84			84		67	85
			Mar 93%					86		88				80	
			Apr 93%					76	84			90			92
			May 93%					88							
			June 95%					86							93
WLCG-08-07	Jun 2008	**Average of Best 8 Sites above 97%** Average of eight sites should reach a reliability above 97%		**Averages of the 8 Best sites Jan-Jun 2008** **Jan 96 - Feb 96 - Mar 96 - Apr 96 - May 98 - Jun 96**											
		Tier-1 Procurement													
WLCG-07-17	1 Apr 2008	**MoU 2008 Pledges Installed** To fulfill the agreement that all sites procure they MoU pledged by April of every year		Sept 2008	CPU OK May Disk Sep 08	July 2008	Apr 2008	CPU Jul 08 Disk Sept 08	CPU OK May Disk Sep 08	CPU OK May Disk Jul 08	Apr 2008	Nov 2008	Apr 2008	CPU OK Disk Nov 08	CPU OK May Disk Jul 08
WLCG-08-04	Sep 2008	**Sites Report on the Status of the MoU 2009 Procurement** Reporting whether is on track with the MoU pledges by April. Or which is the date when the pledges will be fulfilled.			Tender Sept Jan Install May	Tender Sept Dec Install Apr	Tender Sept Oct Install Apr	Tender Sept Install May	Tender Sept Install Apr	Tender Oct Install Apr	Tender CPU Sep Disk Oct	Tender Sept Install TBD	Tender CPU Disk Oct	Tender CPU Sep Disk Oct	Tender Sep Install Apr

ID	Date	Milestone		ASGC	CC IN2P3	CERN	DE-KIT	INFN CNAF	NDGF	PIC	RAL	SARA NIKHEF	TRIUMF	BNL	FNAL
		OSG RSV Tests													
WLCG-08-01	May 2008	**RSV Tier-2 CE Tests Equivalent to SAM** Successful WLCG verification of OSG test equivalence of RSV tests to WLCG CE tests		OSG-RSV											
WLCG-08-01b	Jun 2008	**RSV Tier-2 SE Tests Equivalent to SAM** Successful WLCG verification of OSG test equivalence of RSV tests to WLCG SE tests		OSG-RSV											
WLCG-08-02	Jun 2008	**OSG Tier-2 Reliability Reported** OSG RSV information published in SAM and GOCDB databases. Reliability reports include OSG Tier-2 sites.		OSG-RSV											
		SAM VO-Specific Tests													
WLCG-08-08	Jun 2008	**VO-Specific SAM Tests in Place** With results included every month in the Site Availability Reports.		ALICE			ATLAS			CMS			LHCb		
		MSS/Tape Metrics													
WLCG-08-03	April 2008	**Tape Efficiency Metrics Published** Metrics are collected and published weekly					June 2008								
		Tier-1 Sites Reliability - Dec 2008													
WLCG-08-11	Dec 2008	**Tier-1 Sites Reliability above 97%** Considering each Tier-0 and Tier-1 site	Jul 95%		94			79	88			91			
			Aug 95%						43						
			Sept 95%				90	82				94			
			Oct 95%				84	90	92			83			
			Nov 95%		94		94	86		93	89	93			
			Dec 97%		88		80	91					95	95	
WLCG-08-12	Dec 2008	**Average of ALL Tier-1 Sites above 98%** Average Reliability above 98%		**95% on all Sites - 97% on the Best 8 Sites**											
		SRM Milestones													
WLCG-09-05	Dec 2008	**SRM Short-Term Solutions Available for Deployment**		CASTOR			dCache			DPM		StoRM		BestMan	
WLCG-09-06	Jun 2009	**SRM Short-Term Solutions Deployed at Tier-1 Sites** Installation at the Tier-1 Sites													
		FTS Milestones													
WLCG-09-07	Mar 2009	**FTS Deployed on SL4 at the Tier-1 Sites** FTS is ready to be installed on SL4 at the Tier-1 Sites													
WLCG-08-11	Apr 2009	**VO-Specific Tier-1 Sites Availability** Considering each Tier-0 and Tier-1 site (OPS and by VO?)		**ASGC**	**IN2P3**	**CERN**	**DE-KIT**	**INFN CNAF**	**NDGF**	**PIC**	**RAL**	**SARA NIKHEF**	TRIUMF	**BNL**	**FNAL**
				July 2009											
			OPS	**97**	**99**	**99**	**99**	**100**	**98**	**99**	**90**	**95**	**99**	**n/a**	**99**
			ALICE	n/a	**100**	**100**	**100**	**100**	**100**	n/a	**92**	**94**	n/a	n/a	n/a
			ATLAS	**82**	**99**	**99**	**88**	**97**	**86**	**100**	**86**	**79**	**99**	**n/a**	n/a
			CMS	**96**	**99**	**99**	**98**	**100**	n/a	**90**	**92**	n/a	n/a	n/a	**98**
			LHCb	n/a	**100**	**98**	**100**	**100**	n/a	**99**	**93**	**83**	n/a	n/a	n/a
				August 2009											
			OPS	**100**	**99**	**100**	**99**	**97**	**86**	**97**	**77**	**86**	**99**	**91**	**100**
			ALICE	n/a	**100**	**100**	**100**	**100**	**100**	n/a	**77**	**84**	n/a	n/a	n/a
			ATLAS	**18**	**98**	**99**	**95**	**96**	**98**	**96**	**75**	**80**	**98**	**n/a**	n/a
			CMS	**95**	**92**	**99**	**96**	**100**	n/a	**98**	**77**	n/a	n/a	n/a	**98**
			LHCb	n/a	**100**	**100**	**100**	**99**	n/a	**100**	**78**	**71**	n/a	n/a	n/a
				September 2009											
			OPS	**83**	**87**	**99**	**98**	**99**	**96**	**98**	**92**	**84**	**98**	**100**	**100**
			ALICE	n/a	**77**	**99**	**99**	**100**	**100**	n/a	**88**	**88**	n/a	n/a	n/a
			ATLAS	**48**	**76**	**98**	**76**	**99**	**96**	**96**	**65**	**79**	**98**	**n/a**	n/a
			CMS	**94**	**79**	**97**	**99**	**99**	n/a	**97**	**87**	n/a	n/a	n/a	**99**
			LHCb	n/a	**77**	**97**	**99**	**100**	n/a	**96**	**93**	**89**	n/a	n/a	n/a

28 January 2010

WLCG Sites Reliability (OPS Tests)

October – December 2009

Average of the 8 best sites (not always the same 8)

Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
99	99	99	99	-99	-99

Average of ALL Tier-0 and Tier-1 sites

Apr 09	May 09	Jun 09	Oct 09	Nov 09	Dec 09
99	96	92	95	97	-98

Detailed Monthly Site Reliability (OPS tests)

Site	Jul 09	Aug 09	Sept 09	Oct 09	Nov 09	Dec 09
CA-TRIUMF	99	99	99	99	99	98
CERN	99	100	100	100	99	99
DE-KIT (FZK)	99	99	98	95	94	97
ES-PIC	99	98	99	98	100	98
FR-CCIN2P3	99	99	99	99	98	99
IT-INFN-CNAF	100	97	99	99	92	100
NDGF	98	87	97	72	90	91
NL-T1(NIKHEF)	98	93	91	94	98	98
TW-ASGC	97	100	84	99	100	99
UK-T1-RAL	100	93	93	83	99	100
US-FNAL-CMS	100	100	100	98	99	100
US-T1-BNL	n/a	92	100	99	100	99
Target	*97*	*97*	*97*	*97*	*97*	*97*
Above Target (+ > 90% Target)	11 +0	8 +3	9 +1	8 +2	9 +2	11 +1

Colors: Green > Target Orange > 90% Target Red > 90% Target

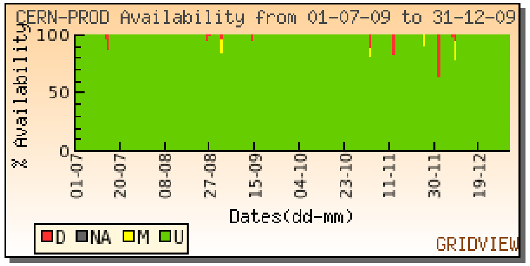
Availability of WLCG Tier-1 Sites + CERN for OPS

July 2009 - December 2009

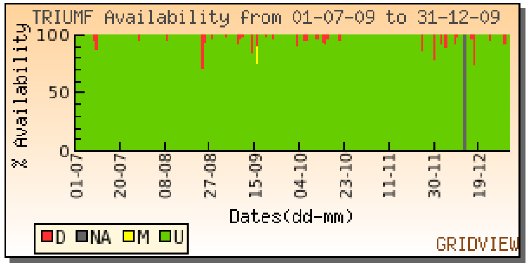
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

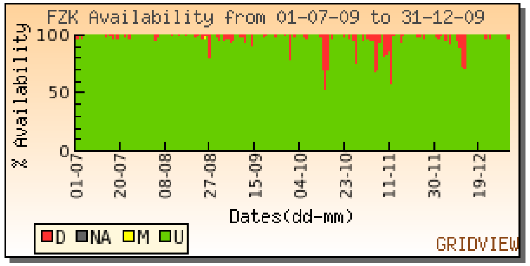
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



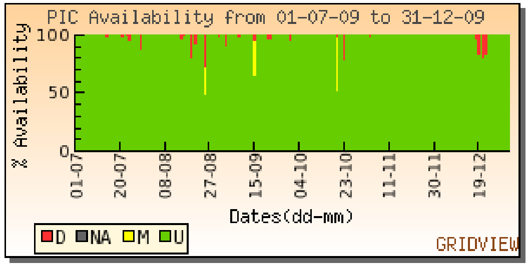
CERN Avail : 99 % Unkn : 0 %



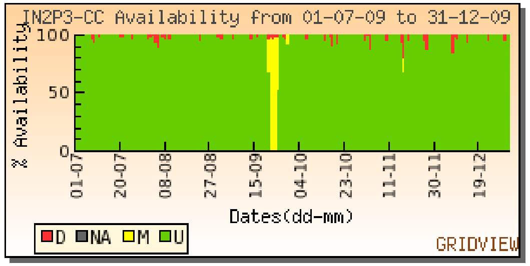
CA-TRIUMF Avail : 98 % Unkn : 1 %



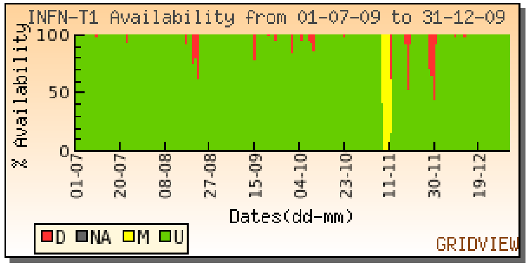
DE-KIT Avail : 97 % Unkn : 0 %



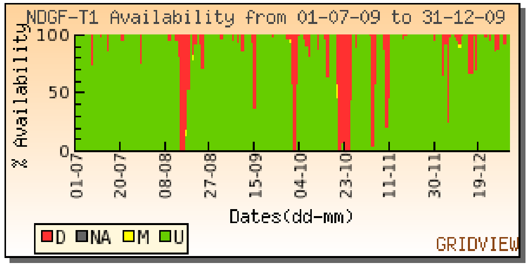
ES-PIC Avail : 98 % Unkn : 0 %



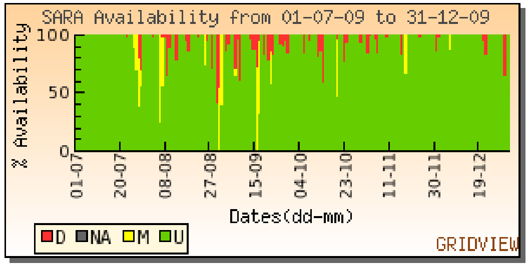
FR-CCIN2P3 Avail : 97 % Unkn : 0 %



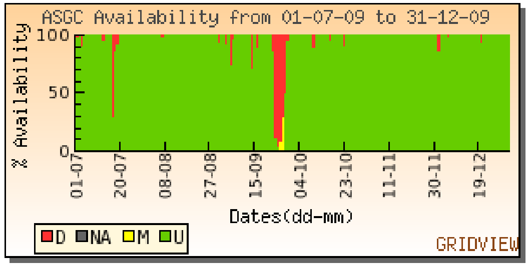
IT-INFN-CNAF Avail : 96 % Unkn : 0 %



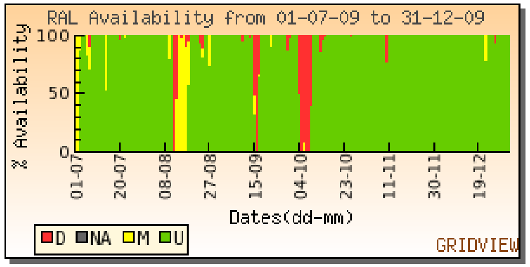
NDGF Avail : 89 % Unkn : 0 %



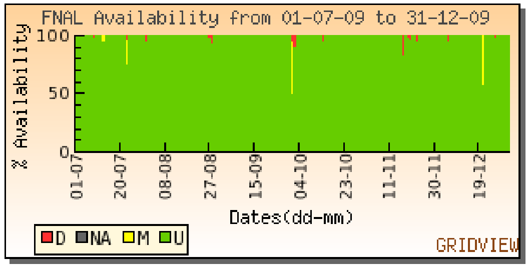
NL-T1 Avail : 92 % Unkn : 0 %



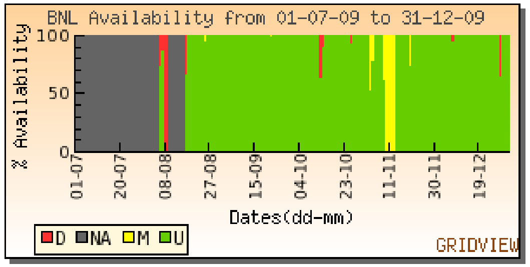
TW-ASGC Avail : 96 % Unkn : 0 %



UK-T1-RAL Avail : 90 % Unkn : 0 %



US-FNAL-CMS Avail : 99 % Unkn : 1 %



US-T1-BNL Avail : 95 % Unkn : 26 %

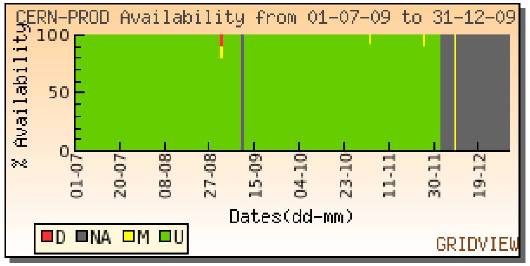
Availability of WLCG Tier-1 Sites + CERN for ALICE

July 2009 - December 2009

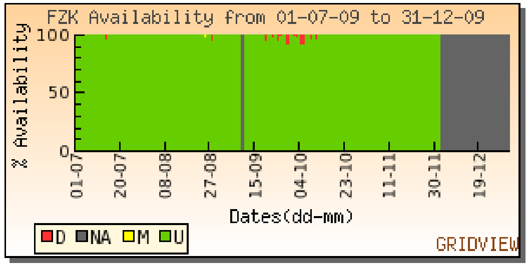
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

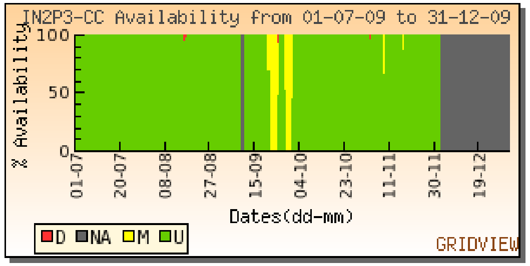
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



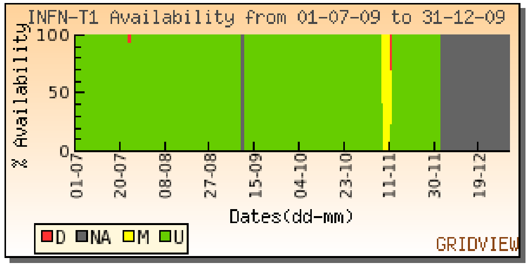
CERN **Avail : 100 %** **Unkn : 17 %**



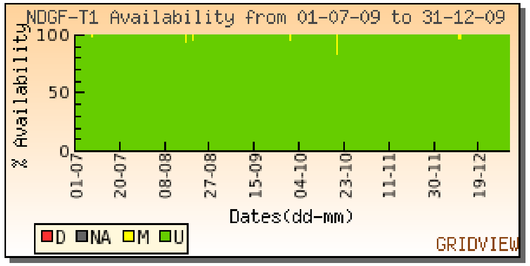
DE-KIT **Avail : 100 %** **Unkn : 17 %**



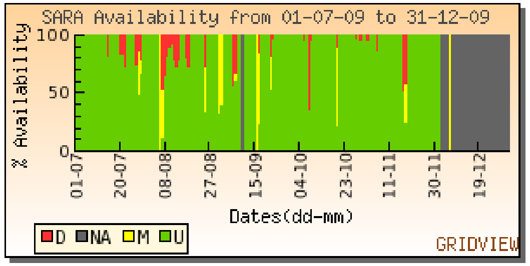
FR-CCIN2P3 **Avail : 95 %** **Unkn : 17 %**



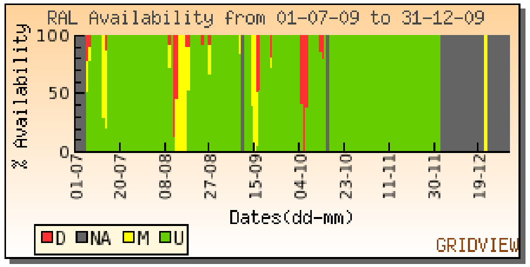
IT-INFN-CNAF **Avail : 97 %** **Unkn : 17 %**



NDGF **Avail : 100 %** **Unkn : 0 %**



NL-T1 **Avail : 91 %** **Unkn : 21 %**



UK-T1-RAL **Avail : 90 %** **Unkn : 22 %**

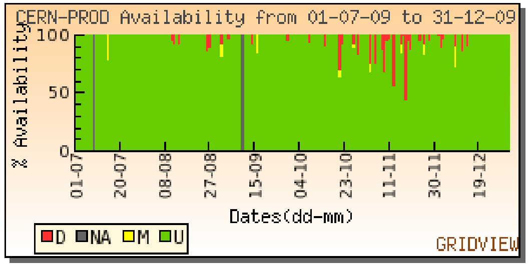
Availability of WLCG Tier-1 Sites + CERN for ATLAS

July 2009 - December 2009

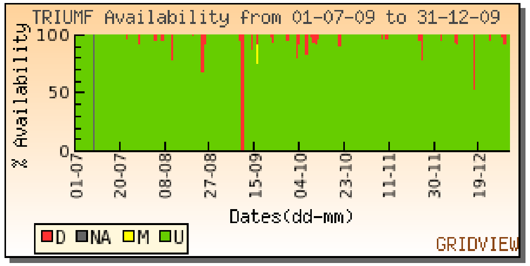
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

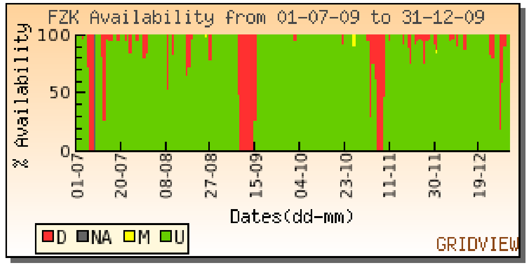
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



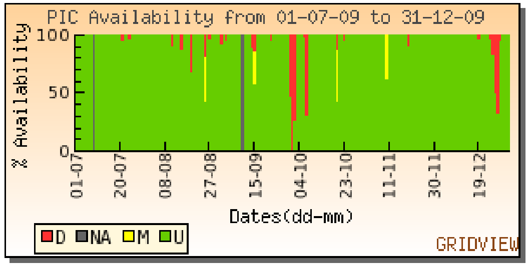
CERN **Avail : 97 %** **Unkn : 3 %**



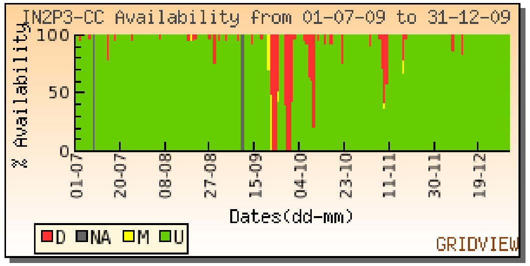
CA-TRIUMF **Avail : 98 %** **Unkn : 3 %**



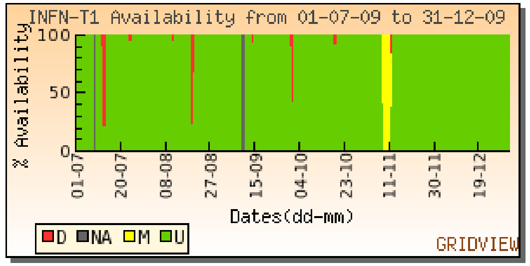
DE-KIT **Avail : 89 %** **Unkn : 2 %**



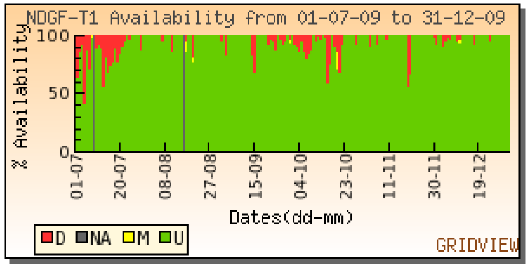
ES-PIC **Avail : 96 %** **Unkn : 3 %**



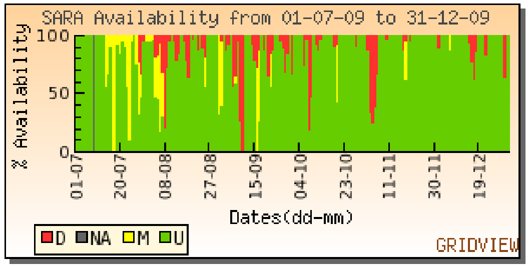
FR-CCIN2P3 **Avail : 93 %** **Unkn : 3 %**



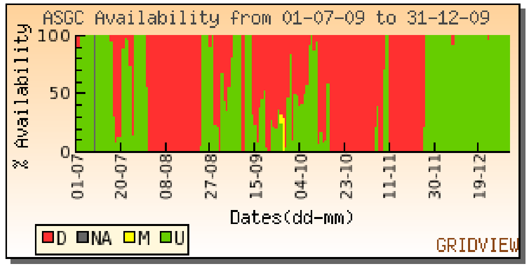
IT-INFN-CNAF **Avail : 96 %** **Unkn : 3 %**



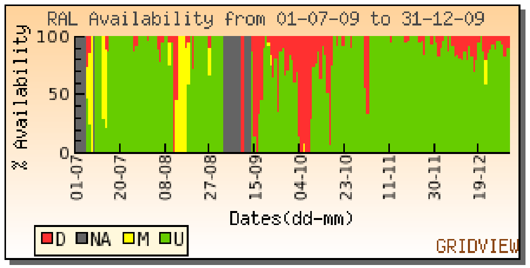
NDGF **Avail : 95 %** **Unkn : 2 %**



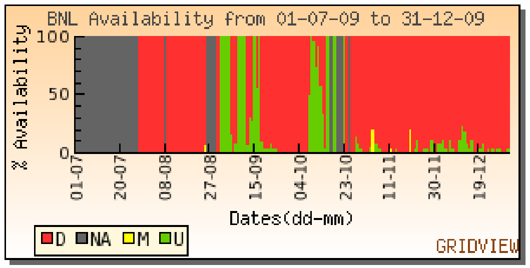
NL-T1 **Avail : 86 %** **Unkn : 3 %**



TW-ASGC **Avail : 49 %** **Unkn : 3 %**



UK-T1-RAL **Avail : 81 %** **Unkn : 12 %**



US-T1-BNL **Avail : 8 %** **Unkn : 33 %**

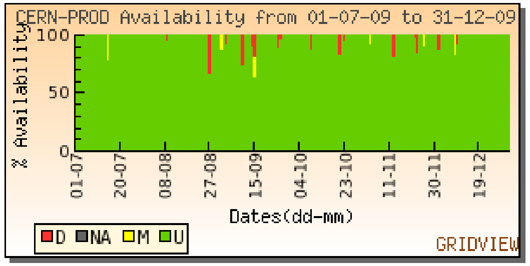
Availability of WLCG Tier-1 Sites + CERN for CMS

July 2009 - December 2009

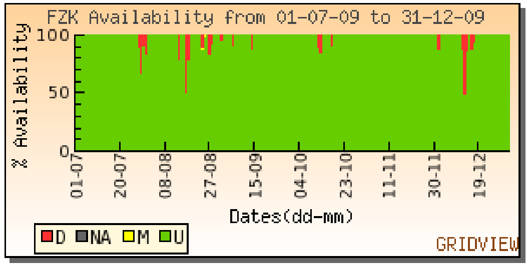
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

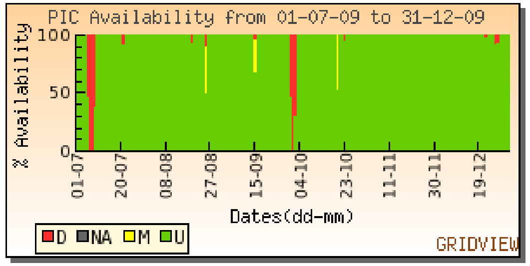
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



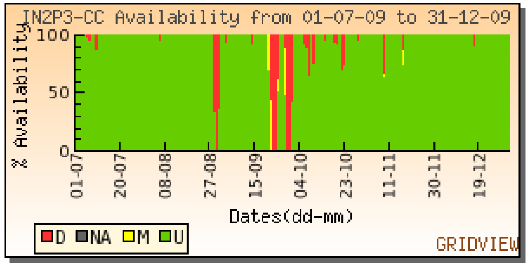
CERN **Avail : 98 %** **Unkn : 0 %**



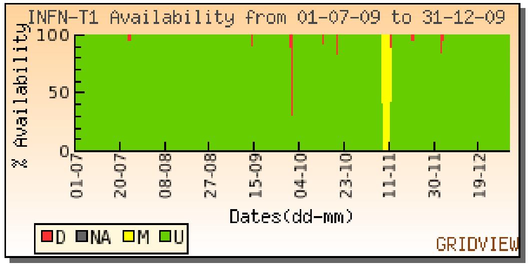
DE-KIT **Avail : 98 %** **Unkn : 0 %**



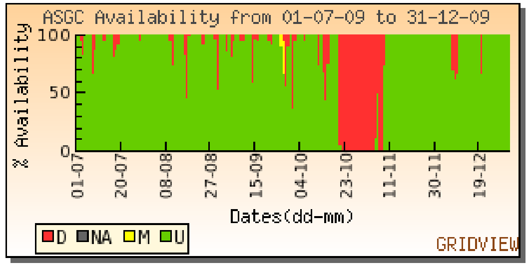
ES-PIC **Avail : 96 %** **Unkn : 0 %**



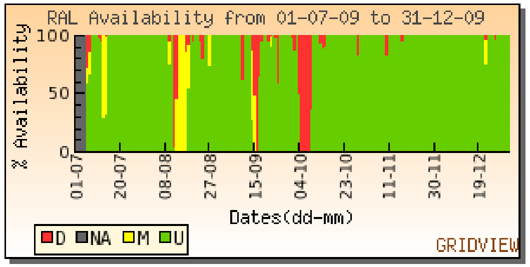
FR-CCIN2P3 **Avail : 94 %** **Unkn : 0 %**



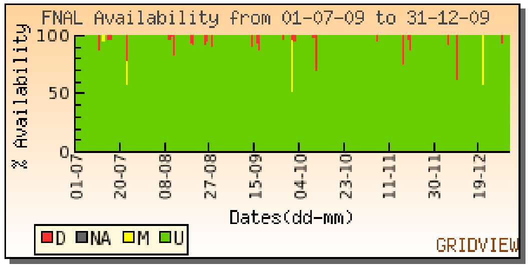
IT-INFN-CNAF **Avail : 97 %** **Unkn : 0 %**



TW-ASGC **Avail : 86 %** **Unkn : 0 %**



UK-T1-RAL **Avail : 89 %** **Unkn : 3 %**



US-FNAL-CMS **Avail : 98 %** **Unkn : 0 %**

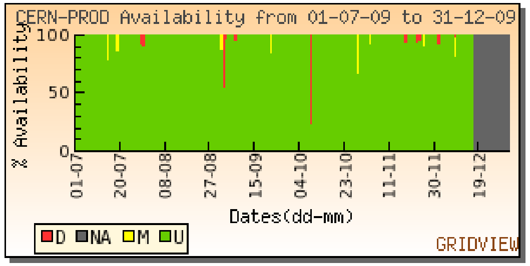
Availability of WLCG Tier-1 Sites + CERN for LHCb

July 2009 - December 2009

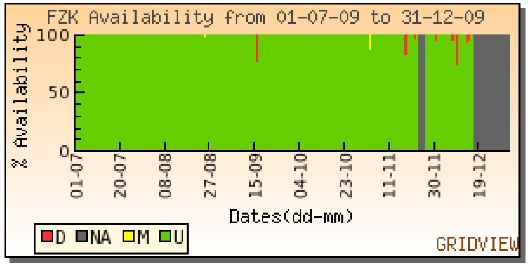
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

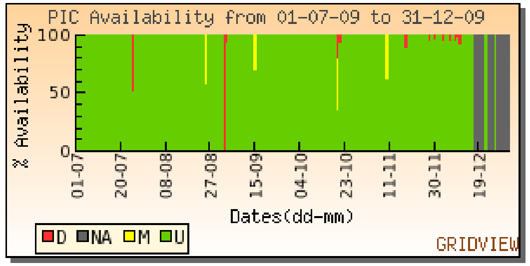
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



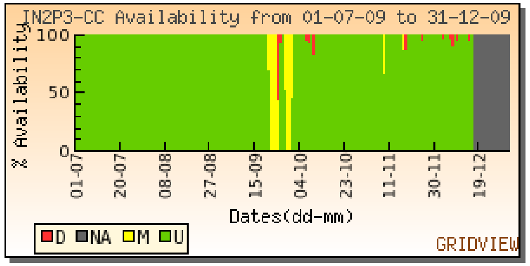
CERN **Avail : 98 %** **Unkn : 10 %**



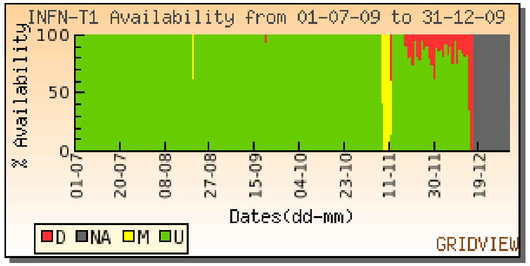
DE-KIT **Avail : 99 %** **Unkn : 12 %**



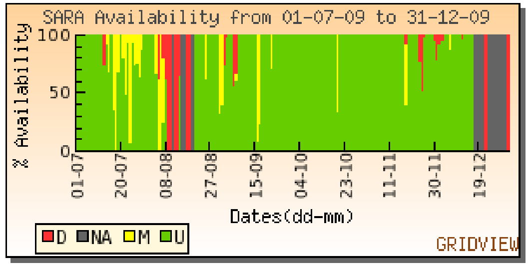
ES-PIC **Avail : 98 %** **Unkn : 11 %**



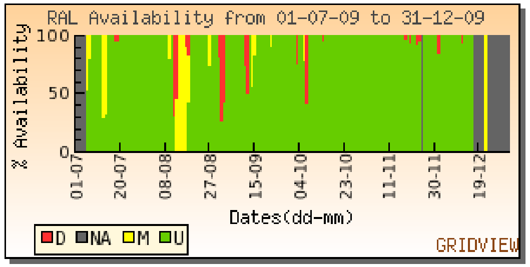
FR-CCIN2P3 **Avail : 95 %** **Unkn : 10 %**



IT-INFN-CNAF **Avail : 94 %** **Unkn : 10 %**



NL-T1 **Avail : 89 %** **Unkn : 17 %**



UK-T1-RAL **Avail : 92 %** **Unkn : 13 %**

Tier-2 Availability and Reliability Report

Federation Summary - Sorted by Name

December 2009

Data from SAM and Gridview

https://twiki.cern.ch/twiki/pub/LCG/GridView/Gridview_Service_Availability_Computation.pdf

Availability = Uptime / (Total time - Time_status_was_UNKNOWN)
Reliability = Uptime / (Total time - Scheduled Downtime - Time_status_was_UNKNOWN)
KSI2K : Installed capacity of the site measured in kilo specInt 2000 (KSI2K)
Reliability and Availability for Federation - Weighted average of all sites in the Federation based on installed capacity(KSI2K)

Colour coding : N/A | < 30% | < 60% | < 90% | >= 90%

Federation	Reliability	Availability
AT-HEPHY-VIENNA-UIBK	99 %	99 %
AU-ATLAS	96 %	96 %
BE-TIER2	97 %	93 %
BR-SP-SPRACE	98 %	90 %
CA-EAST-T2	2 %	2 %
CA-WEST-T2	98 %	98 %
CH-CHIPP-CSCS	100 %	95 %
CN-IHEP	98 %	98 %
CZ-Prague-T2	94 %	94 %
DE-DESY-ATLAS-T2	99 %	99 %
DE-DESY-GOE-ATLAS-T2	89 %	88 %
DE-DESY-RWTH-CMS-T2	99 %	98 %
DE-FREIBURGWUPPERTAL	81 %	81 %
DE-GSI	98 %	98 %
DE-MCAT	94 %	88 %
EE-NICPB	75 %	75 %
ES-ATLAS-T2	95 %	94 %
ES-CMS-T2	94 %	94 %
ES-LHCb-T2	97 %	97 %
FI-HIP-T2	97 %	97 %
FR-GRIF	100 %	100 %
FR-IN2P3-CC-T2	99 %	99 %
FR-IN2P3-IPHC	93 %	92 %
FR-IN2P3-LAPP	96 %	96 %
FR-IN2P3-LPC	99 %	99 %
FR-IN2P3-SUBATECH	99 %	97 %
HU-HGCC-T2	97 %	97 %
IL-HEPTier-2	90 %	90 %
IN-DAE-KOLKATA-TIER2	72 %	72 %
IN-INDIACMS-TIFR	8 %	8 %
IT-ALICE-federation	99 %	98 %
IT-ATLAS-federation	99 %	98 %
IT-CMS-federation	99 %	98 %

Federation	Reliability	Availability
IT-LHCb-federation	98 %	98 %
JP-Tokyo-ATLAS-T2	97 %	92 %
KR-KISTI-T2	100 %	100 %
KR-KNU-T2	94 %	93 %
NO-NORGRID-T2	88 %	88 %
PK-CMS-T2	45 %	45 %
PL-TIER2-WLCG	93 %	93 %
PT-LIP-LCG-Tier2	97 %	93 %
RO-LCG	92 %	92 %
RU-RDIG	91 %	87 %
SE-SNIC-T2	94 %	93 %
SI-SiGNET	96 %	96 %
T2_US_Caltech	100 %	100 %
T2_US_Florida	99 %	96 %
T2_US_MIT	100 %	95 %
T2_US_Nebraska	98 %	98 %
T2_US_Purdue	98 %	97 %
T2_US_UCSD	94 %	94 %
T2_US_Wisconsin	99 %	96 %
TR-Tier2-federation	75 %	75 %
TW-FTT-T2	91 %	91 %
UA-Tier2-Federation	N/A	N/A
UK-London-Tier2	94 %	91 %
UK-NorthGrid	98 %	98 %
UK-ScotGrid	98 %	98 %
UK-SouthGrid	98 %	97 %
US-AGLT2	100 %	99 %
US-MWT2	96 %	95 %
US-NET2	100 %	100 %
US-SWT2	100 %	87 %
US-WT2	95 %	95 %

Tier-2 Availability and Reliability Report

Federation Summary - Sorted by Reliability

December 2009

Data from SAM and Gridview

https://twiki.cern.ch/twiki/pub/LCG/GridView/Gridview_Service_Availability_Computation.pdf

Availability = Uptime / (Total time - Time_status_was_UNKNOWN)
Reliability = Uptime / (Total time - Scheduled Downtime - Time_status_was_UNKNOWN)
KSI2K : Installed capacity of the site measured in kilo specInt 2000 (KSI2K)
Reliability and Availability for Federation - Weighted average of all sites in the Federation based on installed capacity(KSI2K)

Colour coding : N/A | < 30% | < 60% | < 90% | >= 90%

Federation	Reliability	Availability
US-AGLT2	100 %	99 %
US-NET2	100 %	100 %
FR-GRIF	100 %	100 %
US-SWT2	100 %	87 %
T2_US_Caltech	100 %	100 %
KR-KISTI-T2	100 %	100 %
T2_US_MIT	100 %	95 %
CH-CHIPP-CSCS	100 %	95 %
DE-DESY-ATLAS-T2	99 %	99 %
FR-IN2P3-CC-T2	99 %	99 %
FR-IN2P3-LPC	99 %	99 %
FR-IN2P3-SUBATECH	99 %	97 %
DE-DESY-RWTH-CMS-T2	99 %	98 %
AT-HEPHY-VIENNA-UIBK	99 %	99 %
T2_US_Florida	99 %	96 %
T2_US_Wisconsin	99 %	96 %
IT-ALICE-federation	99 %	98 %
IT-ATLAS-federation	99 %	98 %
IT-CMS-federation	99 %	98 %
UK-NorthGrid	98 %	98 %
T2_US_Nebraska	98 %	98 %
CA-WEST-T2	98 %	98 %
IT-LHCb-federation	98 %	98 %
BR-SP-SPRACE	98 %	90 %
DE-GSI	98 %	98 %
CN-IHEP	98 %	98 %
UK-ScotGrid	98 %	98 %
UK-SouthGrid	98 %	97 %
T2_US_Purdue	98 %	97 %
PT-LIP-LCG-Tier2	97 %	93 %
ES-LHCb-T2	97 %	97 %
FI-HIP-T2	97 %	97 %
JP-Tokyo-ATLAS-T2	97 %	92 %

Federation	Reliability	Availability
BE-TIER2	97 %	93 %
HU-HGCC-T2	97 %	97 %
AU-ATLAS	96 %	96 %
FR-IN2P3-LAPP	96 %	96 %
US-MWT2	96 %	95 %
SI-SiGNET	96 %	96 %
US-WT2	95 %	95 %
ES-ATLAS-T2	95 %	94 %
UK-London-Tier2	94 %	91 %
ES-CMS-T2	94 %	94 %
KR-KNU-T2	94 %	93 %
CZ-Prague-T2	94 %	94 %
DE-MCAT	94 %	88 %
T2_US_UCSD	94 %	94 %
SE-SNIC-T2	94 %	93 %
FR-IN2P3-IPHC	93 %	92 %
PL-TIER2-WLCG	93 %	93 %
RO-LCG	92 %	92 %
RU-RDIG	91 %	87 %
TW-FTT-T2	91 %	91 %
IL-HEPTier-2	90 %	90 %
DE-DESY-GOE-ATLAS-T2	89 %	88 %
NO-NORGRID-T2	88 %	88 %
DE-FREIBURGWUPPERTAL	81 %	81 %
TR-Tier2-federation	75 %	75 %
EE-NICPB	75 %	75 %
IN-DAE-KOLKATA-TIER2	72 %	72 %
PK-CMS-T2	45 %	45 %
IN-INDIACMS-TIFR	8 %	8 %
CA-EAST-T2	2 %	2 %
UA-Tier2-Federation	N/A	N/A

Tier-2 Availability and Reliability Report

December 2009

Data from SAM and Gridview

https://twiki.cern.ch/twiki/pub/LCG/GridView/Gridview_Service_Availability_Computation.pdf

Availability = Uptime / (Total time - Time_status_was_UNKNOWN)
Reliability = Uptime / (Total time - Scheduled Downtime - Time_status_was_UNKNOWN)
KSI2K : Installed capacity of the site measured in kilo specInt 2000 (KSI2K)
Reliability and Availability for Federation - Weighted average of all sites in the Federation based on installed capacity(KSI2K)
Unknown : Time status was unknown

Colour coding : N/A | < 30% | < 60% | < 90% | >= 90%

Federation Site	Phy. CPU	Log. CPU	KSI2K	Reliability	Availability	Unknown	Reliability History Sep-09	Oct-09	Nov-09
AT-HEPHY-VIENNA-UIBK (Austria, Austrian Tier-2 Federation)									
HEPHY-UIBK	39	262	540	100 %	100 %	0 %	97 %	99 %	98 %
Hephy-Vienna	143	606	1,162	98 %	98 %	0 %	95 %	96 %	97 %
AU-ATLAS (Australia, University of Melbourne)									
Australia-ATLAS	56	188	3,948	96 %	96 %	0 %	94 %	98 %	91 %
BE-TIER2 (Belgium, Belgian Tier-2 Federation)									
BEgrid-ULB-VUB	466	545	627	98 %	98 %	0 %	74 %	80 %	78 %
BelGrid-UCL	545	631	883	96 %	90 %	0 %	79 %	84 %	92 %
BR-SP-SPRACE (Brazil, SPRACE, São Paulo)									
sprace	N/A	N/A	N/A	98 %	90 %	4 %	97 %	98 %	95 %
CA-EAST-T2 (Canada-East Federation)									
TORONTO-LCG2	415	415	332	2 %	2 %	0 %	95 %	44 %	74 %
CA-WEST-T2 (Canada-West Federation)									
ALBERTA-LCG2	44	88	132	98 %	98 %	30 %	92 %	96 %	86 %
SFU-LCG2	384	1,536	2,900	98 %	98 %	7 %	91 %	85 %	95 %
VICTORIA-LCG2	65	130	127	94 %	94 %	0 %	98 %	96 %	96 %
CH-CHIPP-CSCS (Switzerland, CHIPP)									
CSCS-LCG2	240	960	1,584	100 %	95 %	0 %	90 %	99 %	99 %
CN-IHEP (China, IHEP, Beijing)									
BEIJING-LCG2	224	896	1,936	98 %	98 %	7 %	97 %	98 %	98 %
CZ-Prague-T2 (Czech Rep., FZU AS, Prague)									
prague_cesnet_lcg2	20	80	169	94 %	93 %	0 %	94 %	96 %	84 %
praguelcg2	382	1,244	2,696	94 %	94 %	0 %	100 %	99 %	97 %
DE-DESY-ATLAS-T2 (Germany ATLAS Federation, DESY)									
DESY-HH	742	3,596	10,356	100 %	100 %	0 %	99 %	98 %	99 %
DESY-ZN	168	672	1,344	97 %	97 %	0 %	99 %	98 %	99 %
DE-DESY-GOE-ATLAS-T2 (Germany, ATLAS Federation, HH/Goe)									

Federation	Site	Phy. CPU	Log. CPU	KSI2K	Reliability	Availability	Unknown	Reliability History Sep-09	Oct-09	Nov-09
	GoeGrid	1,680	1,680	4,536	89 %	88 %	0 %	92 %	73 %	93 %
DE-DESY-RWTH-CMS-T2 (Germany, CMS Federation)										
	DESY-HH	742	3,596	10,356	100 %	100 %	0 %	99 %	98 %	99 %
	DESY-ZN	168	672	1,344	97 %	97 %	0 %	99 %	98 %	99 %
	RWTH-Aachen	506	2,024	2,817	96 %	92 %	0 %	83 %	90 %	96 %
DE-FREIBURGWUPPERTAL (Germany, ATLAS Federation FR/W)										
	UNI-FREIBURG	238	708	1,236	81 %	81 %	0 %	85 %	91 %	79 %
	wuppertalprod	N/A	N/A	-0	94 %	94 %	0 %	70 %	93 %	97 %
DE-GSI (Germany, GSI, Darmstadt)										
	GSI-LCG2	2	8	14	98 %	98 %	0 %	93 %	69 %	26 %
DE-MCAT (Germany, ATLAS Federation, Munich)										
	LRZ-LMU	300	600	1,002	91 %	91 %	0 %	91 %	85 %	97 %
	MPPMU	109	872	1,046	96 %	84 %	0 %	88 %	88 %	90 %
EE-NICPB (Estonia, NICPB, Tallinn)										
	T2_Estonia	63	404	788	75 %	75 %	0 %	87 %	65 %	78 %
ES-ATLAS-T2 (Spain, ATLAS Federation)										
	IFIC-LCG2	282	570	977	98 %	97 %	0 %	96 %	98 %	96 %
	UAM-LCG2	84	338	620	89 %	89 %	0 %	94 %	89 %	89 %
	ifae	12	96	115	98 %	98 %	0 %	99 %	96 %	99 %
ES-CMS-T2 (Spain, CMS Federation)										
	CIEMAT-LCG2	298	836	1,104	99 %	99 %	0 %	90 %	99 %	97 %
	IFCA-LCG2	308	1,232	2,593	92 %	92 %	0 %	96 %	82 %	92 %
ES-LHCb-T2 (Spain, LHCb Federation)										
	UB-LCG2	85	275	227	97 %	97 %	0 %	54 %	60 %	80 %
	USC-LCG2	316	676	1,057	97 %	97 %	0 %	99 %	99 %	99 %
FI-HIP-T2 (Finland, NDGF/HIP Tier2)										
	CSC	32	64	95	97 %	97 %	0 %	57 %	90 %	88 %
FR-GRIF (France, GRIF, Paris)										
	GRIF	1,224	4,780	9,752	100 %	100 %	0 %	99 %	99 %	96 %
FR-IN2P3-CC-T2 (France, CC-IN2P3 AF)										
	IN2P3-CC-T2	N/A	N/A	-0	99 %	99 %	0 %	87 %	100 %	97 %
FR-IN2P3-IPHC (France, CC-IN2P3 IPHC)										
	IN2P3-IRES	256	1,216	2,955	93 %	92 %	0 %	84 %	90 %	72 %
FR-IN2P3-LAPP (France, LAPP, Annecy)										
	IN2P3-LAPP	160	512	1,133	96 %	96 %	0 %	91 %	91 %	92 %
FR-IN2P3-LPC (France, LPC, Clermont-Ferrand)										
	IN2P3-LPC	304	1,158	2,247	99 %	99 %	0 %	98 %	99 %	100 %
FR-IN2P3-SUBATECH (France, SUBATECH, Nantes)										
	IN2P3-SUBATECH	140	460	880	99 %	97 %	0 %	98 %	98 %	99 %

Federation Site	Phy. CPU	Log. CPU	KSI2K	Reliability	Availability	Unknown	Reliability History Sep-09	Oct-09	Nov-09
HU-HGCC-T2 (Hungary, HGCC Federation)									
BUDAPEST	106	424	950	97 %	97 %	0 %	98 %	93 %	98 %
ELTE	40	80	62	94 %	94 %	0 %	49 %	82 %	92 %
IL-HEPTier-2 (Israel, HEP-IL Tier-2 Federation)									
IL-TAU-HEP	16	64	173	83 %	83 %	0 %	96 %	74 %	45 %
TECHNION-HEP	34	272	734	92 %	92 %	0 %	64 %	94 %	74 %
WEIZMANN-LCG2	56	180	486	89 %	89 %	0 %	79 %	90 %	88 %
IN-DAE-KOLKATA-TIER2 (India, VECC/SINP, Kolkata)									
IN-DAE-VECC-01	26	52	160	99 %	99 %	0 %	90 %	93 %	80 %
IN-DAE-VECC-02	78	156	479	63 %	63 %	0 %	99 %	93 %	93 %
IN-INDIACMS-TIFR (India, TIFR, Mumbai)									
INDIACMS-TIFR	40	320	544	8 %	8 %	0 %	84 %	60 %	46 %
IT-ALICE-federation (Italy, INFN ALICE Federation)									
INFN-BARI	N/A	N/A	-0	95 %	95 %	0 %	87 %	83 %	89 %
INFN-CATANIA	220	387	689	99 %	99 %	0 %	89 %	73 %	74 %
INFN-FRASCATI	24	80	174	95 %	95 %	0 %	96 %	96 %	76 %
INFN-LNL-2	440	1,128	2,458	100 %	100 %	0 %	96 %	98 %	95 %
INFN-MILANO-ATLASC	162	240	529	96 %	96 %	0 %	95 %	92 %	76 %
INFN-NAPOLI-ATLAS	86	250	567	100 %	100 %	0 %	77 %	86 %	88 %
INFN-PISA	680	1,720	3,784	100 %	100 %	0 %	94 %	100 %	98 %
INFN-ROMA1	102	484	990	96 %	96 %	0 %	95 %	95 %	98 %
INFN-ROMA1-CMS	106	356	770	95 %	95 %	0 %	97 %	95 %	98 %
INFN-TORINO	108	336	595	96 %	96 %	0 %	95 %	86 %	98 %
IT-ATLAS-federation (Italy, INFN ATLAS Federation)									
INFN-BARI	N/A	N/A	-0	95 %	95 %	0 %	87 %	83 %	89 %
INFN-CATANIA	220	387	689	99 %	99 %	0 %	89 %	73 %	74 %
INFN-FRASCATI	24	80	174	95 %	95 %	0 %	96 %	96 %	76 %
INFN-LNL-2	440	1,128	2,458	100 %	100 %	0 %	96 %	98 %	95 %
INFN-MILANO-ATLASC	162	240	529	96 %	96 %	0 %	95 %	92 %	76 %
INFN-NAPOLI-ATLAS	86	250	567	100 %	100 %	0 %	77 %	86 %	88 %
INFN-PISA	680	1,720	3,784	100 %	100 %	0 %	94 %	100 %	98 %
INFN-ROMA1	102	484	990	96 %	96 %	0 %	95 %	95 %	98 %
INFN-ROMA1-CMS	106	356	770	95 %	95 %	0 %	97 %	95 %	98 %
INFN-TORINO	108	336	595	96 %	96 %	0 %	95 %	86 %	98 %
IT-CMS-federation (Italy, INFN CMS Federation)									
INFN-BARI	N/A	N/A	-0	95 %	95 %	0 %	87 %	83 %	89 %
INFN-CATANIA	220	387	689	99 %	99 %	0 %	89 %	73 %	74 %
INFN-FRASCATI	24	80	174	95 %	95 %	0 %	96 %	96 %	76 %
INFN-LNL-2	440	1,128	2,458	100 %	100 %	0 %	96 %	98 %	95 %
INFN-MILANO-ATLASC	162	240	529	96 %	96 %	0 %	95 %	92 %	76 %
INFN-NAPOLI-ATLAS	86	250	567	100 %	100 %	0 %	77 %	86 %	88 %
INFN-PISA	680	1,720	3,784	100 %	100 %	0 %	94 %	100 %	98 %

Federation	Site	Phy. CPU	Log. CPU	KSI2K	Reliability	Availability	Unknown	Reliability History Sep-09	Oct-09	Nov-09
	INFN-ROMA1	102	484	990	96 %	96 %	0 %	95 %	95 %	98 %
	INFN-ROMA1-CMS	106	356	770	95 %	95 %	0 %	97 %	95 %	98 %
	INFN-TORINO	108	336	595	96 %	96 %	0 %	95 %	86 %	98 %
IT-LHCb-federation (Italy, INFN LHCb Federation)										
	INFN-BARI	N/A	N/A	-0	95 %	95 %	0 %	87 %	83 %	89 %
	INFN-CATANIA	220	387	689	99 %	99 %	0 %	89 %	73 %	74 %
	INFN-CNAF-LHCB	572	2,862	4,608	98 %	98 %	0 %	97 %	92 %	75 %
	INFN-FRASCATI	24	80	174	95 %	95 %	0 %	96 %	96 %	76 %
	INFN-LNL-2	440	1,128	2,458	100 %	100 %	0 %	96 %	98 %	95 %
	INFN-MILANO-ATLASC	162	240	529	96 %	96 %	0 %	95 %	92 %	76 %
	INFN-NAPOLI-ATLAS	86	250	567	100 %	100 %	0 %	77 %	86 %	88 %
	INFN-PISA	680	1,720	3,784	100 %	100 %	0 %	94 %	100 %	98 %
	INFN-ROMA1	102	484	990	96 %	96 %	0 %	95 %	95 %	98 %
	INFN-ROMA1-CMS	106	356	770	95 %	95 %	0 %	97 %	95 %	98 %
	INFN-TORINO	108	336	595	96 %	96 %	0 %	95 %	86 %	98 %
JP-Tokyo-ATLAS-T2 (Japan, ICEPP, Tokyo)										
	TOKYO-LCG2	64	256	918	97 %	92 %	0 %	92 %	98 %	93 %
KR-KISTI-T2 (Republic of Korea, KISTI, Daejeon)										
	KR-KISTI-GCRT-01	144	608	1,043	100 %	100 %	0 %	99 %	98 %	100 %
KR-KNU-T2 (Republic of Korea, CHEP of KNU, Daegu)										
	LCG_KNU	140	336	501	94 %	93 %	0 %	94 %	75 %	98 %
NO-NORGRID-T2 (Norway, UNINETT SIGMA Tier-2)										
	NO-NORGRID-T2	5,042	5,042	5	88 %	88 %	0 %	92 %	67 %	81 %
PK-CMS-T2 (Pakistan, Pakistan Tier-2 Federation)										
	NCP-LCG2	12	1	1	48 %	48 %	0 %	96 %	96 %	98 %
	PAKGRID-LCG2	26	58	18	45 %	45 %	0 %	73 %	96 %	73 %
PL-TIER2-WLCG (Poland, Polish Tier-2 Federation)										
	CYFRONET-LCG2	660	2,896	6,038	98 %	98 %	0 %	97 %	90 %	95 %
	PSNC	532	2,128	5,054	85 %	85 %	0 %	90 %	99 %	99 %
	WARSAW-EGEE	237	416	652	100 %	100 %	0 %	92 %	97 %	98 %
PT-LIP-LCG-Tier2 (Portugal, LIP Tier-2 Federation)										
	LIP-Coimbra	44	176	449	97 %	88 %	0 %	98 %	97 %	73 %
	LIP-Lisbon	134	536	1,266	96 %	88 %	0 %	99 %	100 %	99 %
	NCG-INGRID-PT	228	912	1,565	99 %	99 %	0 %	96 %	97 %	95 %
RO-LCG (Romania, Romanian Tier-2 Federation)										
	NIHAM	4	4	10	98 %	98 %	0 %	97 %	90 %	77 %
	RO-02-NIPNE	84	212	318	77 %	77 %	0 %	95 %	91 %	96 %
	RO-07-NIPNE	214	214	367	100 %	100 %	0 %	90 %	81 %	92 %
	RO-11-NIPNE	16	32	48	59 %	59 %	0 %	89 %	77 %	89 %
	RO-14-ITIM	40	160	656	98 %	98 %	0 %	91 %	37 %	94 %
RU-RDIG (Russian Fed., Russian Data-Intensive GRID)										

Federation	Site	Phy. CPU	Log. CPU	KSI2K	Relia bility	Availa bility	Unkn own	Reliability History Sep-09	Oct-09	Nov-09
	ITEP	135	270	746	96 %	96 %	0 %	96 %	91 %	76 %
	JINR-LCG2	314	988	2,428	99 %	88 %	0 %	99 %	82 %	88 %
	RRC-KI	736	736	2,003	96 %	95 %	1 %	23 %	78 %	13 %
	RU-Phys-SPbSU	24	96	37	94 %	94 %	0 %	83 %	40 %	0 %
	RU-Protvino-IHEP	68	192	481	95 %	95 %	0 %	95 %	90 %	97 %
	RU-SPbSU	12	48	122	93 %	93 %	0 %	61 %	95 %	99 %
	Ru-Troitsk-INR-LCG2	160	160	236	99 %	99 %	0 %	90 %	98 %	93 %
	ru-Moscow-FIAN-LCG2	30	52	96	79 %	79 %	0 %	94 %	77 %	98 %
	ru-Moscow-MEPHI-LCG2	54	168	454	41 %	41 %	0 %	95 %	85 %	87 %
	ru-Moscow-SINP-LCG2	104	208	465	99 %	99 %	0 %	99 %	99 %	100 %
	ru-PNPI	64	176	475	54 %	54 %	0 %	20 %	79 %	68 %
SE-SNIC-T2 (Sweden, SNIC Tier-2)										
	SE-SNIC-T2	1,387	1,387	1	94 %	93 %	0 %	95 %	75 %	92 %
SI-SiGNET (Slovenia, SiGNET)										
	SiGNET	239	582	1,426	96 %	96 %	0 %	96 %	93 %	98 %
T2_US_Caltech (USA, Caltech CMS T2)										
	cit_cms_t2	N/A	N/A	1,000	100 %	100 %	1 %	85 %	95 %	99 %
T2_US_Florida (USA, Florida CMS T2)										
	uflorida-hpc	N/A	N/A	615	98 %	94 %	4 %	86 %	100 %	93 %
	uflorida-pg	N/A	N/A	385	100 %	100 %	2 %	92 %	100 %	93 %
T2_US_MIT (USA, MIT CMS T2)										
	mit_cms	N/A	N/A	1,000	100 %	95 %	1 %	95 %	97 %	99 %
T2_US_Nebraska (USA, Nebraska CMS T2)										
	nebraska	N/A	N/A	1,000	98 %	98 %	0 %	100 %	100 %	95 %
T2_US_Purdue (USA, Purdue CMS T2)										
	purdue-rcac	N/A	N/A	880	97 %	97 %	24 %	94 %	99 %	99 %
	purdue-steele	N/A	N/A	120	99 %	99 %	10 %	98 %	100 %	99 %
T2_US_UCSD (USA, UC San Diego CMS T2)										
	ucsdt2	N/A	N/A	1,001	94 %	94 %	1 %	93 %	100 %	100 %
T2_US_Wisconsin (USA, U. Wisconsin CMS T2)										
	GLOW	N/A	N/A	2,000	99 %	96 %	1 %	99 %	99 %	99 %
TR-Tier2-federation (Turkey, Turkish Tier-2 Federation)										
	TR-03-METU	154	308	530	68 %	68 %	0 %	75 %	62 %	55 %
	TR-10-ULAKBIM	202	468	805	80 %	80 %	0 %	83 %	67 %	74 %
TW-FTT-T2 (Taipei, Taiwan Analysis Facility Federation)										
	TW-FTT	156	468	1,259	91 %	91 %	0 %	93 %	98 %	86 %
UK-London-Tier2 (UK, London Tier 2)										
	UKI-LT2-Brunel	71	389	636	97 %	97 %	0 %	99 %	99 %	98 %
	UKI-LT2-IC-HEP	300	1,200	2,400	95 %	95 %	0 %	84 %	75 %	96 %
	UKI-LT2-IC-LeSC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Federation	Site	Phy. CPU	Log. CPU	KSI2K	Reliability	Availability	Unknown	Reliability History Sep-09	Oct-09	Nov-09
	UKI-LT2-QMUL	800	1,632	1,632	98 %	90 %	0 %	80 %	66 %	97 %
	UKI-LT2-RHUL	100	400	730	89 %	89 %	0 %	58 %	84 %	86 %
	UKI-LT2-UCL-CENTRAL	128	128	289	69 %	32 %	0 %	60 %	69 %	63 %
	UKI-LT2-UCL-HEP	162	162	336	99 %	99 %	0 %	99 %	83 %	99 %
UK-NorthGrid (UK, NorthGrid)										
	UKI-NORTHGRID-LANCS-HEP	256	256	730	91 %	91 %	0 %	89 %	84 %	86 %
	UKI-NORTHGRID-LIV-HEP	790	832	1,144	100 %	100 %	0 %	100 %	99 %	100 %
	UKI-NORTHGRID-MAN-HEP	1,786	1,786	2,799	100 %	100 %	0 %	76 %	95 %	94 %
	UKI-NORTHGRID-SHEF-HEP	200	200	375	100 %	100 %	0 %	97 %	96 %	98 %
UK-ScotGrid (UK, ScotGrid)										
	UKI-SCOTGRID-DURHAM	168	672	1,425	97 %	97 %	0 %	89 %	96 %	88 %
	UKI-SCOTGRID-ECDF	460	1,436	3,273	98 %	98 %	0 %	87 %	95 %	90 %
	UKI-SCOTGRID-GLASGOW	618	1,912	3,830	98 %	98 %	0 %	98 %	98 %	99 %
UK-SouthGrid (UK, SouthGrid)										
	EFDA-JET	254	254	412	99 %	99 %	0 %	99 %	99 %	97 %
	UKI-SOUTHGRID-BHAM-HEP	209	324	674	92 %	89 %	0 %	99 %	81 %	67 %
	UKI-SOUTHGRID-BRIS-HEP	196	408	800	100 %	100 %	0 %	98 %	99 %	98 %
	UKI-SOUTHGRID-CAM-HEP	152	184	370	96 %	96 %	0 %	89 %	94 %	95 %
	UKI-SOUTHGRID-OX-HEP	10	40	75	72 %	72 %	0 %	93 %	96 %	81 %
	UKI-SOUTHGRID-RALPP	460	1,544	3,860	99 %	99 %	0 %	97 %	93 %	93 %
US-AGLT2 (USA, Great Lakes ATLAS T2)										
	AGLT2	N/A	N/A	4,813	100 %	99 %	8 %	99 %	100 %	99 %
US-MWT2 (USA, Midwest ATLAS T2)										
	MWT2_IU	N/A	N/A	3,276	93 %	93 %	6 %	100 %	100 %	98 %
	MWT2_UC	N/A	N/A	3,276	99 %	98 %	0 %	100 %	100 %	100 %
US-NET2 (USA, Northeast ATLAS T2)										
	BU_ATLAS_Tier2	N/A	N/A	1,910	100 %	100 %	0 %	100 %	99 %	100 %
US-SWT2 (USA, Southwest ATLAS T2)										
	OU_OCHEP_SWT2	N/A	N/A	464	100 %	100 %	0 %	100 %	100 %	100 %
	SWT2_CPB	N/A	N/A	1,383	100 %	100 %	0 %	93 %	99 %	91 %
	UTA_SWT2	N/A	N/A	493	100 %	37 %	8 %	96 %	100 %	N/A
US-WT2 (USA, SLAC ATLAS T2)										
	WT2	N/A	N/A	1,202	95 %	95 %	4 %	98 %	100 %	100 %

LCG Services Report October – December 2009

6 January 2010

Jamie Shiers

This report covers the final three months of 2009 during which the LHC was successfully restarted and delivered data from proton-proton collisions. It was also the first time that the LHC acted as both an accelerator and a collider: the excitement of this success overrides any small glitches that accompanied it.

Unfortunately service issues remain, ranging from a continued high rate of incidents requiring a “post-mortem” via a Service Incident Report, periodic problems with alarms and other tools / procedures for signaling service problems and a continued high rate of patches / bug fixes for some of the key services. It is possible that this represents the new baseline that we should expect and from which we should perform incremental improvements.

Nonetheless, the WLCG service did deliver with success throughout this quarter, including the Christmas to New Year period, when the experiments ran reprocessing, Monte Carlo production and analysis activities.

This first period of LHC operation also taught us that additional flexibility in rescheduling interventions is required – such as taking advantage of a machine stoppage to carry out an already agreed action.

Globally the service can be considered to be both understood and under control but with further optimizations necessary together with continuity to cover changes already in place – such as in the organization of CERN’s IT department – as well as those foreseen for the first half of 2010, including the end of the EGEE III project and the start of EGI and related activities.

Summary of Main Service Incidents

The following table lists the main service incidents for which a Service Incident Report was produced. These are typically characterized by a serious degradation or total loss of service of at least several hours. Reporting continues to improve, increasingly using a template. Some sites – including CERN and RAL – also produce reports for their own internal purposes at thresholds lower than those in the WLCG Memorandum of Understanding (MoU). However, this is consistent with the guidelines for producing such reports, as discussed at the WLCG Collaboration workshop held in April 2009 prior to CHEP in Prague:

1. When an MoU target is not met;
2. When requested by the Service Coordinator on Duty (SCOD);
3. When useful for the site / entities own internal purposes.

The reduction in incidents seen in the last quarterly report has not become a trend: there were a total of 15 incidents during Q4 (some lasting days or weeks and arguably multiple incidents) versus 7 in Q3. Thus it is more likely that the effect over the summer was at least in part due to reduced activity (both from the side of the experiments as well as service interventions) as compared to this quarter and prolonged data taking may well be accompanied by a further increase in such incidents. More work needs to be done on quantifying the severity of incidents – the duration is relatively easy to measure but is clearly not sufficient whereas the recorded impact (e.g. data loss versus performance degradation) is somewhat subjective.

Further details can be found in the weekly reports to the WLCG Management Board and on the WLCG Service Incident Report page.

Site	*When*	*Issue*
PIC	19 Dec	Most of Tier-1 services shutdown to avoid increasing temperature due to cooling failure
IN2P3	08 Dec	Grid services unavailability caused by failure of load balancing mechanism
CERN	02 Dec	Site wide power cut – most CC services down
RAL	30 Nov	LHCb Data Loss Incident at RAL
CERN	20 Nov	SRM / ATLAS high failure rate and restart after thread exhaustion
CERN	18 Nov	CMS Dashboard performance degradation
IN2P3	12 Nov	CMS Data Loss Incident at FR-CCIN2P3
IN2P3	03 Nov	Many services disturbed due to automatic reboot of machines
IN2P3	14 Oct	Batch problem – only very short jobs able to run
CERN	13 Oct	All CASTOR services dead
RAL	09 Oct	Data loss from CASTOR
IN2P3	08 & 10 Oct	SRM service interrupted
RAL	04-09 Oct	CASTOR, LFC and FTS services down
ASGC	27 Sep on	DB problems affecting Grid & later CASTOR services for several weeks

Site Metrics

The metrics listed below continue to provide a simple but rather complete view of whether a site is meeting its service delivery targets.

#	**Metric**
1	Site is providing (usable) resources that match those pledged & requested;
2	The services are running smoothly, pass the tests and meet reliability and availability targets;
3	"WLCG operations" metrics on handling scheduled and unscheduled service interruptions and degradations are met;
4	Site is meeting or exceeding metrics for "functional blocks".

Three site reviews were carried out during this quarter, covering ASGC, NL-T1 and RAL. Whilst it took ASGC a large fraction of this quarter to resolve the remaining issues that they had faced over many months, the issues previously raised concerning NL-T1 appear to have been successfully resolved.

The report from the RAL review – organized by GridPP – is still in preparation. In this latter respect it is clear that there have been many improvements since the review held one year earlier. However, there are still staffing concerns in the key areas of data management and databases and the foreseen funding for research in the UK and eventually GridPP4 casts a further shadow.

For all sites follow-up in 2010 will be required, as well as some global actions aimed at optimizing our sharing of knowledge and response to problems as a project / community as a whole. This may be coordinated as part of the EGI InSPIRE “Services for Heavy Users of Distributed Computing Infrastructures” activity and/or the ROSCOE Virtual Research Community (VRC) – aimed at providing end-user and community support, both seeking funding through the EU FP7 programme. Further details are given in the outlook section below.

Outlook for 2010

The daily WLCG operations meetings have proven themselves over a period of 2 years, covering CCRC’08, STEP’09 and the first data taking run of the LHC. Contacts with the LHC operations team have been established and the meeting will have to adapt to changing group structures in CERN’s IT – which should be largely transparent to users and external sites. Assuming a positive outcome regarding funding, the role of the EGI InSPIRE work-package, oriented at providing services for “heavy users”, will provide a time limited but much-needed continuation and even increase of service / operations-oriented manpower, whilst the ROSCOE project will have a complementary but more user-oriented focus. The exact work plans for these projects will have to be agreed once the funding levels are known: news is expected on the February / March timeframe.

Working with existing structures, such as those of the WLCG as well as the broader community, e.g. HEPiX, these projects should encourage sharing of tools and techniques to further reduce operations load, increase service reliability and to improve the quality of the service is delivered. This will need to be done not just for WLCG and HEP but also for partner communities involved in these projects, which include astronomy and astrophysics, photon science, life sciences and others. This will not only address the short-medium term issues that can be expected during the “running in” period of the LHC but also – by emphasizing the long-term socio-economic benefits – maximize the chances of future funding for follow-on projects.

Summary and Conclusions

As noted in the report from the previous quarter, the WLCG service continues to deliver at a reasonably reliable and responsive level, with continued improvement as seen on the timescale of months. Well established procedures for responding to exceptions exist and are largely but (still) not always respected. Further improvement will clearly be iterative but is nevertheless required – the “site metric” as described above allows this to be measured quantitatively. A better, but not complete, understanding of how to handle larger service upgrades has been achieved, including the important realization that change is inevitable: it cannot be avoided; it needs to be planned and managed, taking both the long and short term LHC operations schedule into account.

Grid Deployment Board Report Quarterly Report

8 February 2010

October-December 2009

John Gordon

Summary of Past Quarter

The Grid Deployment Board is the WLCG forum where technical discussions can take place in depth between WLCG sites, LHC experiments, middleware developers and service providers.

The GDB met three times this quarter and the agenda and papers are available at http://indico.cern.ch/categoryDisplay.py?categId=3l181 There were no pre-GDB meetings held this quarter but one slot hosted an ATLAS Jamboree.

Among the issues discussed this quarter were:

Security Policies

Revisions of two policies are in an advanced state of preparation. The Acceptable Use Policy and the Site Registration Security Policy were both changed to make them more general and reusable by other infrastructures. The former has changed the dependence on users registering with a VO to a general requirement and conditions for simply registering. This also makes it relevant for grids where the user is required to register with the infrastructure itself. The latter had its focus changed to be purely related to security policy issues, similar to the "Virtual Organisation Registration Security Policy“ which was approved in the previous quarter.

Both documents are now much shorter and simpler.

CREAM

The **CREAM** CE has been installed at all Tier1s and a number of Tier2s. Although the initial rollout metric was easily met earlier in the year the growth has been disappointing and the metric of an additional 50 sites by September was still not met by the end of the quarter (40 CREAM CEs at fewer sites). Despite the MB requiring more sites, the sites have not been motivated to add this new service, not seeing any benefits for themselves, nor being pressured by the experiments. This work has also been delayed by migration to SL5 and changes to storage systems for data taking.

Experience has been gained with new functionality in CREAM to pass some of the user-defined parameters through WMS to the local batch system.

SL5

By the end of the quarter less than half of sites had migrated to SL5 but more than half the capacity was available on SL5. This was enough to meet experiment requirements. By the end of the quarter Alice had started requiring SL5 only from its sites and CMS and ATLAS had both announced software releases for early 2010 that would only be built and run on SL5.

Pilot Jobs

The Multiuser Pilot Job frameworks of all experiments have been considered by the subgroup set up to evaluate their safeness. Progress in installing glexec/SCAS to allow identity switching has been very slow due to probelsm found in testing and the release being overtaken by SL5. The experiments expressed their frustration and their intention to run MUPJ without identity switching. To regularise this behaviour the MB suspended the relevant security policy until the end of February 2010. A working group of the newly-formed Technical Forum was set up and will poll the opinions and requirements of the sites.

Argus, a parallel development to SCAS achieved certification and a test programme with sites and experiments was started. The first release of Argus is functionally similar to SCAS and will be compared but the holding issue in both tests is the deployment of gLExec on WN..

LHCOPN

The LHCOPN group proposed treating all T1-T1 links as part of the OPN and forming a group to work on data flows to/from T2s as well. This ewas approved by the CB and MB and representatives of experiments and non-T1 sites sought.

Security Patching

A large number of sites took too long to install an urgent security patch that was made public last summer. Many only patched when EGEE threatened them with suspension in October. A subsequent threat later in the quarter was controlled more quickly by issueing the suspension threat sooner. A new EGEE policy was adopted of suspending sites who do not patch within seven days of the Security Officer requiring it.

Plans for the Next Quarter

In the next quarter:-

The installed capacity reports should be completed.

gLEexec with SCAS or Argus should be deployed more widely.

Deployment of CREAM should be encouraged more widely. There are signs that the experiments will start to carry out more detailed tests (Apart from Alice who are already fully commited to its use and will likely phase out use of LCG-CE next quarter.

Deployment of SL5 on WN will increase although there may be a long tail of sites retaining some resources as SL4.

The HEPiX Virtualisation Working Group should commence work. .

GDB Meetings During the Quarter

The GDB met three times in this quarter and the agenda and papers are available at:-

October http://indico.cern.ch/conferenceDisplay.py?confId=45480

November http://indico.cern.ch/conferenceDisplay.py?confId=45481

December http://indico.cern.ch/conferenceDisplay.py?confId=64669

QUARTERLY STATUS REPORT				
Project Name			**Date**	
Applications Area			06.02.2010	
Report Period			**Author Name**	
2009Q4			**Pere Mato**	
Milestones for the Quarter			**Status**	**Comments**
SPI				
SPI-18	**30.09.08 31.03.09 30.06.09 30.09.09 31.12.09 31.03.10**	Migration of the current SPI web contents to the newly deployed content management system. This will require the manual inspection and possibly correction, re-writing of the pages.	In progress. Reschedule d.	First parts of the SPI web are currently being fed into the new Drupal web page infrastructure, but the migration of the contents is still ongoing. The work was also re-scheduled because of more urgent SPI-33
SPI-29	**31.12.09**	ICC environment for AA building	Completed	The icc compiler suite was successfully integrated into the LCG AA compilation stack. Nightly builds are producing icc compilations for all AA projects.
SPI-30	**31.12.09 31.03.10**	Moving to Mac OSX 10.6 32 and 64 bit	In progress. Reschedule d	The migration to Mac OSX external packages in 32bit mode is almost finished. A few more packages need to be installed.
SPI-31	**31.12.09 31.03.10**	Extending Nightly builds for non CMT based projects	In progress. Reschedule d	After the successful deployment of the new version of nightly build scripts the feasibility of integrating CMS builds will be investigated.
SPI-32	**31.12.09**	Extending the nightly builds to CernVM	Completed	The proper setup for testing the AA project stack on CERNVM was done successfully and tested via the nightly build environment.
ROOT				
ROOT-24	**31.12.09**	Implement automatic test suites for fitting histograms, graphs and trees.	Completed	A new automatic test program for fitting all the ROOT data objects with all the possible options and minimizers algorithms from Minuit and Minuit2 has been provided before the 5.26 release and it is now run every night as part of the ROOT test suite.
ROOT-25	**31.12.09**	Provide implementations in RooStats for hypothesis tests and interval estimation with various techniques	Completed	The new production release, 5.26, provides now a complete set of classes for interval estimation and hypothesis tests based on frequentist (Neyman construction), likelihood and bayesian techniques (based on numerical or Markov-Chain Monte Carlo integration). This release improves also the methods previously released in 5.24, but with new interfaces and bug fixes.
ROOT-26	**31.12.09**	Testing CINT7 with CMS Framework	Canceled	CINT7's cost outweighs its benefits: the dictionaries become more fragile due to incompatible underlying concepts of CINT's and Reflex's reflection system and due to incompatible names. Patching those is possible, but will require additional development time. Even in its current state, CINT7 has an increased run-time, code size and memory usage. The status was presented <http://indico.cern.ch/materialDisplay.py?contribId=3&materialId=slides&confId=71078> and discussed with the experiments. They agreed
ROOT-27	**31.12.09**	Implement delayed loading for genreflex dictionaries	Completed	Implemented in version 5.26.00, as foreseen by the milestone. Due to e.g. POOL's I/O hooks, which need to query reflection data at a very early stage and trigger the dictionary loading, the gain is not as much as hoped for. It is not negligible either: CMS sees a gain of 75MB when running a reconstruction benchmark job.
ROOT-28	**31.12.09 31.03.10**	Implement a better PROOF benchmark suite to measure real performance	In progress. Reschedule d	First version being tested on the korean KISTI PROOF cluster. The target is to include it in the next development version 5.27/02.
ROOT-29	**31.12.09**	PROOF dynamic parallel merging	Completed	Parallel merging with dynamically determined submergers. The optimal number of submergers will be determined from the size and composition of the output list. This development has been included in version 5.26/00.
ROOT-30	**31.12.09 31.03.10**	PROOF worker auto-discovery using bonjour/avahi	In progress. Reschedule d	Using bonjour/avahi service discovery technology it is possible to eliminate the need for the proof.conf file with static information about the available worker machines.

ROOT-31	**31.12.09**	Implementation of 2D graphics entirely based on OpenGL	Completed	The pad painting is now done via a virtual class allowing to connect at run time either to the X11 or GL painting classes. So, the basic framework is in place to render 2D pads using GL. A complete implementation requires items like: - the rendering in XOR more (or equivalent) to render rubber band lines
ROOT-32	**31.12.09** **30.06.10**	Interfacing the Pad-GL to the 3-D GL viewer	In progress. Rescheduled	This milestone was not met as feature extensions and since user-support for ALICE and CMS had a higher priority. Preliminary investigations were made and development plan has been prepared. Propose to reschedule the milestone to 1.7.2010.
ROOT-33	**31.12.09**	Implementation of an interface for the "graphviz" package	Completed	The interface was implemented. Now the new classes need to be used from packages like THTML and gviz3d. This will trigger improvements and new developments.
ROOT-34	**31.12.09**	Finalization and consolidatiuon of the Event Recorder	Completed	The cross-platform interoperability has been improved, allowing to record and replay sessions between different platforms. Several macros using the recorder have been added in the tutorials by each package manager, used for QA (Quality Assurance). They will be used in the nightly test suite as soon as a dedicated node is
ROOT-35	**31.12.09**	Consolidation of the GUI builder	Completed	Its user interface has been improved, in order to be more intuitive. The different editing modes are now clearly distinguished, and every element of the GUI is now editable. The robustness has also been improved, and several important dialogs, such as "Save Project" when closing the window, have been added.
POOL				
POOL-17	**31.10.08** **30.04.09** **30.07.09** **31.12.09** **31.03.10**	Release of CORAL Server with secure authentication. All functional tests pass.	In progress. Rescheduled.	This is a rescheduled milestone, previously expected for October 2008 as part of POOL-16. A first implementation of secure data transmission and grid certificate authentication using VOMS and ssl was prepared in Q1 2009, using the new design for component architecture. During Q2, the implementation was completed with the addition of VOMS-based authorization, of a tool for maintaining a list of connections and credentials, and of a more complete test suite. The package has not yet been released because its external dependencies and integration with LCGCMT still need to be finalised in the wider context of LCG AA dependencies on Grid packages. There was no progress on these issues in Q3 or Q4. The CORAL server software was developed and tested (on SLC4 and SLC5) using a 1.9 VOMS package that uses the system version of ssl and does not depend on Globus. However, this may lead to incompatibilities with other Grid packages (like gfal) that on SLC4 can only be supported using the Globus version of ssl. It is likely that the secure CORAL server will be release either only on SLC5 using the no-Globus VOMS, or also on SLC4 using the Globus-based VOMS.
POOL-18	**31.10.08** **30.04.09** **30.09.09** **31.12.09** **31.03.10**	Release of CORAL Server with full write functionality (DML and DDL). All functional tests pass.	Rescheduled.	This is a rescheduled milestone previously expected for October 2008 as part of POOL-16.
POOL-25	**30.09.09** **31.12.09** **31.03.10**	Performance optimizations in the CORAL LFC replica service.	In test. Rescheduled.	Peformance issues with the LFC replica service have been observed by LHCb during Q2 2009. A first patch to fix some of these problems was included in CORAL 2.3.2 (July 2009). Another patch was added in Q3 to address other pending issues but still needs to be tested and validated by LHCb in Q1 2010.
POOL-26	**31.10.09** **31.03.10**	Monitoring tools for the CORAL server and CORAL server proxy.	In progress. Rescheduled.	A new package CoralMonitor has been added during Q3 2009. This presently allows the collection of timing and other statistics from the CORAL server and client components and their dump to a csv file or their real-time visualization. More work is needed to allow fine-grained monitoring of individual resource-intensive requests, as well as the monitoring of the CORAL server proxy.

COOL				
COOL-29	**30.09.08** **31.12.08** **31.03.09** **30.09.09** **31.12.09**	Expose transaction management in the user API.	In progress. *Removed.*	Prototypes of the API and implementation for this feature (requested by ATLAS) were prepared in Q4 2008. The task of reviewing and releasing this implementation has never been completed, due to more urgent priorities for the PF in 2009 (such as the CORAL server developments and the support for new platforms and externals). The milestone has been removed because this functionality is no longer a priority for ATLAS and because a more general review of transaction management in CORAL and COOL is likely to take place in the context of CORAL server developments in 2010.
COOL-30	**30.09.08** **31.12.08** **31.03.09** **30.09.09** **31.12.09**	Allow session sharing in the user API.	Depends on COOL-29. *Removed.*	This milestone depends on transaction management (COOL-29). Both milestones have been removed as they are no longer a priority for ATLAS.
COOL-35	**30.06.09** **30.12.09** **30.06.10**	Migration from CVS to SVN.	No progress. Reschedule d.	This task has now a lower priority and has been rescheduled because the CVS service will be maintained until all experiments have migrated to SVN, which is not expected to happen before the end of 2010.
COOL-37	**30.10.09**	Full support for Oracle on Linux SLC5.	Completed.	For LCG releases using Oracle 10.2 (up to the LCG_56 series), support for Oracle on SLC5 can only be provided if the SELinux security layer is partially disabled. This is due to the presence of text relocations in the Oracle 10.2 client libraries, which may result in failures at runtime ('cannot restore segment prot after relocation') if SElinux is fully enabled. The issue, which has been followed up with Oracle Support by the PF team, can only be solved by an upgrade to the latest version 11.2 of Oracle, released in September 2009. The Oracle 11.2 client libraries for Linux have been installed and used to prepare the latest LCG_57 release, including COOL 2.8.3 (September 2009). According to Oracle, the problem should be fully solved in the 11.2 OCI libraries, used by CORAL. It is worth noting that the issue is instead still unsolved for OCCI-based applications (such as some CMS packages). During Q4 2009, a few more problems in the 11.2 OCI libraries for linux64 have been observed and reported to Oracle. However the problem is no longer considered a showstopper, thanks to a much
COOL-39	**30.09.09** **30.11.09**	Performance improvement for CLOB data (bulk retrieval).	Completed.	During Q2 2009 Atlas reported slow performance for read access to COOL folders containing CLOB data. The COOL implementation has been changed so that CLOB data are retrieved in bulk via CORAL rather than row by row. After being validated through functional and performance tests, the patch was released in COOL 2.8.4 (December 2009).
SIMU				
SIMU-20	**30.11.07** **30.11.09** **31.10.10**	Review, redesign and debugging of the FLUGG tool (SF711)	On hold. Reschedule d	Some progress made in the investigations concerning the problem affecting the ATLAS HEC test-beam setup; a fix however is not yet in place. G.Camellini, the student assigned to this task leaves in January; manpower would be required to complete this milestone. Rescheduled to October 2010.
SIMU-38	**1.06.09** **1.12.09**	Evaluation of Rivet and HepMC Analysis Tool for regression testing based on distributions (GS905)	Canceled	This milestone has been re-phased to SIMU-43. This one can be canceled.
SIMU-39-b	**01.12.09**	Investigation and improvements of the transition between Geant4 hadronic models (G4901)	Completed	The investigations of the hadronic reactions have identified a key source of the discontinuities in energy deposition; fractions of the initial beam energy carried by outgoing pions and nucleons depend strongly on the model chosen. Improvements have been made in the FTF/Fritiof hadronic model at energies below 5 GeV, covering reactions with few outgoing particles and a comparison with the Bertini cascade. Improvements lead to better matching with the Bertini model at 3 and 8 GeV, enabling a smoother transition to be achieved in the FTFP_BERT physics list. Examined potential of new CHIPS physics list, which utilises a single model; it achieves smooth dependence on energy; further improvement and tuning of model parameters appears necessary.

SIMU-40	**19.12.09**	Contributions to the December 2009 public release of Geant4 (G4908)	Completed	Release 9.3 announced on schedule; some of the features included are listed here… Extended CHIPS model with hadronic interactions covering all energies for all hadronic particles. Created new CHIPS physics-list that uses it. Improved FTF model: revised pion absorption on nucleons, introduced Reggeon cascade stage, implemented quark-exchange for hadronic interactions and and added excitation energy calculation. Improved memory allocation for touchables, addressing issue reported by CMS and ATLAS, and achieving 5% CPU speed improvement in complex test setups. Collaboration with Geant4 partners to solicit and test other improvements: one reduced memory use by Bertini (SLAC) with speedup of 5% in time per event; another reduced by a factor 3 the initialization time used in building physics tables for EM stopping powers, ranges and cross-sections (in collaboration with Japan). Adapted a stepper for magnetic fields developed in Atlas, which reduces number of calls to expensive field evaluation method, improving performance. Improvements to the GDML writer, enabling it to cope with extensions of the schema by users (for use with custom solids, as used by Atlas). The repeated integration testing in combination with the extensive
SIMU-41	**01.12.09**	Complete build of all versions of generators with 'autotools' (GS911)	Completed	Implementation of the new build system completed.
SIMU-42	**01.12.09**	Support MCDB for CMS productions (GS912)	Completed	CMS is now using MCDB in large GRID productions
SIMU-43	**01.12.09** **31.07.10**	Evaluation of Rivet for regression testing based on distributions (GS913)	On hold. Rescheduled	On hold. Progress expected in the next months. Rescheduled to July 2010

Summary Of Progress

In the last quarter of 2009 the SPI project was concentrating on extending the AA software stack into new areas, such as the successful migration to the Intel icc compiler suite. More compiler flavors, such as the experimental llvm suite, are foreseen for the near future. The nightly build system, which is performing continuous building and testing of the AA project stack, has been released in a new version which uses the full potential of multicore build machines by parallelizing the builds on several levels. Moreover new features such as code coverage testing results and a new overview webpage have been deployed which are very much appreciated by the user community. Urgent works on migrating the Savannah bug tracking project onto the slc5 operating system have started and progressed well.

The production version 5.26/00 of ROOT was released in December on schedule. The detailed release notes are available at http://root.cern.ch/root/v526/Version526.news.html. Among the many improvements in many areas it is worth to mention the optimizations in the ROOT Tree and I/O system, achieving speedup factors of order 5 or 6 while reading ATLAS AOD files. A new class called TTreePerfStats has been introduced to measure the I/O performance of a Tree.

New versions of all PF projects have been released in Q4 2009 for the three new configurations LCG_57a (November 2009), LCG_56d (December 2009) and LCG_58 (January 2010). LCG_56d is based on ROOT 5.22 and was requested by ATLAS, while LCG_57a and LCG_58 are based on ROOT 5.24 and ROOT 5.26 respectively and were requested by LHCb. The three releases include several enhancements specific to PF projects, such as a COOL performance fix for CLOB data access and the CORAL move to the "light" version of the Oracle instant client, both requested by ATLAS. Reconnecting to an Oracle database after a connection glitch has been made more robust in CORAL, following many support requests of production users in the experiments at the time of the LHC startup. The POOL fast file merge feature implemented in an earlier release has also been validated by ATLAS during Q4 2009.

Progress was made in Q4 2009 on improving monitoring and performance for the CORAL server software, but these enhancements have not yet been fully tested, therefore their release and deployment has been postponed to avoid disruptions to the ATLAS online system.
New issues have been reported in the Oracle client libraries, caused by text relocations on SLC5 with SELinux enabled, and are being followed up with Oracle support. The port of CORAL to the icc compiler in Q4 2009 was useful to further investigate this problem, as the same symptoms have been observed in the CORAL libraries built using an old version of icc.

In the last quarter of 2009 a considerable number of open milestones have been achieved. The investigations carried out on the transition between different hadronic models have been beneficial and relevant improvements have been made in several models, FTF, Bertini and CHIPS. The new public release of Geant4, Geant4 9.3, was delivered on schedule; CPU speedups (both at initialisation and run-time) and improved memory management are included in this new release, as the result of strong cooperation with ATLAS and CMS teams. The build system of GENSER is now fully based on ‘autotools’ with bootstrap approach. W.Pokorski will lead the Generator Services sub-project as of January 2010, replacing A.Ribon.

Issues During the Quarter

Milestones Changes and Actions

References and Hyperlinks

New and Next Quarter Milestones			Status	Comments
SPI-33	**31.03.10**	Moving Savannah to slc5	New	The Savannah bug tracking system needs to be migrated on to the new slc5 operating system
SPI-34	**31.03.10**	llvm environment for AA building	New	An experimental compiler "llvm" shall be tested to build the AA project stack, e.g. via the nightly build system
SPI-35	**31.03.10**	Re-organizing python module distributions	New	Due to very many requests of python modules to be included into the AA software distribution, they need to be re-organized, i.e. grouping modules into bigger "chunks".
ROOT-36	**31.12.10**	Implement a new histogram class in one and multi-dimensions for binomial probabilities (efficiency histogram) and for non-parametric kernel density estimators	New	
ROOT-37	**31.12.10**	Provide a new test suite for all the major RooStats method	New	
ROOT-38	**31.12.10**	Interactive remote ROOT sessions. Investigation and implementation of a prototype.	New	The remote root session allows to remotely (via ssh) run root macros and to locally receive and display the results (e.g. histograms). The goal is to investigate and implement a prototype of interactivity between the local and remote sessions, with client and server running root, but also investigate remote access with mobile devices (e.g. via javascript) by using possibly the same engine.
ROOT-39	**31.03.10**	Improvements in PROOF: support for running over multiple datasets at once or same dataset with multiple entry-lists, new benchmark suite, support for associated files in datasets	New	
ROOT-40	**30.09.10**	Improvements in PROOF: TPackageManager including support for packages under Windows, connection layer w/ session-owned TCP socket, re-designed XrdProofd plug-in.	New	
ROOT-41	**31.12.10**	Consolidation of PROOF dynamic setup: support for worker addition, support for session check-pointing, worker auto-discovery	New	
POOL-29	**28.02.10**	Fast merge of POOL files.	Completed.	Support for fast merge of POOL files has been requested by ATLAS. The implementation of this feature was released in POOL 2.9.3 (September 2009) and was then tested and validated by ATLAS during Q4 2009.
POOL-30	**28.02.10**	CORAL API for Oracle partitioning.		
POOL-31	**28.02.10**	Deployment of a general-purpose CORAL server instance for CERN users.		
POOL-32	**31.12.09**	Reduce the high memory footprint of CORAL-based applications caused by the Oracle instant client libraries.	New. Completed.	All new versions of CORAL released in Q4 2009 have been built using the "light" version of the Oracle instant client library to reduce the memory footprint of CORAL-based applications (which was especially a problem for ATLAS). The full instant client had been needed to support the character set previously used by the devdb10

COOL-42	**28.02.10**	Oracle partitioning for the COOL relational schema.	In progress.	Oracle partitioning is being evaluated as a component of the strategy for the long term archiving of the large volumes of COOL conditions data from the LHC experiments. Tests of COOL query performance on partitioned schema prototypes have been resumed in Q3 2009, giving more optimistic results than previous tests performed in 2008
COOL-43	**31.01.10**	COOL, CORAL and POOL port to the ICC compiler.	New. Completed.	A new development platform using the icc compiler on Linux was introduced in Q4 2009. CORAL, POOL and COOL have been ported to the new platform and the nightly builds and tests are now successful for all three projects. The port to icc was useful to improve the code by removing new build warnings from icc, and to further
SIMU-21	**15.12.07** **31.12.08** **15.03.10** **30.09.10**	Thin-target validations of Geant4 forward physics (G4712)	On hold. Reschedule d	Remains pending. A new fellow, A.Dotti, started in July 2009. This topic will be the second of two main areas of his involvement. Proposed revised date: mid-September 2010.
SIMU-25	**30.03.08** **31.03.09** **31.03.10**	4th simple benchmark for Geant4 and Fluka: diffraction of nuclei (VD801)	On hold. Reschedule d.	Waiting for the new fellowship to start on July 1st. Milestone to be rescheduled for March 2010.
SIMU-31	**01.06.08** **31.12.08** **30.06.09** **01.06.10**	Extend Rivet validation to new C++ generators (GS808)	On hold. Reschedule d.	Given the current man-power and the need to complete the migration to 'autotools' for all generators, the milestone should be rescheduled for June 2010.
SIMU-44	**15.07.10**	Contributions to June 2010 Geant4 Beta release (G41001)	New	2nd level milestone
SIMU-45	**01.10.10**	Investigation on the effects of model transition on energy resolution (G41002)	New	2nd level milestone
SIMU-46	**01.12.10**	Review of key Geant4 classes & interfaces: priority and plan for revision (G41003)	New	2nd level milestone
SIMU-47	**15.12.10**	Contributions to the December 2010 public release of Geant4 (G41004)	New	2nd level milestone
SIMU-48	**31.03.10**	Porting of generators to MacOS-X 32/64 bits (GS1005)	New	2nd level milestone
SIMU-49	**01.06.10**	Review of tests, addition of new tests and more adoption of distribution-based tests (GS1008)	New	2nd level milestone
SIMU-50	**01.06.10**	Nightly tests for HepMC (GS1009)	New	2nd level milestone
Comments and Additional Information				

ALICE Report

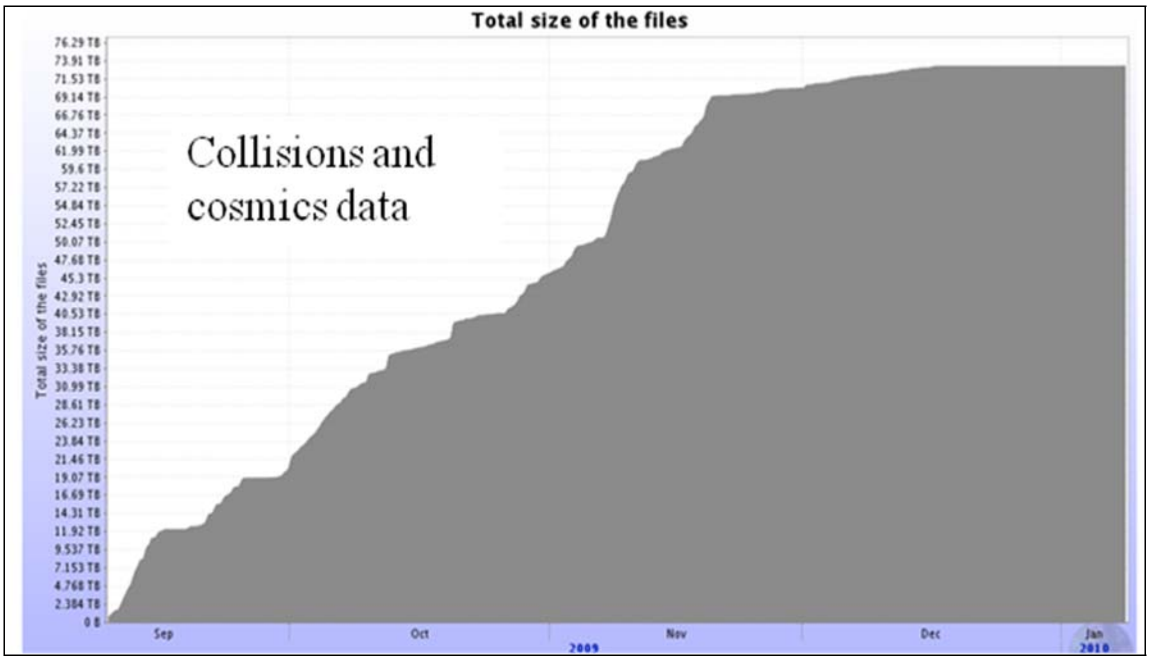
October - December 2009

Y.Schutz

Data Taking

ALICE data taking started with all installed detectors from the first collision on. A total of 1 Mio collision events for 365 GB RAW were stored at the Tier-0 and replicated two times in external Tier-1 Sites only after end of data taking, not in parallel.

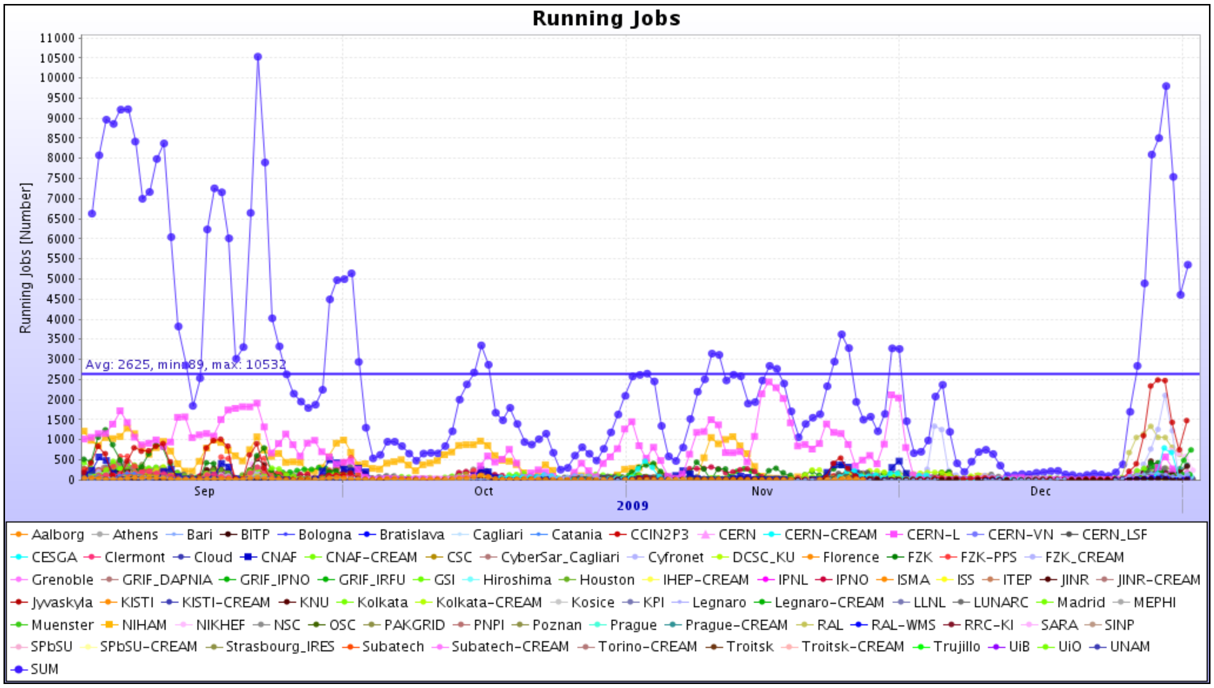
The data migration strategy changed: during data taking data are migrated from the DAQ disk buffer to the ALICE CASTOR disk pool (alicedisk) for temporary storage; data are then optionally migrated to the CASTOR permanent data storage (t0alice).
CASTOR v.2.1.8 was extremely stable throughout the data taking activities.



Data Processing

Pilot reconstruction and analysis was performed for a fraction of the run, typically a few thousands events, on the CAF as soon as data are transferred to CASTOR and registered in the AliEn file catalogue. This method was chosen because it provides quick feedback to run coordination on data quality.

Data reconstruction is automatically launched (first pass) at Tier-0 at the end of the run and ESDs are available for analysis a few hours later in 3 SE. The first pass reconstruction success rate was ~96%. Second pass reconstruction has been run during the Christmas break at Tier-0+Tier-1 Sites. Second pass reconstruction success rate was ~98%. The ALICE analysis trains have run several times over the entire set of reconstructed data of pass1 and pass2. MC production was executed at all Sites with several ‘Early Physics’ production runs with RAW conditions data. In average 2600 jobs were running concurrently.



ALICE Software

When confronted for the first time with real collision data, a number of fixes were needed to the algorithms. The main issues found regarded high memory usage ~ 4 GB for RAW reconstruction. Therefore the main effort is concentrated in reducing the memory usage of the ALICE applications. The goal is to reach 2 GB of memory, after calibrating the detectors with the collected data sample. A new release of the ALICE software was performed on January 15.

Services: SL5 and CREAM

Priority was given to SL5 migration and all Tier-1 Sites and most of the Tier-2 Sites have migrated. Four Tier-2 Sites were still blocked (Athens, PNPI, UNAM, Madrid) because they do not run SL5. All migration is expected to be completed by the end of January.

CREAM CE deployment reached 50% of the ALICE Sites without further recent progress. Therefore ALICE still has to run dual submission on both CREAM and WMS this is not the desired setup for ALICE and they will continue to work with the Sites on asking for the deployment of the CREAM CE at all Sites.

Milestones

The ALICE updated milestones, both completed, are:

- MS-130 15 Feb 10: CREAM CE deployed at all Sites
- MS-131 15 Jan 10: AliRoot release ready for data taking

Conclusions

The first data taking period has been a full success for ALICE in general and for ALICE computing in particular data flow and data processing went as planned in the Computing Model. The Grid operation has been smooth and the Sites delivered in general what they have pledged. Two main concerns remain and are the excessive usage of memory prevents ALICE from running at all Tier-1 Sites and achieve uniformity of the submission system (i.e. CREAM at all Sites) before start of data taking.

ATLAS Report

October - December 2009

D.Barberis

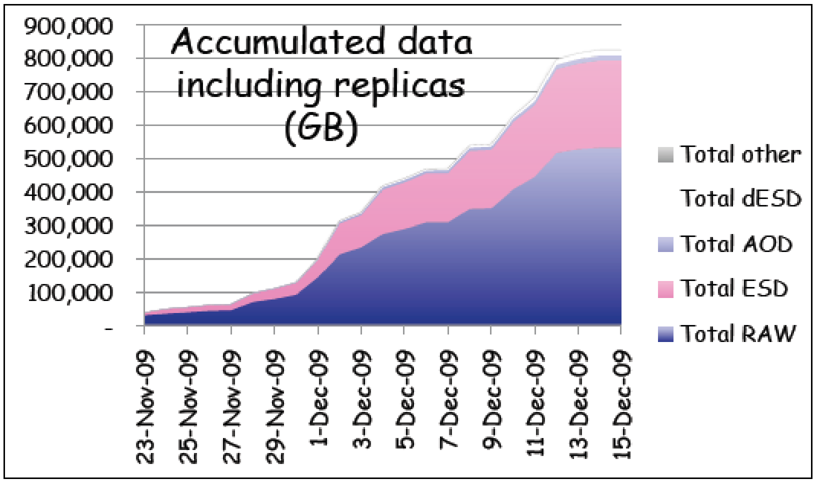
Tier-0 and data-taking activities

In October 2009 ATLAS took global cosmics and by Mid-November at the start of LHC data ATLAS was ready. Data taking was performed with open trigger, with low thresholds, and the full calorimeter read-out. Data size was 5 MB/event on average.

The instantaneous rate was limited to 800 MB/s, but the average event rate was very low anyway. This setup produced Large RAW, but small ESD.

Cosmics runs are interleaved with LHC runs when the LHC is not running. They are needed, together with beam halo, for detector alignment to constrain the weak distortion modes that cannot be constrained by tracks originating from the collision point.

ATLAS has accumulated almost 1 PB of data, including replicas. All data was processed in real time at Tier-0 and there were no surprises with respect to MC events in terms of CPU and memory.



Data Distribution Pattern and Performance

RAW

All RAW data was sent to disk and tape in each Tier-1 by Tier-1 share. Moreover all RAW go to disk at BNL, Lyon and SARA. Normal is tape in each Tier-1 by Tier-1 share and no extra RAW data to disk at CERN except for the CAF.

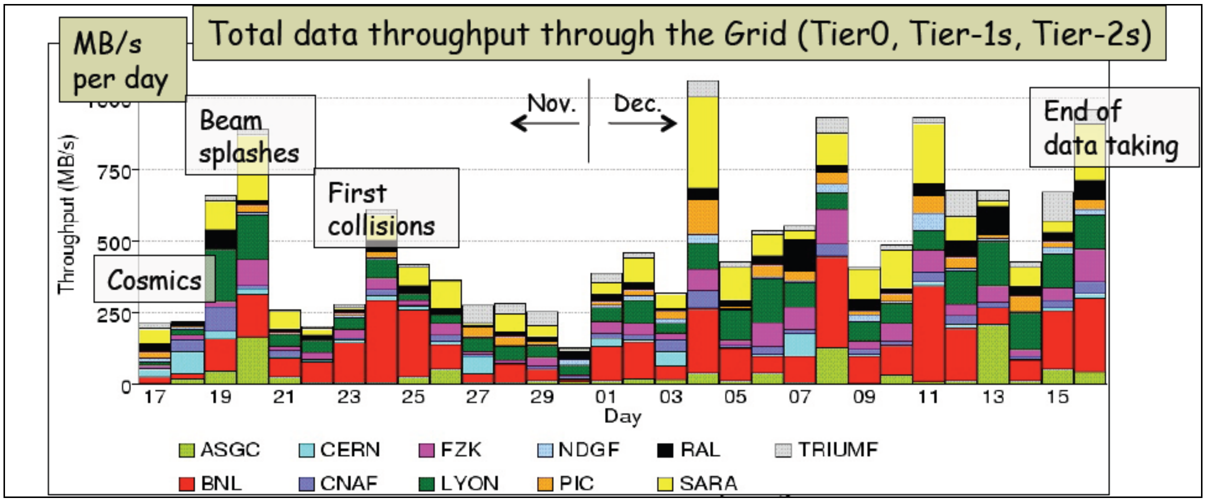
ESD

All ESD data was stored on disk in each Tier-1. Normally one would have two copies, distributed over all Tier-1 Sites, with full ESD copy to disk at CERN and ESD data to disk in Tier-2 Sites by Tier-2 share.

AOD and dESD, skimmed data, to disk in all Tier-1 Sites. Normally would be two copies kept in all Tier-1 Sites only. Copied to disk in Tier-2 Sites by Tier-2 share (total ~18 copies). Normal is 10 copies in the Tier-2 Sites only

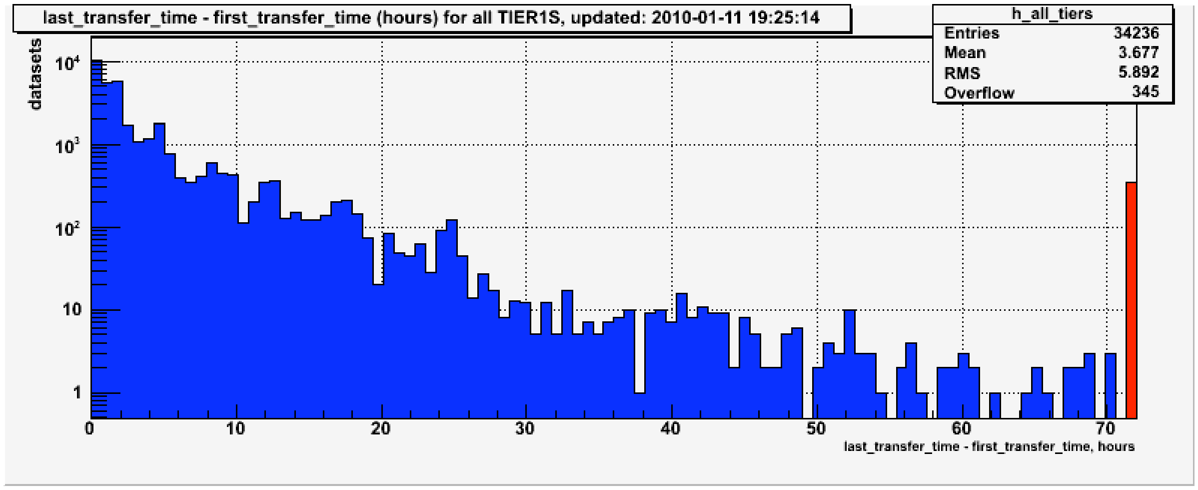
Additional copies will be reduced dynamically to make room for 2010 data.

Below is the total data throughput over a month in November and December.



All data were delivered to Tier-1 Sites and Tier-2 Sites using open datasets. RAW during data-taking (run in progress) while ESD etc during Tier-0 processing, as soon as outputs were available.

Data were available for analysis at Tier-2 Sites on average 4 hours after data-taking; including the time for Tier-0 processing

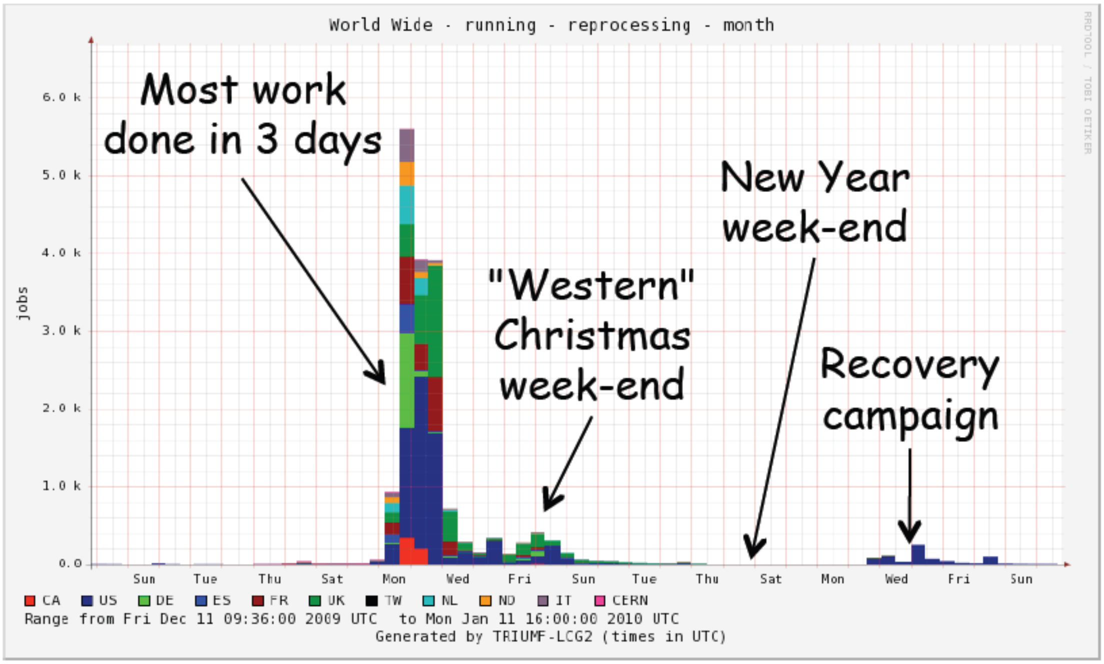


Data Reprocessing

An "ultra-fast" reprocessing campaign was run on 21-31 December 2009 using the last Tier-0 software cache plus a few last-minute bug fixes (release 15.5.4.10) and most up-to-date calibrations and alignments for the whole period.

Only 22 RAW->ESD jobs failed out of 130148 and 27 ESD->AOD jobs out of 10001

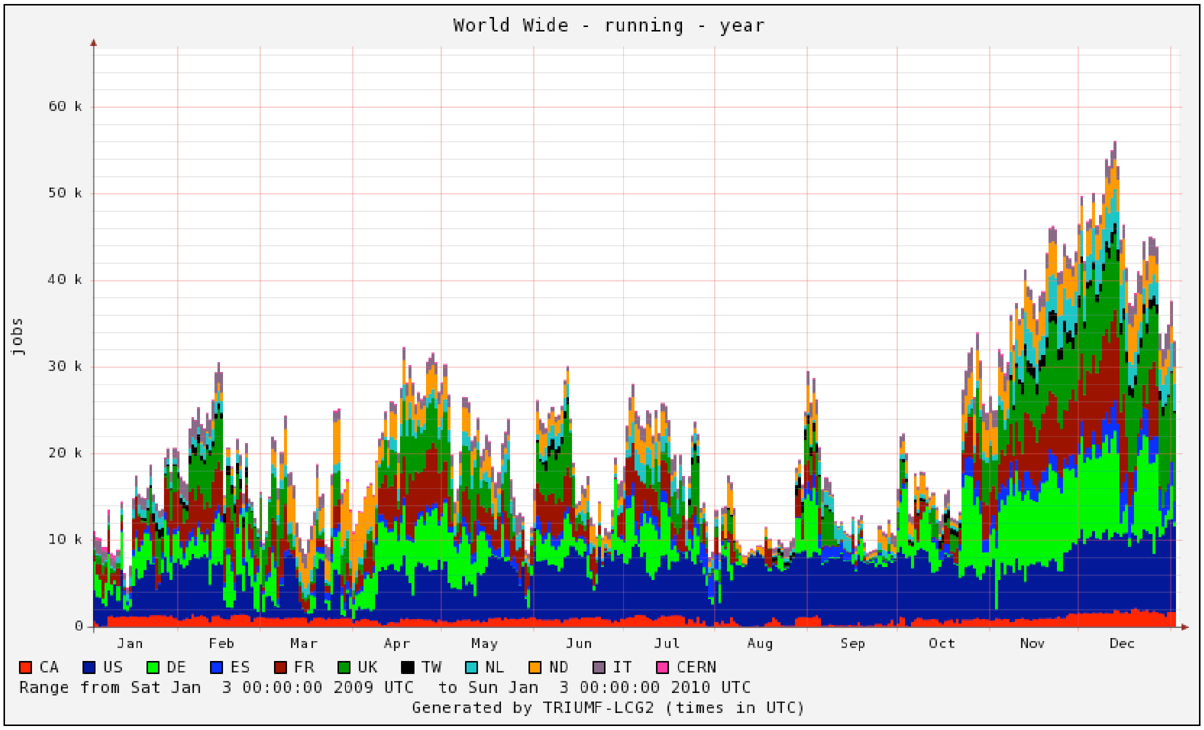
A few software bugs are being followed up; they are affecting beam splash events. Next reprocessing round will take place in February using release 15.6.3.X built now. It will also be a test of releases 15.6.X.Y to be used at Tier-0 next month. All was on SLC5/gcc4.3 only.



Simulation Production

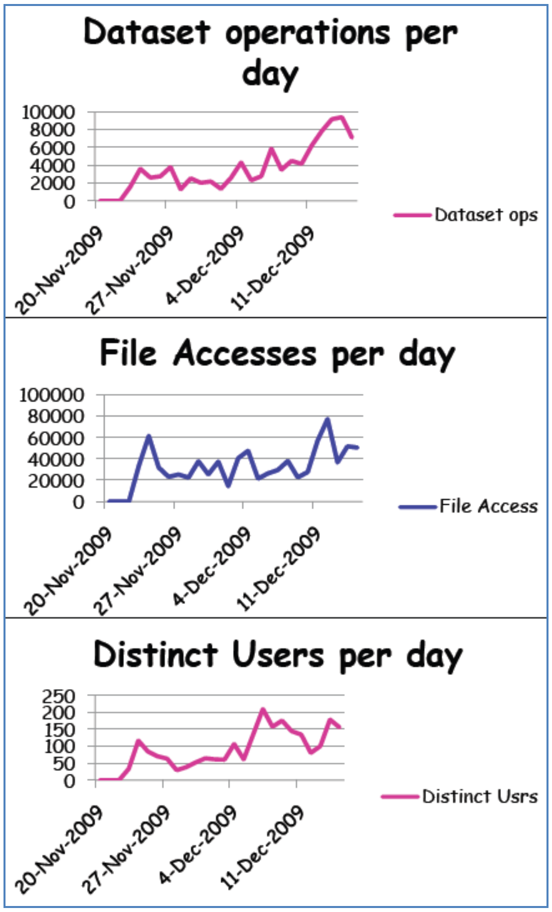
Simulation production continues in the background all the time. It is only limited by physics requests and the availability of disk space for the output.

Parallel effort is underway for MC reconstruction and reprocessing. It is including reprocessing of MC09 900 GeV and 2.36 TeV samples with AtlasTier0 15.5.4.10 reconstruction, same release as for data reprocessing.



Analysis Data Access

Data were analysed on the Grid already from the first days of data-taking as shown below.



Several "single" users submitted event selection and/or analysis jobs on behalf of their physics working group. Output is made of ntuples that are then copied to group space and then downloaded by end users.

Using this work model the number of real Grid users is considerably underestimated.

Plans

ATLAS plans to restart data-taking with separate detector runs during January, with no data export. They will start global cosmics run first week of February, with start of Tier-0 data processing and export. ATLAS is ready for LHC beams in 2010.

CMS Report

October – December 2009

I.Fisk

Introduction

The CMS Distributed Computing System generally performed well with the addition of collision data. The data rates and sample sizes are still quite low and the system was not resource constrained during this early period.

The workflows and activities were generally what were expected from the CMS computing model; but the workflow could be executed much more frequently.

- Data was multiply subscribed. More Tier-1 (four) and Tier-2 (about 13) subscriptions than would happen with more data.
- Re-processing occurred every 2-3 days instead of every couple of months.

Data Reconstruction, Skimming, Re-reconstruction at Tier-1 Sites could run in parallel with distributed user analysis and MC production at Tier-2 Sites.

Data Collection Infrastructure

Tier-0 and Tier-1 Re-reco and Data Distribution Systems functioned with early collisions. Events were reconstructed and exported to Tier-1 Sites, the express stream latency was at target levels and data was re-reconstructed using Tier-1 centers. In addition the Prompt Skimming system was moved into production.

The Tier-0 Facility had been routinely exercised with cosmic data taking and simulated event samples and was performing stably with Cosmics data with very few failures as shown below.

Job Type	Total Jobs	Failures	Success Rate
Express	342186	31	99.99%
Repack	134730	2	100.00%
PromptReco	38911	18	99.95%
AlcaSkim	41659	3	99.99%

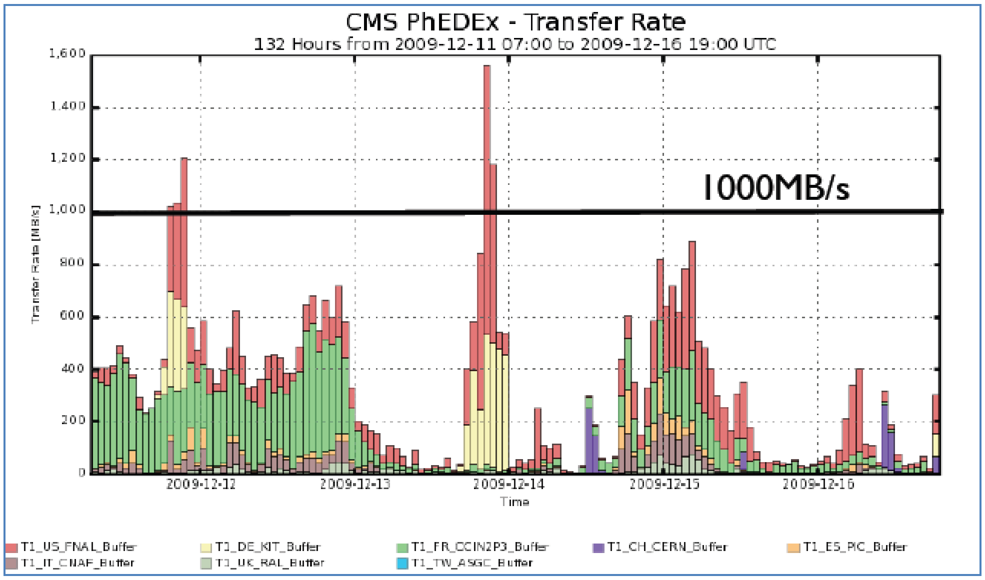
One should note that failures were concentrated in setup phase and therefore were not so important.

Job Type	Total Jobs	Failures	Success Rate
Express	404546	9442	97.72%
Repack	86982	69	99.92%
PromptReco	209773	2875	98.64%
AlcaSkim	17631	431	97.61%

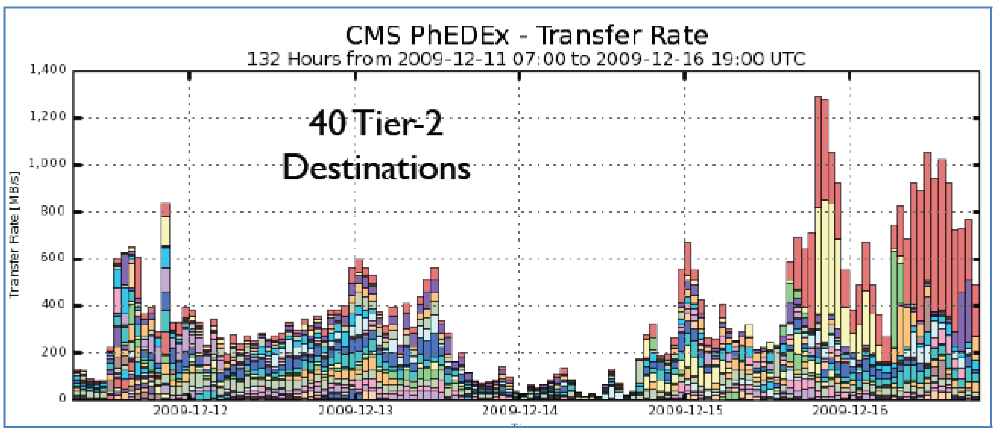
The ~3000 cores at CERN were all used with local submission to farm with multiple workflows. Overall there was very good stability and performance of the CMS software. CMS received confirmation from CERN on Tier-0+CAF pledge in 2010.

Data Distribution and Access

Below is data distribution from CERN or a Tier-1 going to destination at another Tier-1.

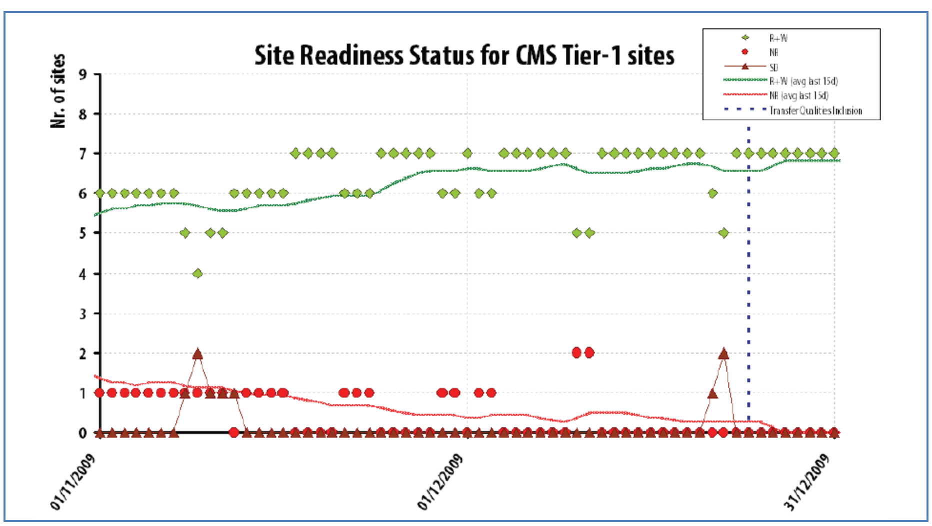


And here instead is with source a Tier-1 going to a destination Tier-2.

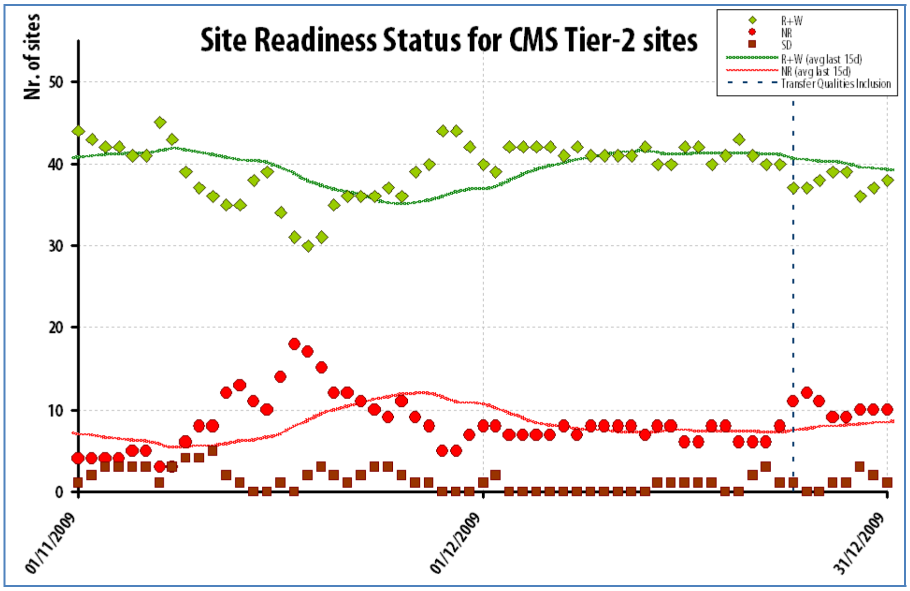


Site Stability

Tier-1 Readiness for November and December is shown below.



About 40 Tier-2 are constantly available but has not improved over the two months.



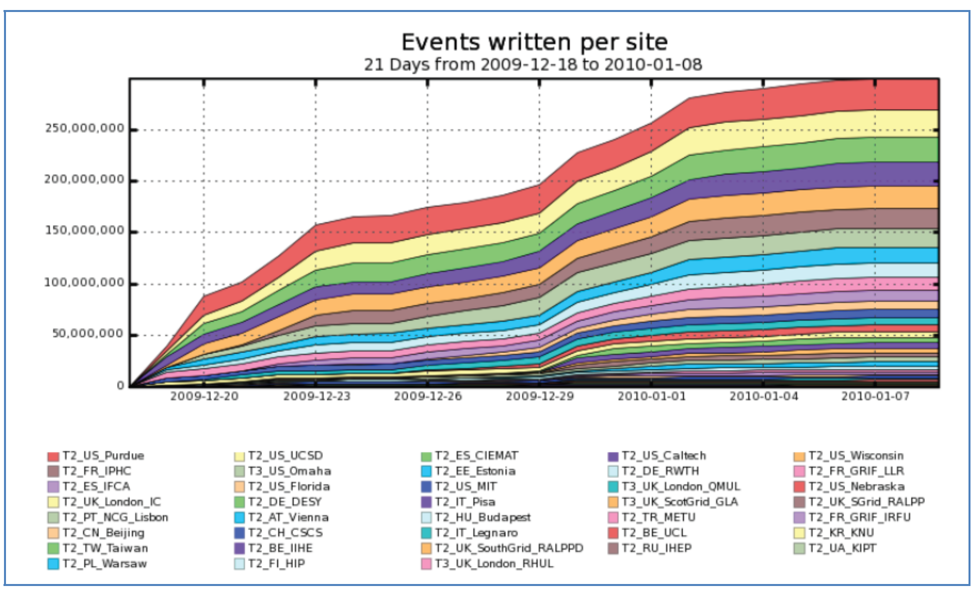
Activities over the end 2009 Break

Data Processing Activities during the break were the following: Re-processing and skimming of all good runs finished on 12/24 for the two large physics datasets

- ZeroBias 22M RAW events, 1019 files processed.
  11TB produced, 112M events in Secondary Datasets, AlcaReco etc
- MinimumBias RAW 21.5M events, 1207 files processed.
  10TB produced, 74M events in Secondary Datasets, AlcaReco etc distributed
  Processed for two software releases (on SL5 and SL4).
  Re-processing of MC datasets finished on 12/25, 20M MinimumBias
  Re-processing of Cosmics MC finished on 12/25, 130M events

Problem-free processing of high-quality data. For the latest CMS software version only 1 of >2000 job failed due to memory consumption and was done within 5 days.

MC Production



Smooth MC Production over break with 120M events produced (RAW, RECO, AOD); including special MinBias samples for comparison with 900GeV and 2.36TpV data. Most was with Full Simulation, some with Fast Simulation

Current Activities and Conclusions

CMS operated in an environment without resource constraints; data rate and complexity is lower than expected in the final system and this allows many more passes and caused some complaints about lack of utilization. The number of users is also lower.

The CMS Computing TDR defines the burst rate Tier-1 to Tier-2 as 50MB/s for slower links up to 500MB/s for the best connected Sites. CMS have seen a full spectrum of achieved transfer rates. From the size of the facilities and the amount of data hosted, CMS has planning estimates for how much export bandwidth should be achievable at a particular Tier-. No Tier-1 has been observed to hit the planning numbers.

CMS would like to organize a concerted effort to exercise the export capability and need to work with Site representatives, CMS experts, FTS and Network experts. This is an area for collaboration.

In conclusion the Distributed Computing worked well during the opening collision data for CMS. CMS thanked CERN and the Tier-1 Sites for keeping things working.

LHCb Report

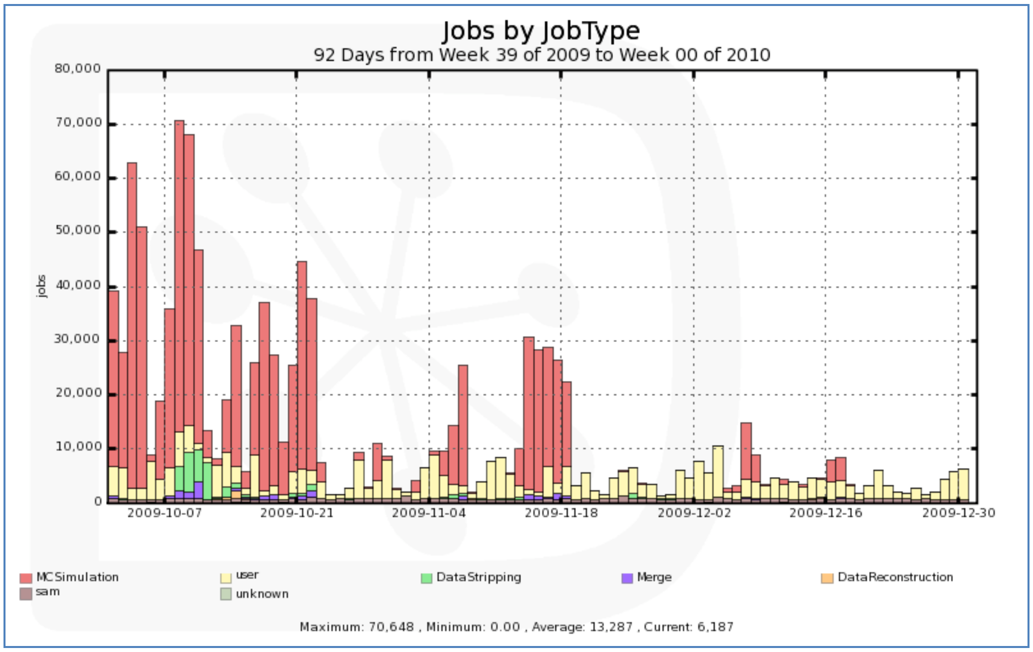
October - December 2009

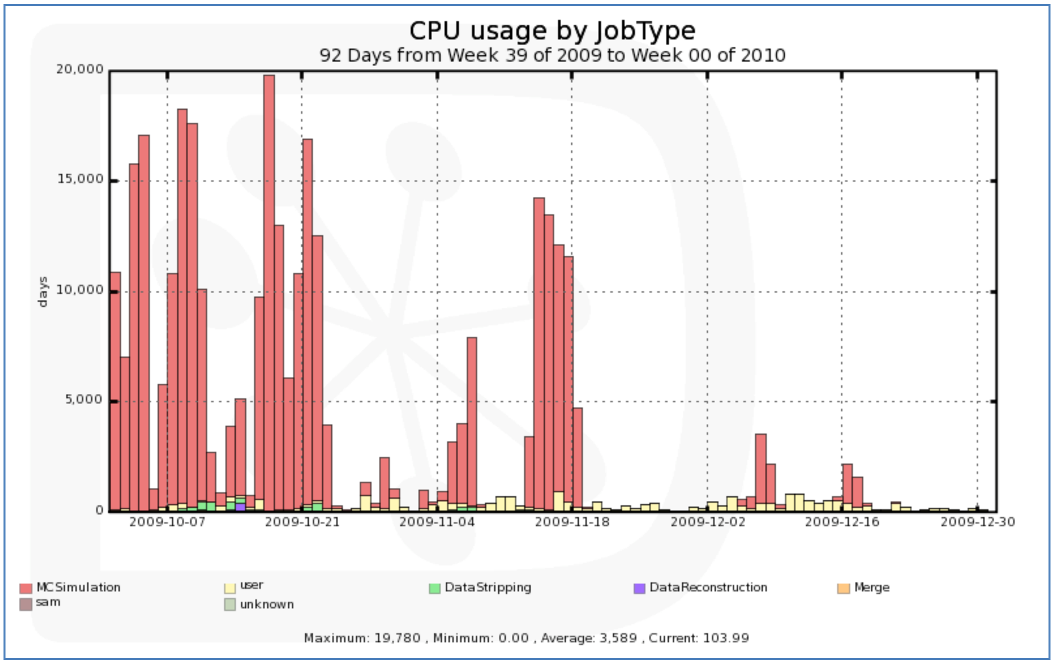
Ph.Charpentier

LHCb Activities in 2009Q4

The main LHCb activities during the quarter were in setting stable version of the LHCb Core Software and of the Applications by September in order to be ready for real data. Fast minor releases followed.

Below are the Number of Jobs per day and the CPU Usage by Job Type during the quarter.





Experience with Real Data

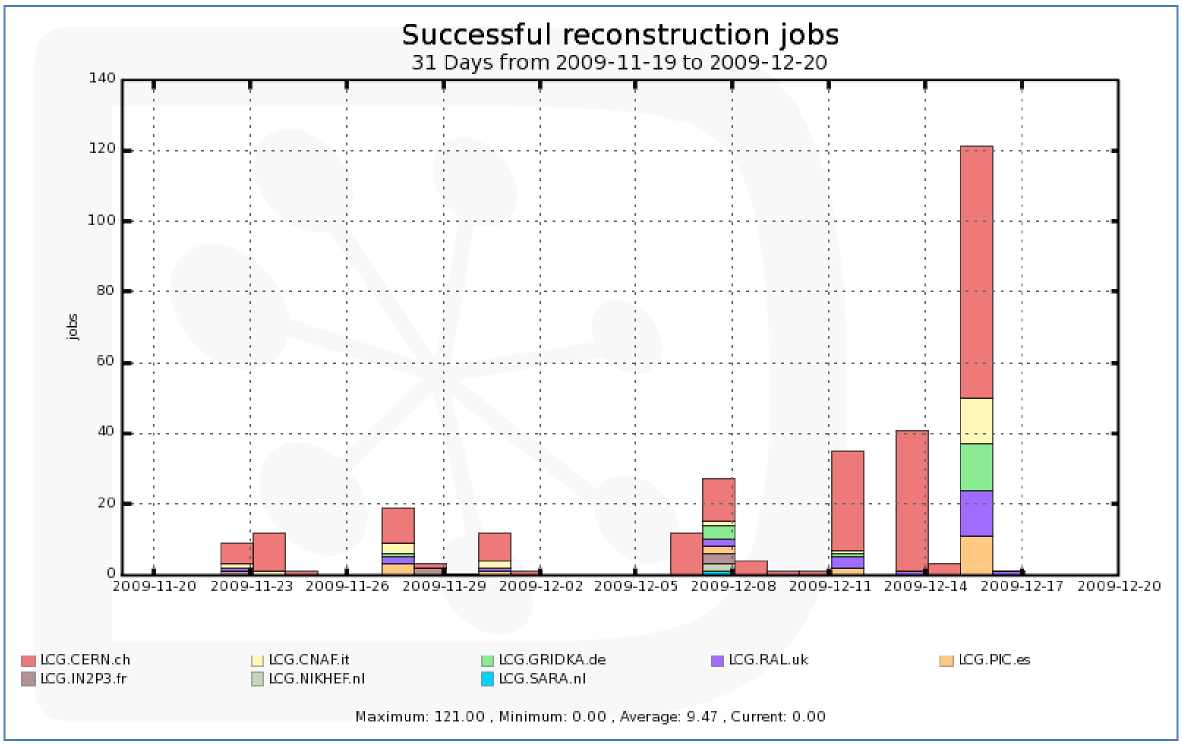
LHCb had very little data to collect. Only 217 GB were gathered, due to very low crossing rate with a maximum of 8 bunches colliding (88 kHz crossing) with very low luminosity. Minimum bias trigger rate: from 0.1 to 10 Hz. Data was taken with single beam and with collisions.

	Number of RAW Files	Total File Size
Lhcb Beam1	36	0.4 GB
Lhcb Collision09	120	217.4 GB

Read Data Processing

The Data processing was and Iterative process with small changes in the reconstruction application and improved alignment. In total 5 sets of processing conditions and only the last files were all processed twice.

Processing was more efficient at CERN, as shown below. Eventually after few trials at Tier1, the file is processed at CERN. No stripping was performed and all DST files distributed to all Tier1s for analysis



Issues Encountered

A few issues were encountered by LHCb:

The Castor migration was at very low rate and had to change the migration algorithm for more frequent migration.

Issue with large files (above 2 GB): Real data files are not ROOT files but open by ROOT. There was an issue with a compatibility library for slc4-32 bit on slc5 nodes. Fixed within a day.

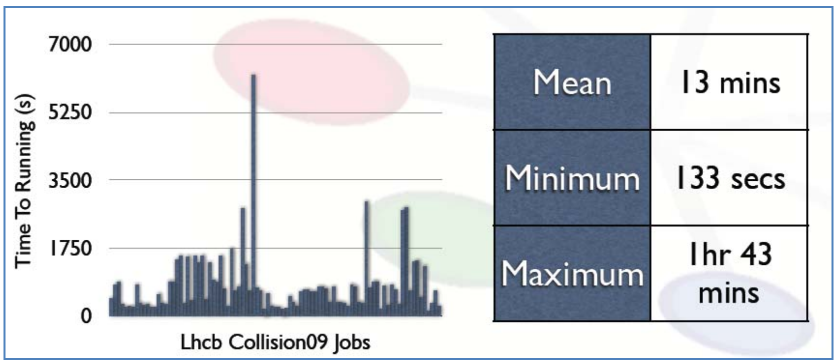
Wrong magnetic field sign was found but it was just due to different coordinate systems for LHCb and LHC and was fixed promptly.

Data access problem were found when accessing data by protocol, directly from server. DCache issue found at IN2P3 and NIKHEF but the dCache experts immediately worked on them.

LHCb therefore moved to “copy mode” paradigm for reconstruction but there were still problems for user jobs and some Sites had to be banned for analysis.

Transfers and Latency

No problems were observed during file transfers. Files were randomly distributed to Tier1 and LHCB will move to distribution by runs (few 100’s files). For 2009, runs were not longer than 4-5 files with very good Grid latency in terms of time between submission and jobs starting running.



Conclusions

LHCb was concentrating on real data even if was very few data (200 GB). It was a very important learning exercise. A few improvements identified for the 2010 running:

- Run distribution (rather than files)
- Conditions DB synchronization check
- Make sure Online Conditions are up-to-date
-

Still some MC productions will be needed with feedback from first real data e.g. final position of the VeLo (15 mm from beam).

First analysis of 2009 data was made on the Grid and LHCb foresee a stripping phase for V0 physics publications.

LHCb definitely wants to continue using Multi-User Pilot Jobs at the WLCG Sites.