LHC Computing Grid Project

Quarterly Status and Progress Reports

Nov 2010 – Jan 2011

23 February 2011

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Milestone Report
Nov 2010 – Jan 2011

Feb 2011

Ian Bird

The status and progress with the outstanding high level milestones is as follows:

- Support for multi-user pilot jobs. Deployment continues, with all of the Tier 1 sites now having installed glexec and either SCAS or ARGUS, or GUMS for some US sites. A significant number of Tier 2 sites have now also installed the software and are available to be used by the experiments. As reported previously there has been little reason for the experiments to change their software to use glexec, particularly in the first few months of data taking. In the February MB this issue has again been brought forward, and the agreement is to push the deployment again by using the test probes to check the correct installation at sites and to follow up problems by opening GGUS tickets to the sites. In parallel, the problems reported by ATLAS in using glexec will be followed up. Other experiments are ready to use the facility where available.
- CREAM CE deployment. Cream is now deployed widely and all experiments are satisfied with the performance at the moment. Many sites still run LCG-CEs although this is now no longer necessary. The SAM system still has to complete the update of the testing so that Cream is treated in the same way as the LCG-CE as an alternative CE. This is due to be completed in February. At that point the LCG-CE will no longer be recommended for deployment, and an end-of-life date will be discussed.
- Data Management prototypes. In January the work on the data management prototypes was presented and discussed. Of the original 14 suggested prototypes, around 10 of them are being actively investigated or followed by one or more experiments. It was agreed that the process that had been started in Amsterdam had successfully concluded, and that further work on these tools and services would become part of the work plans of the experiments and software developers. Future work on these will continue to be reported in GDB meetings.
- Automated gathering of installed capacity data. Most sites Tier 1 and Tier 2 now correctly report their overall capacities. However, very few yet correctly publish by VO-share which is what is required in order to correctly report on capacities. This has to be followed up site by site to ensure valid data publication; the Tier 1s have the responsibility to follow up with their Tier 2s.
- Updates to SAM/Nagios to provide more flexible reporting:
    - Validate dashboard applications with Nagios tests (IT/ES); New interface by myEGI is available since mid-January; pre-production service can be used for migration
    - Stop old SAM system as soon as green light from the experiments
    - New ACE availability calculation mechanism:
        - December 2010: Validated the standard availability for OPS - done

- January: Computation of standard availabilities for LHC experiments (one profile per VO) - done
- February: Multiple availabilities (different profiles, same algorithm) per VO - done
- March: Multiple availabilities (different profiles and algorithms: CREAM CE use case) per VO; almost complete.

22 Feb 2011

WLCG Sites Reliability (OPS Tests)

Aug 2010 – Jan 2011

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

Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11
100	98	99	99	100	100

Average of ALL Tier-0 and Tier-1 sites

Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11
99	94	96	98	99	99

Detailed Monthly Site Reliability (OPS tests)

Site	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11
CA-TRIUMF	100	99	100	100	100	100
CERN	100	96	100	100	100	100
DE-KIT	99	87	99	94	100	98
ES-PIC	100	99	97	99	99	100
FR-CCIN2P3	100	87	96	98	100	100
IT-INFN-CNAF	99	95	100	98	99	100
NDGF	100	97	92	99	98	99
NL-T1	98	95	87	93	98	98
TW-ASGC	96	72	83	93	95	100
UK-T1-RAL	95	99	100	99	99	99
US-FNAL-CMS	99	100	100	98	100	100
US-T1-BNL	99	100	100	100	99	100
Target	*97*	*97*	*97*	*97*	*97*	*97*

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

Availability of WLCG Tier-1 Sites + CERN for OPS

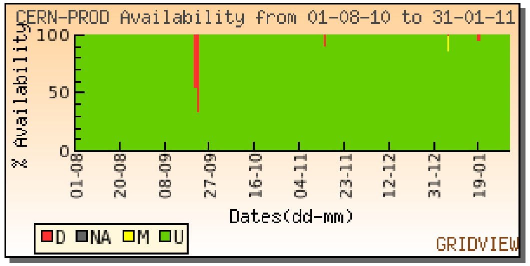
August 2010 - January 2011

Data from Nagios and Gridview

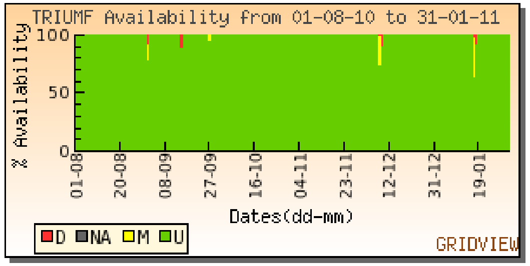
Plots show Availability for last 6 Months

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

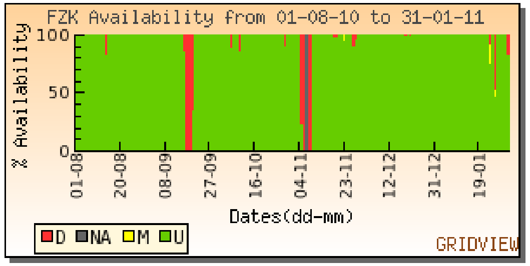
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



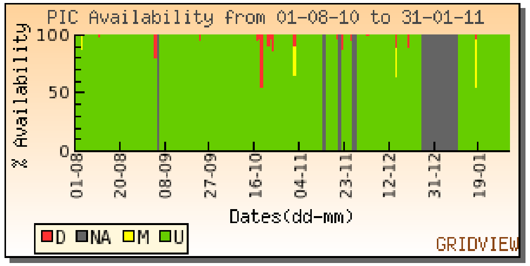
CERN **Avail : 99 %** **Unkn : 1 %**



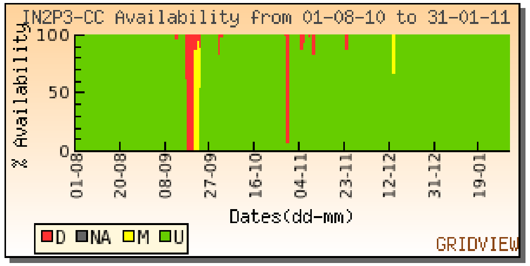
CA-TRIUMF **Avail : 99 %** **Unkn : 2 %**



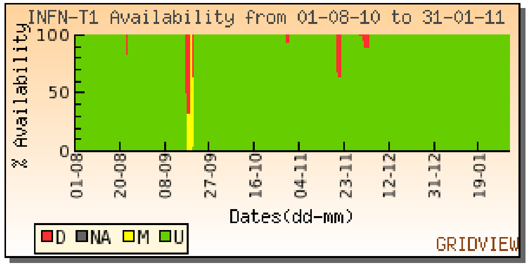
DE-KIT **Avail : 96 %** **Unkn : 2 %**



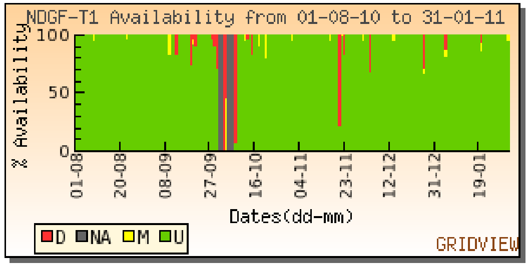
ES-PIC **Avail : 98 %** **Unkn : 17 %**



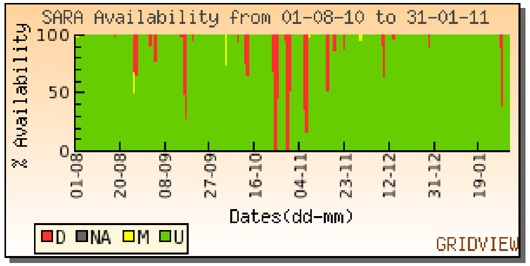
FR-CCIN2P3 **Avail : 96 %** **Unkn : 1 %**



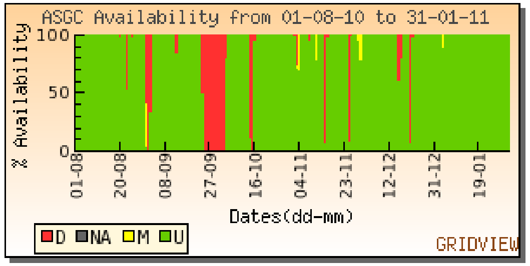
IT-INFN-CNAF **Avail : 98 %** **Unkn : 0 %**



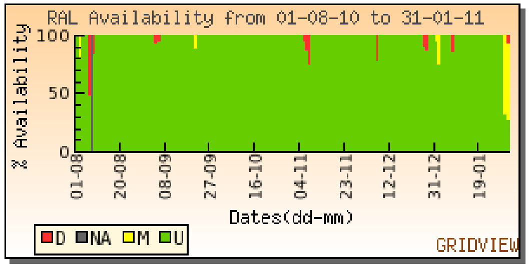
NDGF **Avail : 97 %** **Unkn : 5 %**



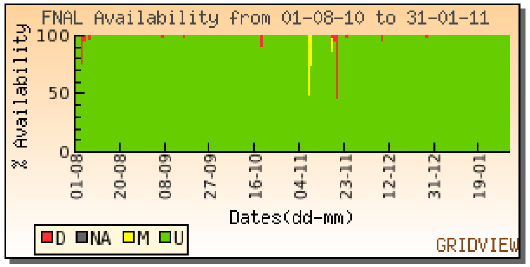
NL-T1 **Avail : 94 %** **Unkn : 2 %**



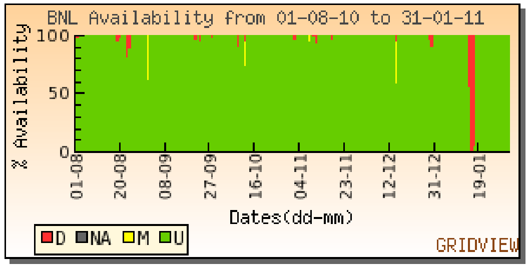
TW-ASGC **Avail : 89 %** **Unkn : 2 %**



UK-T1-RAL **Avail : 98 %** **Unkn : 1 %**



US-FNAL-CMS **Avail : 99 %** **Unkn : 0 %**



US-T1-BNL **Avail : 98 %** **Unkn : 1 %**

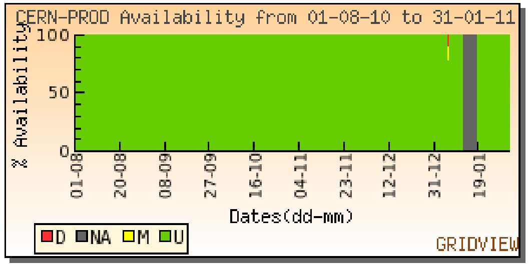
Availability of WLCG Tier-1 Sites + CERN for ALICE

August 2010 - January 2011

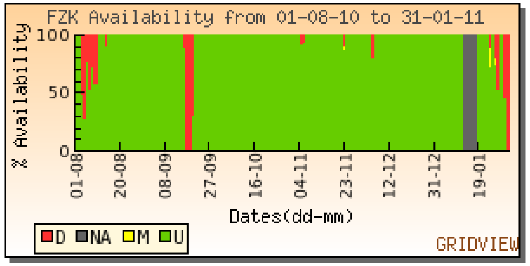
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

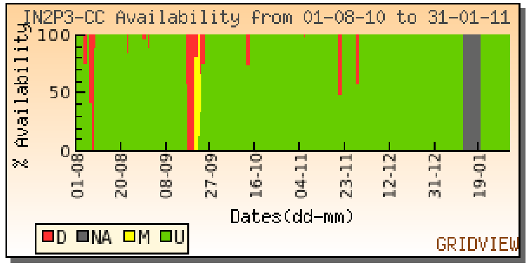
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



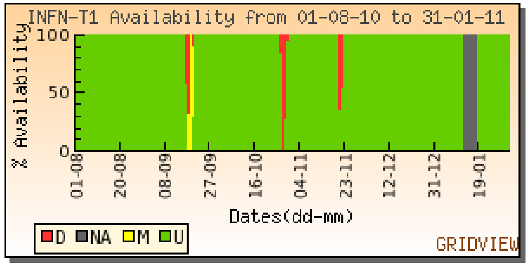
CERN **Avail : 100 %** **Unkn : 4 %**



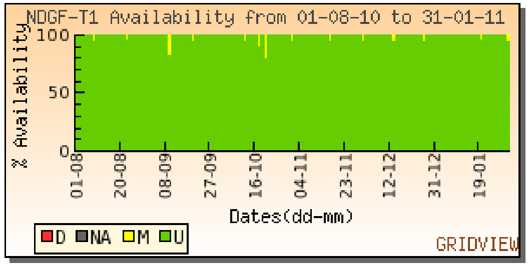
DE-KIT **Avail : 95 %** **Unkn : 5 %**



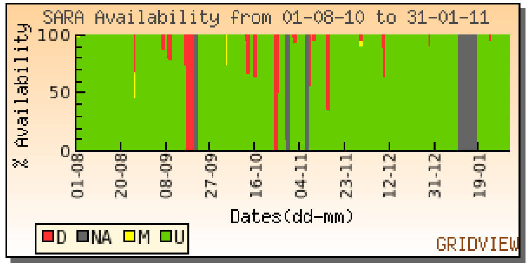
FR-CCIN2P3 **Avail : 95 %** **Unkn : 6 %**



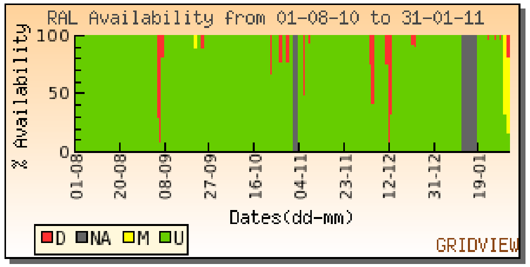
IT-INFN-CNAF **Avail : 97 %** **Unkn : 4 %**



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



NL-T1 **Avail : 95 %** **Unkn : 11 %**



UK-T1-RAL **Avail : 95 %** **Unkn : 8 %**

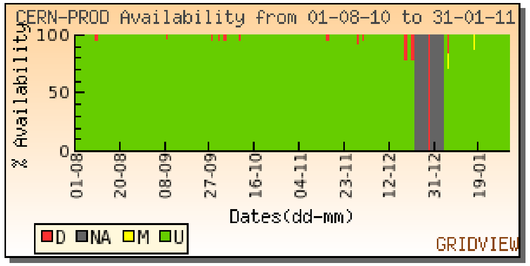
Availability of WLCG Tier-1 Sites + CERN for ATLAS

August 2010 - January 2011

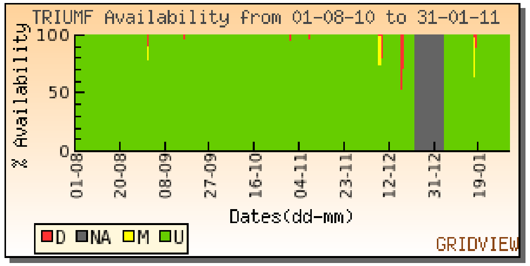
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

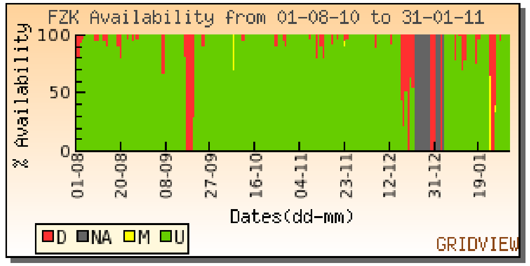
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



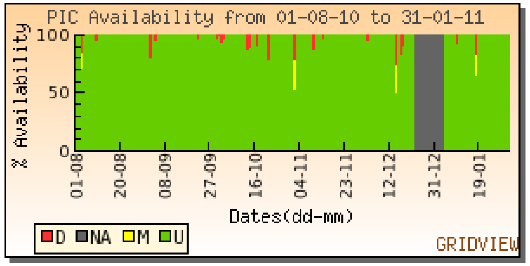
CERN **Avail : 99 %** **Unkn : 9 %**



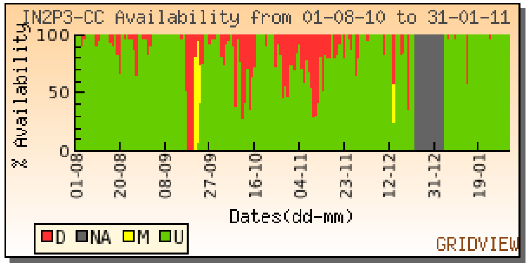
CA-TRIUMF **Avail : 99 %** **Unkn : 9 %**



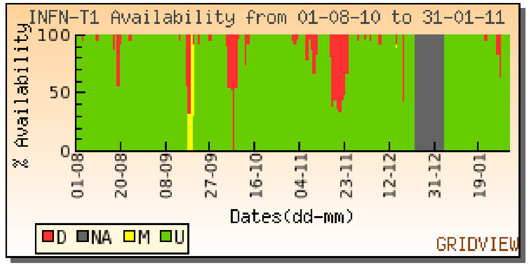
DE-KIT **Avail : 92 %** **Unkn : 9 %**



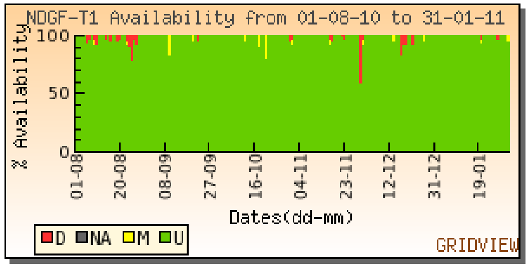
ES-PIC **Avail : 98 %** **Unkn : 9 %**



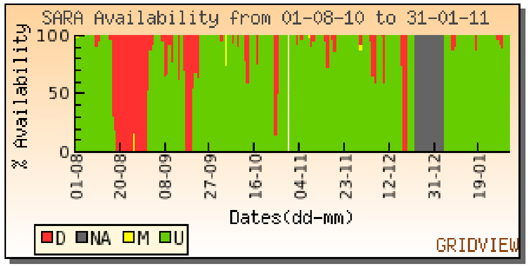
FR-CCIN2P3 **Avail : 86 %** **Unkn : 8 %**



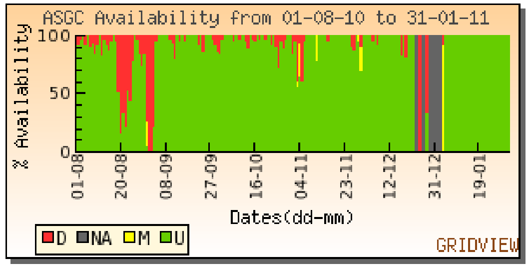
IT-INFN-CNAF **Avail : 92 %** **Unkn : 9 %**



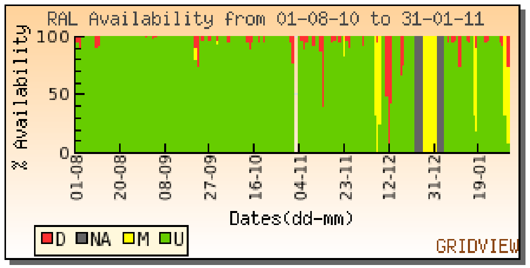
NDGF **Avail : 98 %** **Unkn : 0 %**



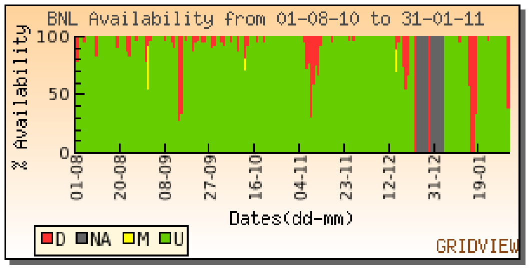
NL-T1 **Avail : 83 %** **Unkn : 9 %**



TW-ASGC **Avail : 92 %** **Unkn : 8 %**



UK-T1-RAL **Avail : 91 %** **Unkn : 7 %**



US-T1-BNL **Avail : 93 %** **Unkn : 8 %**

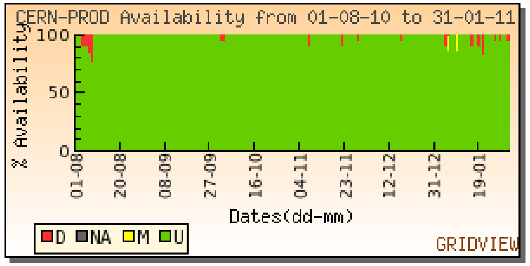
Availability of WLCG Tier-1 Sites + CERN for CMS

August 2010 - January 2011

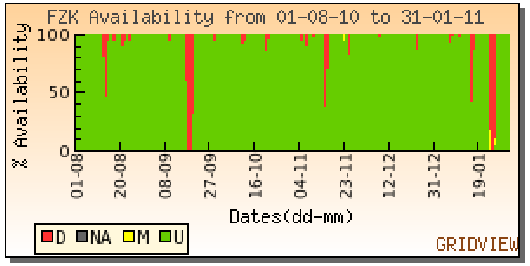
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

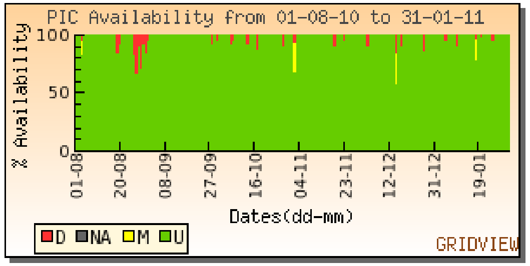
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



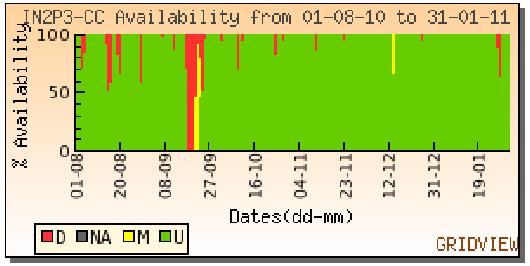
CERN **Avail : 99 %** **Unkn : 1 %**



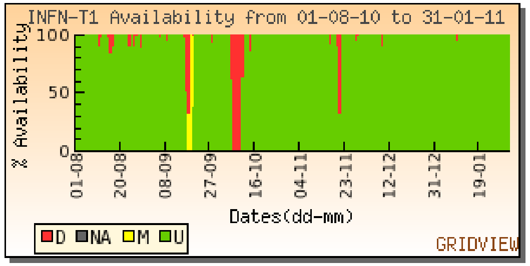
DE-KIT **Avail : 95 %** **Unkn : 1 %**



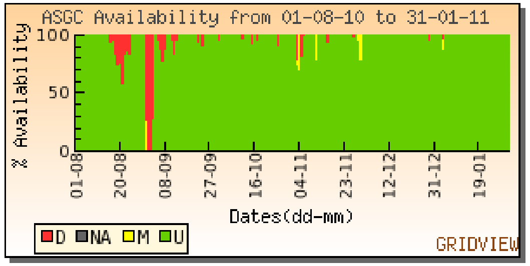
ES-PIC **Avail : 98 %** **Unkn : 1 %**



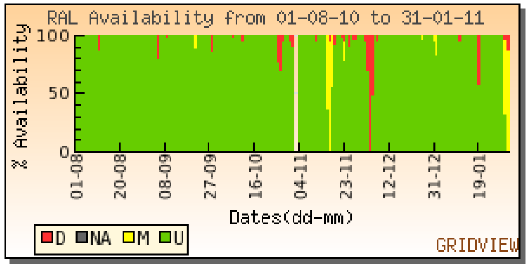
FR-CCIN2P3 **Avail : 94 %** **Unkn : 1 %**



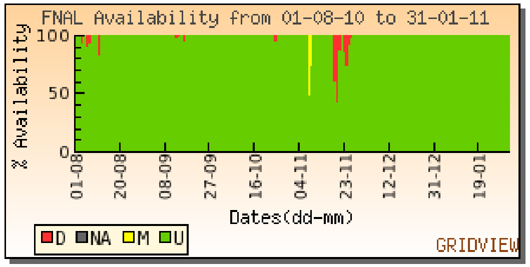
IT-INFN-CNAF **Avail : 95 %** **Unkn : 1 %**



TW-ASGC **Avail : 96 %** **Unkn : 1 %**



UK-T1-RAL **Avail : 96 %** **Unkn : 1 %**



US-FNAL-CMS **Avail : 98 %** **Unkn : 1 %**

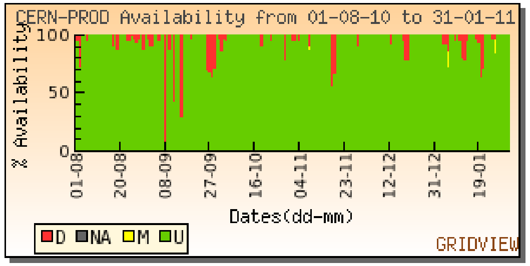
Availability of WLCG Tier-1 Sites + CERN for LHCb

August 2010 - January 2011

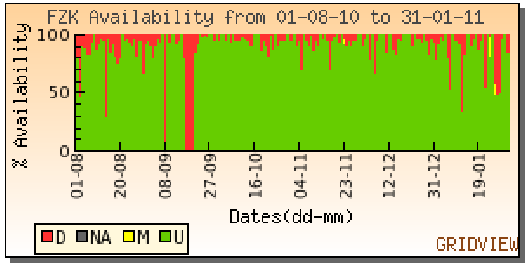
Data from SAM and Gridview **Plots show Availability for last 6 Months**

Availability is calculated as uptime / (total_time - time_status_was_UNKNOWN)

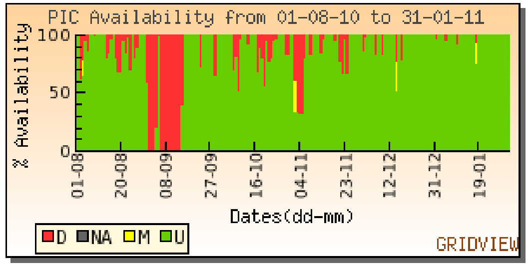
Target reliability for each site is 97 % and Target for 8 best sites is 98 % from January, 2009



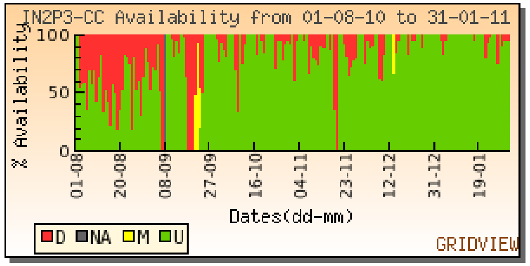
CERN **Avail : 95 %** **Unkn : 2 %**



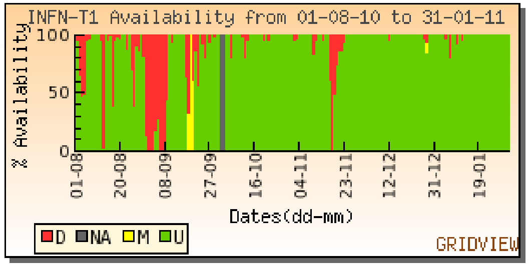
DE-KIT **Avail : 90 %** **Unkn : 4 %**



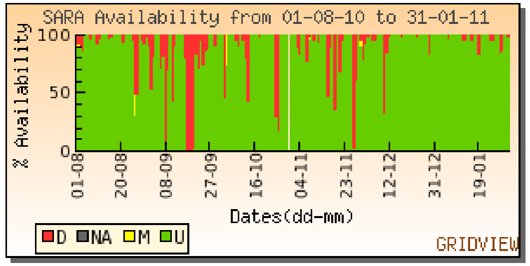
ES-PIC **Avail : 86 %** **Unkn : 2 %**



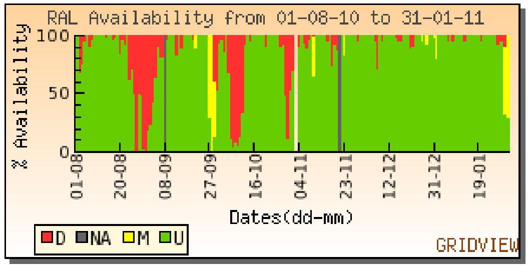
FR-CCIN2P3 **Avail : 82 %** **Unkn : 2 %**



IT-INFN-CNAF **Avail : 88 %** **Unkn : 6 %**



NL-T1 **Avail : 90 %** **Unkn : 3 %**



UK-T1-RAL **Avail : 86 %** **Unkn : 3 %**

Tier-2 Availability and Reliability Report

Federation Summary - Sorted by Name

January 2011

Data from Nagios 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)
HS06 : Installed capacity of the site measured in HEPSPEC06 (HS06)
Reliability and Availability for Federation - Weighted average of all sites in the Federation based on installed capacity(HS06)

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

Federation	Reliability	Availability
AT-HEPHY-VIENNA-UIBK	100 %	100 %
AU-ATLAS	100 %	100 %
BE-TIER2	93 %	93 %
BR-SP-SPRACE	100 %	88 %
CA-EAST-T2	97 %	84 %
CA-WEST-T2	99 %	99 %
CH-CHIPP-CSCS	99 %	99 %
CN-IHEP	100 %	100 %
CZ-Prague-T2	78 %	78 %
DE-DESY-ATLAS-T2	99 %	99 %
DE-DESY-GOE-ATLAS-T2	96 %	96 %
DE-DESY-LHCB	100 %	100 %
DE-DESY-RWTH-CMS-T2	99 %	98 %
DE-FREIBURGWUPPERTAL	93 %	93 %
DE-GSI	N/A	N/A
DE-MCAT	99 %	99 %
EE-NICPB	57 %	57 %
ES-ATLAS-T2	98 %	96 %
ES-CMS-T2	98 %	97 %
ES-LHCb-T2	93 %	93 %
FI-HIP-T2	0 %	0 %
FR-GRIF	100 %	100 %
FR-IN2P3-CC-T2	100 %	100 %
FR-IN2P3-CPPM	98 %	98 %
FR-IN2P3-IPHC	99 %	99 %
FR-IN2P3-LAPP	97 %	97 %
FR-IN2P3-LPC	100 %	100 %
FR-IN2P3-SUBATECH	98 %	98 %
HU-HGCC-T2	99 %	99 %
IL-HEPTier-2	96 %	96 %
IN-DAE-KOLKATA-TIER2	81 %	81 %
IN-INDIACMS-TIFR	96 %	96 %
IT-ALICE-federation	96 %	96 %
IT-ATLAS-federation	97 %	97 %
IT-CMS-federation	97 %	97 %
IT-LHCb-federation	99 %	98 %
JP-Tokyo-ATLAS-T2	100 %	98 %
KR-KISTI-T2	96 %	96 %
KR-KNU-T2	100 %	98 %
NO-NORGRID-T2	98 %	98 %
PK-CMS-T2	96 %	96 %
PL-TIER2-WLCG	97 %	97 %
PT-LIP-LCG-Tier2	99 %	99 %
RO-LCG	83 %	83 %
RU-RDIG	99 %	98 %
SE-SNIC-T2	99 %	99 %
SI-SiGNET	100 %	100 %
T2_US_Caltech	100 %	99 %
T2_US_Florida	100 %	99 %
T2_US_MIT	100 %	99 %
T2_US_Nebraska	97 %	97 %
T2_US_Purdue	96 %	96 %
T2_US_UCSD	100 %	100 %
T2_US_Wisconsin	99 %	99 %
TR-Tier2-federation	86 %	86 %
TW-FTT-T2	100 %	100 %
UA-Tier2-Federation	N/A	N/A
UK-London-Tier2	98 %	90 %
UK-NorthGrid	91 %	91 %
UK-ScotGrid	100 %	100 %
UK-SouthGrid	97 %	97 %
US-AGLT2	98 %	96 %
US-MWT2	100 %	100 %
US-NET2	100 %	100 %
US-SWT2	99 %	99 %
US-WT2	99 %	99 %

Tier-2 Availability and Reliability Report

Federation Summary - Sorted by Reliability

January 2011

Data from Nagios 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)
HS06 : Installed capacity of the site measured in HEPSPEC06 (HS06)
Reliability and Availability for Federation - Weighted average of all sites in the Federation based on installed capacity(HS06)

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

Federation	Reli-ability	Avail-ability
AU-ATLAS	100 %	100 %
CN-IHEP	100 %	100 %
FR-IN2P3-LPC	100 %	100 %
KR-KNU-T2	100 %	98 %
BR-SP-SPRACE	100 %	88 %
T2_US_Florida	100 %	99 %
US-NET2	100 %	100 %
TW-FTT-T2	100 %	100 %
DE-DESY-LHCB	100 %	100 %
T2_US_UCSD	100 %	100 %
FR-IN2P3-CC-T2	100 %	100 %
US-MWT2	100 %	100 %
SI-SiGNET	100 %	100 %
T2_US_MIT	100 %	99 %
JP-Tokyo-ATLAS-T2	100 %	98 %
FR-GRIF	100 %	100 %
T2_US_Caltech	100 %	99 %
AT-HEPHY-VIENNA-UIBK	100 %	100 %
UK-ScotGrid	100 %	100 %
US-WT2	99 %	99 %
DE-DESY-ATLAS-T2	99 %	99 %
FR-IN2P3-IPHC	99 %	99 %
CA-WEST-T2	99 %	99 %
CH-CHIPP-CSCS	99 %	99 %
HU-HGCC-T2	99 %	99 %
US-SWT2	99 %	99 %
DE-DESY-RWTH-CMS-T2	99 %	98 %
SE-SNIC-T2	99 %	99 %
DE-MCAT	99 %	99 %
IT-LHCb-federation	99 %	98 %
T2_US_Wisconsin	99 %	99 %
PT-LIP-LCG-Tier2	99 %	99 %
RU-RDIG	99 %	98 %
FR-IN2P3-CPPM	98 %	98 %
US-AGLT2	98 %	96 %
NO-NORGRID-T2	98 %	98 %
ES-ATLAS-T2	98 %	96 %
ES-CMS-T2	98 %	97 %
FR-IN2P3-SUBATECH	98 %	98 %
UK-London-Tier2	98 %	90 %
PL-TIER2-WLCG	97 %	97 %
T2_US_Nebraska	97 %	97 %
UK-SouthGrid	97 %	97 %
IT-ATLAS-federation	97 %	97 %
IT-CMS-federation	97 %	97 %
FR-IN2P3-LAPP	97 %	97 %
CA-EAST-T2	97 %	84 %
IN-INDIACMS-TIFR	96 %	96 %
IT-ALICE-federation	96 %	96 %
T2_US_Purdue	96 %	96 %
KR-KISTI-T2	96 %	96 %
PK-CMS-T2	96 %	96 %
DE-DESY-GOE-ATLAS-T2	96 %	96 %
IL-HEPTier-2	96 %	96 %
DE-FREIBURGWUPPERTAL	93 %	93 %
ES-LHCb-T2	93 %	93 %
BE-TIER2	93 %	93 %
UK-NorthGrid	91 %	91 %
TR-Tier2-federation	86 %	86 %
RO-LCG	83 %	83 %
IN-DAE-KOLKATA-TIER2	81 %	81 %
CZ-Prague-T2	78 %	78 %
EE-NICPB	57 %	57 %
FI-HIP-T2	0 %	0 %
DE-GSI	N/A	N/A
UA-Tier2-Federation	N/A	N/A

Tier-2 Availability and Reliability Report

January 2011

Data from Nagios 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)
HS06 : Installed capacity of the site measured in HEPSPEC06 (HS06)
Reliability and Availability for Federation - Weighted average of all sites in the Federation based on installed capacity(HS06)

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

Federation	Site	Phy. CPU	Log. CPU	HS06	Reliability	Availability	Unknown	Reliability History Oct-10	Nov-10	Dec-10
AT-HEPHY-VIENNA-UIBK (Austria, Austrian Tier-2 Federation)										
	HEPHY-UIBK	37	260	1,857	99 %	99 %	0 %	100 %	99 %	100 %
	Hephy-Vienna	455	603	3,953	100 %	100 %	0 %	99 %	97 %	100 %
AU-ATLAS (Australia, University of Melbourne)										
	Australia-ATLAS	54	216	2,538	100 %	100 %	0 %	97 %	98 %	100 %
BE-TIER2 (Belgium, Belgian Tier-2 Federation)										
	BEgrid-ULB-VUB	200	830	N/A	89 %	89 %	0 %	97 %	94 %	86 %
	BelGrid-UCL	545	631	N/A	96 %	96 %	33 %	95 %	90 %	100 %
BR-SP-SPRACE (Brazil, SPRACE, São Paulo)										
	GridUNESP_CENTRAL	512	2,048	18,171	100 %	88 %	0 %	N/A	99 %	100 %
	sprace	160	320	N/A	98 %	84 %	1 %	100 %	100 %	100 %
CA-EAST-T2 (Canada-East Federation)										
	CA-SCINET-T2	268	1,072	13,400	97 %	84 %	0 %	97 %	92 %	86 %
CA-WEST-T2 (Canada-West Federation)										
	CA-ALBERTA-WESTGRID-T2	56	224	1,814	100 %	99 %	0 %	81 %	84 %	99 %
	CA-VICTORIA-WESTGRID-T2	84	336	4,539	99 %	99 %	0 %	96 %	94 %	99 %
	SFU-LCG2	70	280	3,376	100 %	100 %	0 %	97 %	100 %	100 %
CH-CHIPP-CSCS (Switzerland, CHIPP)										
	CSCS-LCG2	192	1,152	11,520	99 %	99 %	0 %	98 %	84 %	91 %
CN-IHEP (China, IHEP, Beijing)										
	BEIJING-LCG2	226	904	8,885	100 %	100 %	0 %	94 %	98 %	99 %
CZ-Prague-T2 (Czech Rep., FZU AS, Prague)										
	prague_cesnet_lcg2	20	80	657	91 %	91 %	2 %	98 %	93 %	73 %
	praguelcg2	682	2,728	21,715	77 %	77 %	6 %	100 %	95 %	95 %
DE-DESY-ATLAS-T2 (Germany ATLAS Federation, DESY)										
	DESY-HH	736	4,232	33,941	99 %	99 %	0 %	100 %	97 %	99 %
	DESY-ZN	196	784	8,663	100 %	100 %	0 %	99 %	100 %	100 %

Federation	Site	Phy. CPU	Log. CPU	HS06	Reliability	Availability	Unknown	Reliability History Oct-10	Nov-10	Dec-10
DE-DESY-GOE-ATLAS-T2 (Germany, ATLAS Federation, HH/Goe)										
	GoeGrid	266	1,064	N/A	96 %	96 %	2 %	89 %	81 %	98 %
DE-DESY-LHCB (Germany LHCb Federation, DESY)										
	DESY-ZN	196	784	8,663	100 %	100 %	0 %	99 %	100 %	100 %
DE-DESY-RWTH-CMS-T2 (Germany, CMS Federation)										
	DESY-HH	736	4,232	33,941	99 %	99 %	0 %	100 %	97 %	99 %
	DESY-ZN	196	784	8,663	100 %	100 %	0 %	99 %	100 %	100 %
	RWTH-Aachen	506	2,024	17,002	97 %	97 %	0 %	98 %	76 %	96 %
DE-FREIBURGWUPPERTAL (Germany, ATLAS Federation FR/W)										
	UNI-FREIBURG	222	838	7,291	89 %	89 %	1 %	95 %	85 %	96 %
	wuppertalprod	232	928	8,064	97 %	97 %	1 %	93 %	90 %	98 %
DE-GSI (Germany, GSI, Darmstadt)										
	GSI-LCG2	2	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DE-MCAT (Germany, ATLAS Federation, Munich)										
	LRZ-LMU	600	1,800	29,952	100 %	100 %	0 %	97 %	58 %	100 %
	MPPMU	126	896	12,992	96 %	96 %	0 %	98 %	45 %	76 %
EE-NICPB (Estonia, NICPB, Tallinn)										
	T2_Estonia	63	404	N/A	57 %	57 %	2 %	58 %	77 %	64 %
ES-ATLAS-T2 (Spain, ATLAS Federation)										
	IFIC-LCG2	318	1,272	9,411	99 %	97 %	38 %	93 %	97 %	99 %
	UAM-LCG2	88	353	3,389	95 %	95 %	38 %	100 %	100 %	100 %
	ifae	30	360	4,950	99 %	96 %	38 %	99 %	99 %	99 %
ES-CMS-T2 (Spain, CMS Federation)										
	CIEMAT-LCG2	298	836	9,581	100 %	100 %	38 %	92 %	95 %	100 %
	IFCA-LCG2	420	1,680	14,146	97 %	95 %	22 %	97 %	87 %	95 %
ES-LHCb-T2 (Spain, LHCb Federation)										
	UB-LCG2	69	273	1,904	90 %	90 %	22 %	100 %	89 %	93 %
	USC-LCG2	69	234	1,385	99 %	99 %	22 %	99 %	100 %	75 %
FI-HIP-T2 (Finland, NDGF/HIP Tier2)										
	CSC	32	64	N/A	0 %	0 %	86 %	70 %	95 %	0 %
FR-GRIF (France, GRIF, Paris)										
	GRIF	1,524	6,677	54,336	100 %	100 %	0 %	100 %	100 %	98 %
FR-IN2P3-CC-T2 (France, CC-IN2P3 AF)										
	IN2P3-CC-T2	451	2,534	21,792	100 %	100 %	0 %	96 %	99 %	100 %
FR-IN2P3-CPPM (CPPM, Marseille)										
	IN2P3-CPPM	188	853	7,268	98 %	98 %	1 %	99 %	98 %	100 %
FR-IN2P3-IPHC (France, CC-IN2P3 IPHC)										
	IN2P3-IRES	288	1,504	13,536	99 %	99 %	3 %	90 %	93 %	92 %

Federation Site	Phy. CPU	Log. CPU	HS06	Reliability	Availability	Unknown	Reliability History Oct-10	Nov-10	Dec-10
FR-IN2P3-LAPP (France, LAPP, Annecy)									
IN2P3-LAPP	220	752	7,198	97 %	97 %	1 %	88 %	98 %	100 %
FR-IN2P3-LPC (France, LPC, Clermont-Ferrand)									
IN2P3-LPC	228	816	7,228	100 %	100 %	0 %	100 %	99 %	100 %
FR-IN2P3-SUBATECH (France, SUBATECH, Nantes)									
IN2P3-SUBATECH	104	408	3,487	98 %	98 %	1 %	100 %	98 %	100 %
HU-HGCC-T2 (Hungary, HGCC Federation)									
BUDAPEST	125	500	5,350	99 %	99 %	0 %	94 %	100 %	100 %
ELTE	44	56	175	96 %	96 %	0 %	66 %	98 %	98 %
IL-HEPTier-2 (Israel, HEP-IL Tier-2 Federation)									
IL-TAU-HEP	34	272	N/A	100 %	100 %	2 %	90 %	84 %	77 %
TECHNION-HEP	34	272	N/A	99 %	99 %	3 %	91 %	86 %	93 %
WEIZMANN-LCG2	124	496	54,560	96 %	96 %	4 %	75 %	73 %	89 %
IN-DAE-KOLKATA-TIER2 (India, VECC/SINP, Kolkata)									
IN-DAE-VECC-02	94	220	N/A	81 %	81 %	0 %	99 %	77 %	87 %
IN-INDIACMS-TIFR (India, TIFR, Mumbai)									
INDIACMS-TIFR	48	384	32,640	96 %	96 %	4 %	52 %	59 %	99 %
IT-ALICE-federation (Italy, INFN ALICE Federation)									
INFN-BARI	284	1,136	10,224	98 %	98 %	0 %	97 %	95 %	97 %
INFN-NAPOLI-ATLAS	112	462	3,825	87 %	85 %	0 %	94 %	95 %	93 %
INFN-PISA	756	3,024	26,460	96 %	96 %	0 %	93 %	99 %	99 %
INFN-ROMA1-CMS	106	356	3,072	97 %	96 %	0 %	84 %	97 %	94 %
INFN-TORINO	128	488	4,244	99 %	99 %	0 %	99 %	96 %	94 %
IT-ATLAS-federation (Italy, INFN ATLAS Federation)									
INFN-BARI	284	1,136	10,224	98 %	98 %	0 %	97 %	95 %	97 %
INFN-CATANIA	314	892	8,028	100 %	100 %	0 %	27 %	86 %	99 %
INFN-FRASCATI	32	168	1,341	96 %	96 %	0 %	96 %	94 %	100 %
INFN-LNL-2	176	656	6,704	100 %	95 %	0 %	100 %	100 %	96 %
INFN-MILANO-ATLASC	76	438	3,560	98 %	98 %	3 %	79 %	99 %	100 %
INFN-NAPOLI-ATLAS	112	462	3,825	87 %	85 %	0 %	94 %	95 %	93 %
INFN-PISA	756	3,024	26,460	96 %	96 %	0 %	93 %	99 %	99 %
INFN-ROMA1	109	544	4,406	99 %	97 %	0 %	100 %	100 %	100 %
INFN-ROMA1-CMS	106	356	3,072	97 %	96 %	0 %	84 %	97 %	94 %
INFN-TORINO	128	488	4,244	99 %	99 %	0 %	99 %	96 %	94 %
IT-CMS-federation (Italy, INFN CMS Federation)									
INFN-BARI	284	1,136	10,224	98 %	98 %	0 %	97 %	95 %	97 %
INFN-CATANIA	314	892	8,028	100 %	100 %	0 %	27 %	86 %	99 %
INFN-FRASCATI	32	168	1,341	96 %	96 %	0 %	96 %	94 %	100 %
INFN-LNL-2	176	656	6,704	100 %	95 %	0 %	100 %	100 %	96 %
INFN-MILANO-ATLASC	76	438	3,560	98 %	98 %	3 %	79 %	99 %	100 %
INFN-NAPOLI-ATLAS	112	462	3,825	87 %	85 %	0 %	94 %	95 %	93 %

Federation	Site	Phy. CPU	Log. CPU	HS06	Reliability	Availability	Unknown	Oct-10	Nov-10	Dec-10
								Reliability History		
	INFN-PISA	756	3,024	26,460	96 %	96 %	0 %	93 %	99 %	99 %
	INFN-ROMA1	109	544	4,406	99 %	97 %	0 %	100 %	100 %	100 %
	INFN-ROMA1-CMS	106	356	3,072	97 %	96 %	0 %	84 %	97 %	94 %
	INFN-TORINO	128	488	4,244	99 %	99 %	0 %	99 %	96 %	94 %
IT-LHCb-federation (Italy, INFN LHCb Federation)										
	INFN-BARI	284	1,136	10,224	98 %	98 %	0 %	97 %	95 %	97 %
	INFN-CATANIA	314	892	8,028	100 %	100 %	0 %	27 %	86 %	99 %
	INFN-CNAF-LHCB	2,252	8,192	85,516	100 %	100 %	0 %	99 %	99 %	99 %
	INFN-FRASCATI	32	168	1,341	96 %	96 %	0 %	96 %	94 %	100 %
	INFN-LNL-2	176	656	6,704	100 %	95 %	0 %	100 %	100 %	96 %
	INFN-MILANO-ATLASC	76	438	3,560	98 %	98 %	3 %	79 %	99 %	100 %
	INFN-NAPOLI-ATLAS	112	462	3,825	87 %	85 %	0 %	94 %	95 %	93 %
	INFN-PISA	756	3,024	26,460	96 %	96 %	0 %	93 %	99 %	99 %
	INFN-ROMA1	109	544	4,406	99 %	97 %	0 %	100 %	100 %	100 %
	INFN-ROMA1-CMS	106	356	3,072	97 %	96 %	0 %	84 %	97 %	94 %
	INFN-TORINO	128	488	4,244	99 %	99 %	0 %	99 %	96 %	94 %
JP-Tokyo-ATLAS-T2 (Japan, ICEPP, Tokyo)										
	TOKYO-LCG2	288	1,152	16,531	100 %	98 %	0 %	96 %	96 %	100 %
KR-KISTI-T2 (Republic of Korea, KISTI, Daejeon)										
	KR-KISTI-GCRT-01	114	456	4,248	96 %	96 %	0 %	100 %	99 %	99 %
KR-KNU-T2 (Republic of Korea, CHEP of KNU, Daegu)										
	LCG_KNU	140	336	N/A	100 %	98 %	39 %	100 %	99 %	100 %
NO-NORGRID-T2 (Norway, UNINETT SIGMA Tier-2)										
	NO-NORGRID-T2	5,240	5,240	N/A	98 %	98 %	0 %	88 %	94 %	97 %
PK-CMS-T2 (Pakistan, Pakistan Tier-2 Federation)										
	NCP-LCG2	106	524	6,365	96 %	96 %	0 %	94 %	97 %	99 %
	PAKGRID-LCG2	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PL-TIER2-WLCG (Poland, Polish Tier-2 Federation)										
	CYFRONET-LCG2	1,020	5,104	52,571	97 %	97 %	0 %	96 %	96 %	84 %
	PSNC	532	4,720	N/A	99 %	99 %	0 %	99 %	91 %	94 %
	WARSAW-EGEE	396	1,376	N/A	93 %	93 %	0 %	90 %	91 %	91 %
PT-LIP-LCG-Tier2 (Portugal, LIP Tier-2 Federation)										
	LIP-Coimbra	46	184	1,879	96 %	96 %	38 %	97 %	91 %	100 %
	LIP-Lisbon	139	532	5,432	100 %	100 %	22 %	100 %	100 %	96 %
	NCG-INGRID-PT	312	1,248	8,524	98 %	98 %	38 %	84 %	90 %	96 %
RO-LCG (Romania, Romanian Tier-2 Federation)										
	NIHAM	1	2	N/A	89 %	89 %	7 %	58 %	98 %	88 %
	RO-02-NIPNE	84	212	N/A	N/A	N/A	100 %	N/A	N/A	N/A
	RO-07-NIPNE	96	794	6,924	89 %	89 %	7 %	86 %	93 %	97 %
	RO-11-NIPNE	32	12	N/A	99 %	99 %	7 %	0 %	65 %	98 %
	RO-13-ISS	16	64	452	90 %	90 %	7 %	90 %	100 %	95 %

Federation	Site	Phy. CPU	Log. CPU	HS06	Reliability	Availability	Unknown	Reliability History Oct-10	Nov-10	Dec-10
	RO-14-ITIM	40	160	1,440	100 %	100 %	7 %	87 %	100 %	100 %
	RO-16-UAIC	68	272	2,448	57 %	57 %	52 %	85 %	100 %	95 %
RU-RDIG (Russian Fed., Russian Data-Intensive GRID)										
	ITEP	136	240	N/A	92 %	92 %	0 %	99 %	98 %	100 %
	JINR-LCG2	566	1,132	11,364	100 %	100 %	0 %	100 %	99 %	100 %
	RRC-KI	1,784	1,784	N/A	90 %	57 %	0 %	44 %	66 %	100 %
	RU-Protvino-IHEP	120	400	N/A	93 %	85 %	0 %	100 %	100 %	100 %
	RU-SPbSU	12	48	N/A	78 %	78 %	1 %	55 %	99 %	99 %
	Ru-Troitsk-INR-LCG2	48	192	1,530	90 %	90 %	28 %	78 %	100 %	82 %
	ru-Moscow-FIAN-LCG2	30	52	N/A	91 %	91 %	0 %	12 %	90 %	98 %
	ru-Moscow-MEPHI-LCG2	54	168	N/A	N/A	N/A	100 %	N/A	N/A	N/A
	ru-Moscow-SINP-LCG2	94	188	1,801	100 %	100 %	0 %	91 %	100 %	95 %
	ru-PNPI	116	232	2,552	96 %	96 %	0 %	92 %	91 %	94 %
SE-SNIC-T2 (Sweden, SNIC Tier-2)										
	SE-SNIC-T2	1,354	1,354	3,039	99 %	99 %	0 %	94 %	91 %	99 %
SI-SiGNET (Slovenia, SiGNET)										
	SiGNET	335	1,162	11,388	100 %	100 %	9 %	84 %	92 %	99 %
T2_US_Caltech (USA, Caltech CMS T2)										
	cit_cms_t2	276	992	7,760	100 %	99 %	0 %	100 %	97 %	100 %
T2_US_Florida (USA, Florida CMS T2)										
	uflorida-hpc	1,024	2,496	N/A	98 %	98 %	4 %	95 %	99 %	100 %
	uflorida-pg	252	504	7,760	100 %	99 %	11 %	100 %	100 %	100 %
T2_US_MIT (USA, MIT CMS T2)										
	mit_cms	3,012	3,012	7,760	100 %	99 %	4 %	99 %	100 %	100 %
T2_US_Nebraska (USA, Nebraska CMS T2)										
	nebraska	412	1,264	7,760	97 %	97 %	0 %	94 %	100 %	100 %
T2_US_Purdue (USA, Purdue CMS T2)										
	Purdue-Rossmann	800	4,800	N/A	100 %	99 %	0 %	100 %	100 %	100 %
	purdue-rcac	448	1,792	7,760	96 %	96 %	1 %	100 %	96 %	100 %
	purdue-steele	1,600	6,400	N/A	100 %	99 %	0 %	89 %	99 %	100 %
T2_US_UCSD (USA, UC San Diego CMS T2)										
	ucsdt2	916	1,236	7,760	100 %	100 %	3 %	100 %	100 %	100 %
T2_US_Wisconsin (USA, U. Wisconsin CMS T2)										
	GLOW	458	2,200	7,760	99 %	99 %	2 %	83 %	98 %	96 %
TR-Tier2-federation (Turkey, Turkish Tier-2 Federation)										
	TR-03-METU	N/A	N/A	4,352	83 %	83 %	8 %	100 %	75 %	87 %
	TR-10-ULAKBIM	320	640	4,352	88 %	88 %	3 %	98 %	66 %	71 %
TW-FTT-T2 (Taipei, Taiwan Analysis Facility Federation)										
	TW-FTT	102	404	N/A	100 %	100 %	0 %	80 %	98 %	96 %
UK-London-Tier2 (UK, London Tier 2)										

Federation	Site	Phy. CPU	Log. CPU	HS06	Reliability	Availability	Unknown	Reliability History Oct-10	Nov-10	Dec-10
	UKI-LT2-Brunel	307	785	7,364	100 %	100 %	1 %	100 %	100 %	100 %
	UKI-LT2-IC-HEP	420	1,680	13,440	96 %	95 %	2 %	99 %	98 %	99 %
	UKI-LT2-QMUL	1,592	4,224	22,699	98 %	83 %	1 %	91 %	98 %	98 %
	UKI-LT2-RHUL	100	400	3,160	97 %	97 %	2 %	98 %	90 %	100 %
	UKI-LT2-UCL-CENTRAL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	UKI-LT2-UCL-HEP	40	160	1,408	100 %	79 %	1 %	100 %	100 %	88 %
UK-NorthGrid (UK, NorthGrid)										
	UKI-NORTHGRID-LANCS-HEP	96	768	8,586	94 %	94 %	2 %	97 %	96 %	98 %
	UKI-NORTHGRID-LIV-HEP	143	572	8,318	99 %	99 %	5 %	16 %	96 %	100 %
	UKI-NORTHGRID-MAN-HEP	1,010	1,810	18,482	84 %	84 %	2 %	97 %	96 %	92 %
	UKI-NORTHGRID-SHEF-HEP	300	400	4,800	98 %	98 %	1 %	100 %	100 %	97 %
UK-ScotGrid (UK, ScotGrid)										
	UKI-SCOTGRID-DURHAM	168	672	5,699	96 %	96 %	1 %	90 %	97 %	82 %
	UKI-SCOTGRID-ECDF	492	1,968	22,351	100 %	100 %	1 %	100 %	100 %	100 %
	UKI-SCOTGRID-GLASGOW	510	2,112	21,298	100 %	100 %	1 %	90 %	96 %	100 %
UK-SouthGrid (UK, SouthGrid)										
	EFDA-JET	124	248	1,714	100 %	100 %	1 %	100 %	96 %	99 %
	UKI-SOUTHGRID-BHAM-HEP	72	384	3,368	85 %	82 %	6 %	93 %	88 %	86 %
	UKI-SOUTHGRID-BRIS-HEP	38	152	1,310	100 %	100 %	1 %	100 %	100 %	99 %
	UKI-SOUTHGRID-CAM-HEP	55	220	2,181	100 %	100 %	1 %	97 %	91 %	80 %
	UKI-SOUTHGRID-OX-HEP	158	632	5,485	100 %	100 %	1 %	99 %	100 %	96 %
	UKI-SOUTHGRID-RALPP	460	1,544	12,584	98 %	98 %	1 %	99 %	100 %	99 %
US-AGLT2 (USA, Great Lakes ATLAS T2)										
	AGLT2	700	4,180	36,430	98 %	96 %	3 %	100 %	100 %	100 %
US-MWT2 (USA, Midwest ATLAS T2)										
	MWT2_IU	80	160	5,838	100 %	100 %	0 %	100 %	100 %	100 %
	MWT2_UC	604	1,940	10,410	100 %	100 %	3 %	100 %	100 %	100 %
US-NET2 (USA, Northeast ATLAS T2)										
	BU_ATLAS_Tier2	224	896	5,520	100 %	100 %	0 %	100 %	100 %	100 %
	hu_atlas_tier2	382	1,528	13,515	100 %	100 %	0 %	100 %	100 %	100 %
US-SWT2 (USA, Southwest ATLAS T2)										
	OU_OCHEP_SWT2	108	432	4,169	100 %	100 %	0 %	100 %	100 %	100 %
	SWT2_CPB	422	944	8,344	99 %	99 %	5 %	99 %	97 %	97 %
	UTA_SWT2	320	530	10,707	99 %	99 %	0 %	100 %	96 %	99 %
US-WT2 (USA, SLAC ATLAS T2)										
	WT2	1,378	4,684	9,570	99 %	99 %	4 %	97 %	100 %	99 %

WLCG Service Report November 2010 – January 2011

1 February 2011

Maria Girone, Jamie Shiers

This report covers the end of the initial prolonged proton-proton run of the LHC, the inaugural heavy ion run and the first end-of-year shutdown during the LHC data-taking era. The WLCG service continued to operate smoothly during this period, reaching new records in terms of data rates (multi-GB/s), number of jobs (1M jobs/day) and users (1000 unique analysis users for ATLAS per month, some 500 for CMS and somewhat lower for ALICE and LHCb) and in total data volume collected (15PB excluding replicas).

As in previous quarters, the Key Performance Indicators of GGUS statistics, Site Usability plots and Service Incident Reports (SIRs) / Risk Assessments, continue to provide a realistic overview of the service during a given period and are used in the regular reports to the WLCG Management Board (MB). The number of GGUS tickets remains rather constant, dominated by TEAM tickets and with a small fraction of ALARM tickets to which the response continues to be within the targets. In common with EGI-InSPIRE, we introduce the number of HEP tickets and the meantime for their resolution.

Number of HEP VO support tickets	929 (ATLAS: 699, ALICE: 13, CMS: 108, LHCb: 109)
Mean time to resolution	241:38 (HHH:MM)

Table 1 - HEP metrics for EGI-InSPIRE SA3

The Site Usability plots show a marked improvement since their introduction in the Service Reports at the time of STEP'09, although the number of "false negatives" due to failures of the tests themselves still needs to be improved.

Summary of Main Service Incidents

Previous quarterly reports have included a table listing by date, site and service the main incidents for which a Service Incident Report (SIR) was produced. These are typically characterized by a serious degradation or total loss of service of at least several hours and / or when an alarm ticket was generated.

As introduced at CHEP 2010, SIRs are now categorized by service area: Infrastructure, Middleware, Database, Storage or Network. In this quarter there were two service interruptions that lasted more than 96 hours and three degradations that took much longer to fully understand and resolve. A further incident involving the migration of the CMS software repository took one week to resolve and is included in the tables below for completeness (a total of 6 incidents).

An area for improvement continues to be the ability of all sites to be able to recover database services in a timely fashion. A possible target for recovery could be one shift (one day if recovery from tape is required).

In addition, the follow-up on network problems needs to be improved and made more systematic and a new procedure was introduced during this quarter to address precisely this issue. It clarifies the responsibilities and information flow and is applicable to all types of problem, from degradation to complete outage, and covers both LHC OPN as well as general-purpose network incidents.

Site	Date(s)	Duration	Service	Area	Summary
CERN	18 Dec	5 days	ATLARC DB	DB	Service interruption following power cut. DB had to be restored from tape + problems with TSM63.
CERN	18 Dec	26+ hours	Power	Infrastructure	Interruption of physics services; those with weight > 50 restored in 26 hours
CERN	16 Dec	2.5h	ATLR DB	DB	ATLR service degraded then interrupted after FC switch replacement
CERN	7 Dec	7 days	CVS	Infrastructure	Problems with migration of CMS SW repository – no files lost
CERN	Nov/Dec	8 days	ATLR DB	DB	Reboots of one node traced to rotate log script
IN2P3	-	Months	Shared s/w area	Infrastructure/ storage	Two problems related to shared area for which final analysis pending
IN2P3	-	Weeks	dCache	Storage	Final analysis pending
KIT	26 Nov	1.5h	GGUS	Infrastructure	GGUS unavailable
KIT	16 Nov	3.5h	GGUS	Infrastructure	GGUS unavailable
NL-T1	26 Oct	48h	Conditions DB	DB	Conditions data of ATLAS and LHCb partly inconsistent since SARA recovery
CERN	20 Oct	4.5h	Batch	Infrastructure	Severely degraded response
CNAF	6 Oct	5 days	CMS storage	Storage	CMS storage down due to GPFS bug
CERN	4 Oct	2.1h	Myproxy	Middleware/ Infrastructure	Outage after incorrect certificate renewal
CNAF/ BNL	-	Months	Primary circuit	Network	Final analysis pending

Table 2 - Summary of SIRs in Q4 2010

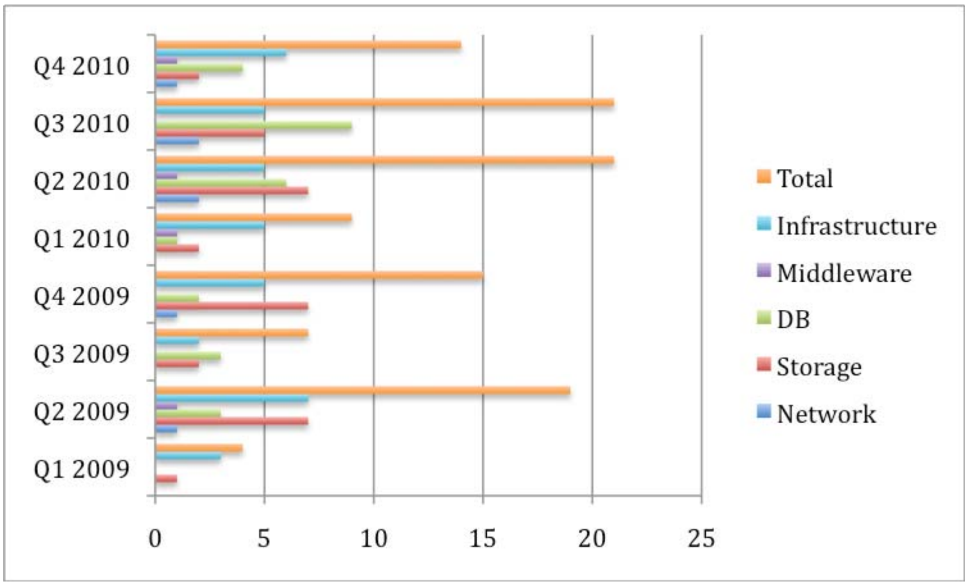


Figure 1 - Service Incidents by Area

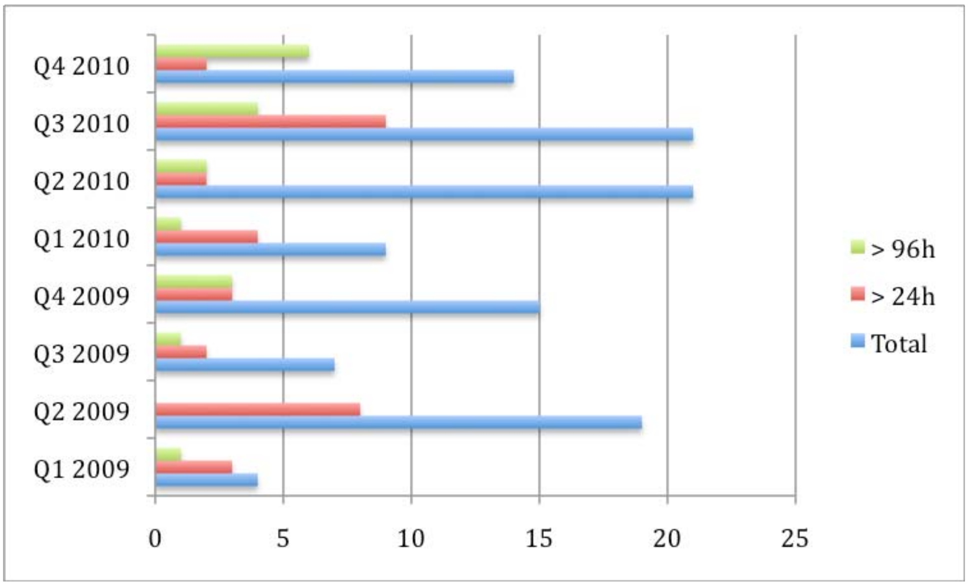


Figure 2 - Time to Resolution

Summary and Conclusions

The last quarter of 2010 was arguably the most demanding to date on WLCG services but nonetheless showed tangible improvements with respect to previous quarters. The challenge for 2011 will be to sustain this level of service with the increased load that is expected from this year's LHC data taking.

Grid Deployment Board Report Nov 2010 – Jan 2011

Feb 2011

John Gordon

Introduction

There were three meetings of GDB held during this quarter The agendas show the topics covered and the slides and papers. http://indico.cern.ch/categoryDisplay.py?categId=3l181

Long-Running Issues

CREAM: The experiments now all seem happy with using CREAM in production. Alice already rely solely on it; ATLAS use it in preference at sites that have it; LHCb use it transparently via WMS and are advanced in work on direct submission. CMS reported they are happy with it but haven't moved their production yet. Despite requests dating back more than a year, only the T1s and a handful of T2 had installed CREAM. This improved greatly during this quarter. There are now roughly the same number of sites running CREAM as T1+T2 sites but there is no automated way to see the correlation. OSG is still in the planning phase of a roll-out of CREAM but since they don't use LCG-CE this is not a barrier to the retiral of LCG-CE once CREAM is widely used in EGI.

Multi-User Pilot Jobs: ATLAS, CMS and LHCb reported that their software works fine with glexec (ATLAS later retracted this after the end of the quarter). The security policy requiring identity switching for MUPJ payloads was suspended into 2011 until glexec is more widely deployed. The plan for the next quarters are that T1s get glexec running reliably by the end March (they have all tested it) and T2s by the end of June. In parallel developers will work with ATLAS to diagnose their problem. Alice have a deeper problem and require much more development in their framework to support identity changing.

Topical Issues

Handling of network problems: The trouble-shooting procedures were revised so that one end of a problem transfer route takes responsibility for interacting with the network providers and reports regularly to WLCG.

CERNVMFS: This has been further tested and looks suitable for software distribution and possibly some types of metadata. It is being tested in production by some sites with the experiments accepting that a manual roll-back may be needed. Wider deployment needs a production quality infrastructure at CERN and this is being planned.

Data Access and Management Demonstrators: 12 projects were reviewed at the January GDB. Of these, 10 either driven, or interest expressed, by experiments. Assume these 10 will progress and be regularly reported on in GDB. Scope for collaboration between several and this is to be encouraged. Several using xrootd technology so we must ensure adequate support.

Information Service: work has started on a new architecture for BDII for WLCG. Some T1s have volunteered and a plan will be forthcoming.

Software Distribution: while most middleware and tools for WLCG is provided by other projects there is a small set of software produced by WLCG partners. A stable home for this needs planning.

Applications Area Report Nov 2010 – Jan 2011

February 2011

Pere Mato

We have seen in the last quarter a small reorganization in the activities of the PH-SFT group to respond to the review recommendations and to define the new priorities for 2011 and 2012. The group will continue support for the LHC experiments as its main priority. At the same time, improve synergy between activities of the group, start supporting new approved experiments and continue to prepare for the future by investigating new software technologies. This new organization comes with changes in roles and responsibilities: John Harvey is the new group leader, Pere Mato will continue to run the AF and steer the baseline and consolidation tasks, Fons Rademakers leads the ROOT project, Gabriele Cosmo leads the simulation project and Benedikt Hegner leads the SPI project.

ROOT

The production release 5.28 at the end of the year went smoothly without any major problems. Large effort has been made to consolidate the existing code and improve its quality by using the coverity tool, better testing infrastructure and additional tests for the GUI subsystem using the event recorder. For the I/O subsystem, major progress has been made to further optimize the reading part of the streaming engine. The new interpreter prototype based on clag/LLVM is clearly progressing: already in this early stage it can replace certain parts of ROOT's current interpreter CINT. Additional improvements have been made in the core mathematical libraries such as an updated interface for numerical integration, minimization and distribution sampling. New algorithms like genetic minimization or kernel density estimation have been added, as well as various bug fixes and improvements have been applied also in Roofit/Roostats packages. Started to investigate (and prototype) new GUI technologies based on OpenGL (in particular OpenGL ES) on different platforms.

For PROOF a lot of work on supporting ALICE during the HI run. Introduction of the ProofBench suite that allows benchmarking and understanding PROOF performance at any cluster.

Persistency Framework

New releases of the PF projects have been prepared for the two new configurations LCG_59b (for ATLAS, based on ROOT 5.26) and LCG_60 (for LHCb, based on ROOT 5.28), using the same code base for both (COOL 2.8.8, CORAL 2.3.14 and POOL 2.9.11). The new releases include several bug fixes and enhancements in all three packages, mainly in CORAL (including a major restructuring of the test infrastructure to extend its coverage, as well as the implementation of a workaround for a bug causing endless connection retrial loops after a network glitch), but also in POOL (support for the latest I/O optimizations in ROOT and enhancements in the collections packages) and COOL (bug fixes for NaN handling).

Simulation

The new public release of Geant4, release 9.4, was made in December as scheduled. Among the features included, contributed by SFT, to mention: improvements in the Fritiof/FTF hadronic model (better selection of final states at low energies and tuning of the parameters of its Reggeon cascade); a revised choice of modeling in FTFP_BERT to use improved modeling of hyperons and anti-nucleons (adopting the CHIPS model in place of LEP); a new geometrical solid, G4GenericTrap (following an ALICE request); the first implementation of a new build/installation environment based on CMake. Validation tests of the new release have been carried on the GRID, showing excellent stability. The new release has been chosen by both ATLAS and CMS to base their 2011 simulation production on.

The Geant4 source code repository has been successfully migrated from CVS to SVN IT services; a new tags selector system integrated with Drupal has been put in place, replacing the old Bonsai system.

On physics validation, the investigation on the effects of hadronic models transition on the energy resolution has been completed; it has revealed that both resolution and the normalized width do not show the problem, and in particular, the FTFP_BERT physics-list is very smooth. "Shower momenta" are now routinely checked with the Simplified-Calorimeter test suite. The results are now available through a web-based application.

The new web service on MC Generators tuning and validation is now publicly available at mcplots.cern.ch. Further extensions and improvements are now planned. Most MC Generator packages have now been ported to MacOSX, and old ones can be added on demand.

SPI

The SPI project has been focusing on consolidation of infrastructure and services. All the web services have been successfully migrated to newer hosts in the CERN computing center, and in turn integrated into the central service monitoring provided by CERN IT. The AA project websites are still being moved to the central Drupal services of PH/SFT, and an effort to systematically update the documentation of the SPI infrastructure has been started.

There have been two further releases in the "LCG 59" cycle and the first release of the "LCG 60" cycle. The most important change in the "LCG 60" cycle is the move to ROOT 5.28.00 and Boost 1.44. Various other externals were updated as well. This release series is the first one to fully support the Intel icc compiler on Linux. At the same time VC7 was replaced by VC9 on the Windows platform. The Scientific Linux 4 support has now officially been discontinued.

The usage of JIRA as an issue tracker for the internal work of the Applications Area was evaluated. Its usage should increase the transparency of tasks and priorities for discussions in the Architects Forum. The evaluation was very successful and the tool is about to be used in production now.

A new prototype project is the usage of CMake as a common build tool for the Applications Area projects, being a potential replacement for CMT and manually managed Makefiles. First attempts have been promising and the next milestone will be to provide the externals of the LCG configuration in form of a CMake environment.

ALICE Report
Nov 2010 – Jan 2011

February 2011

Raw data registration and replication

Data are being registered from the DAQ buffer at P2 to CASTOR2 at CERN Tier0 with a rate up to 4 GB/s during the heavy-ion running. No incident has been reported since the beginning of the LHC operation.

Since the beginning of LHC operation physics and calibration runs have been recorded for a total of 2.5 PB of raw data in 1.4M of files.

Raw data are replicated using *xrdcp* in Tier1s with a target rate adjusted to the Tier1s contribution to mass storage resources. The maximum transfer rate reached during the PbPb run was 260 MB/s. No incident has been reported since the beginning of the LHC operation.

Processing strategy

The quasi-online pass 1 reconstruction is performed in the Tier0 using calibration parameters calculated online. The fraction of successful jobs is larger than 95%.

Pass 2 reconstruction is performed in Tier1s using improved calibration parameters obtained from the results of the analysis trains processing pass 1 ESDs. Pass 2 is scheduled to run with a unique version of the software over data collected during a single LHC period. Four periods out of 6 have already been processed. The fraction of successful jobs is larger than 99%. PbPb data have been reconstructed once and pass 2 is starting now. Large memory usage has limited the efficiency of pass 1 reconstruction to 73%. Pass 2 will be processed with an improved version, with respect to memory consumption, of the code.

Condition data are calculated with detectors algorithms running on dedicated DAQ workers. The output together with the DCS data is collected with the offline shuttle system and published on GRID SEs as ROOT files and in the AliEn catalog. Condition data are accessed by the reconstruction jobs. There is no issue with the condition data to signal. Calibration parameters for several detectors computed online do not lead to optimum performances requiring the need for additional processing implemented at the level of reconstruction and analysis. A new calibration strategy optimizing the available computing resources is under preparation.

Analysis of the ESDs is performed on the GRID by two analysis trains: the QA train is started together with pass 1 and pass 2 reconstruction for immediate quality assessment of the raw data, the calibration parameters and the reconstruction algorithms, the analysis train is started after completion of a reconstruction pass to create AODs to be used for the end user analysis. The train operation is routine since the beginning of the LHC operation. End user analysis on the grid is a routine with 25% of all ALICE resources being used for these analyses with peaks before ALICE weeks or conferences reaching 50%.

Issue

The main concern is the memory usage in PbPb reconstruction and the calibration procedure requiring more CPU resources than expected.

ATLAS Report
Oct 2010 – Jan 2011

February 11, 2011

Kors Bos

ATLAS took successfully data until the last moment of proton running at the end of October. All 2010 (and 2009) data and the corresponding simulated datasets were re-processed promptly after. The whole re-processing including the tails (re-running of failed jobs and re-running jobs for incomplete datasets) took 3 weeks. The majority of all jobs were run in about 1 week. The whole re-processing including the distribution of the data was concluded well before the Christmas break.

ATLAS also took data at nominal rate with Heavy Ion (HI) collisions. This was the first run with HIs and many things in the software had to be adapted on the fly. In the ATLAS case RAW events were hardly bigger on average than the ones from proton collisions but ESD events were. From HI reconstruction, no AOD but ESD and DESD are produced. The RAW and ESD were distributed and stored as for proton data but the DESD were only kept at CERN and in the GROUPDATA pools in BNL, Krakow and Tel Aviv. Better triggers on “central events” for the 2011 HI run will drive the event size and reconstruction time up significantly.

From very early on during the HI run outstanding events with jet quenching were noticed. This let to an exciting period of rapid analysis of the data and eventually resulted in a publication in record time. The HI data will be re-processed shortly before the next proton will start in March 2011.

PD2P, the dynamic data placement on request mentioned in the latest Q-report has been further developed and understood. As of the beginning of 2011 it is applied to all data-types and everywhere between T1s as well as from T1s to T2s. This has let to the effect that no data is pre-placed in T2s any more but all data is pulled when jobs need it. In the monitoring it shows that PD2P is now triggering the biggest part of all data transfers.

Because the Data Management Central Catalogue (CC) has been improved to effectively handle quota it has been decided to reduce the number of space tokens for data storage in all Tiers. All simulated data will be moved into the pools reserved for detector data and the share between real and simulated data will be controlled from the CC. Also the much-fragmented space for the various physics and detector groups can now be combined into one space and the quota controlled from the CC. More pools will follow and this is expected to improve the disk usage efficiency and easy central operations.

Until December 31 ATLAS submitted 658 team tickets and 15 alarm tickets. Of those alarm tickets 6 were for storage, 4 for LFC, 1 for AFS, 1 for FTS, 1 for BDII and 1 for network problems and 1 because of a power cut that brought all services down.

CMS Report
Nov 2010 – Jan 2011

Feb 2011

Ian Fisk

CMS Experiences

For CMS the fourth quarter contained the end of the 2010 proton-proton run and the complete 2010 heavy ion run. In order to prepare the experiment for the 2011 winter conferences the computing teams began preparing the final data and simulation samples needed for analysis. The production of this round of simulation began in August and completed with approximately 1.5 billion events. The reconstruction of these events with the number of pile-up events observed in 2010 began in this quarter and ran efficiently. Some test samples with the larger number of pile-up events expected in 2011 were also produced. These were successful, but demonstrated some of the challenges in terms of processing size and event size that will be issues in 2011.

The data was processed twice during this quarter. The first pass was produced only a few days after the completion of the run to repair a few known issues in the data. There was a second pass through the data with improved calibration produced during December. The reduced data complexity and limited data size in 2010 allowed quick passes through the data. The analysis object data (AOD) had been previously produced for simulation, but was produced for the reprocessed samples. In the model this reduced analysis format will eventually be used for 90% of the analysis activity.

The heavy ion run had challenges, but ran very smoothly. CMS chose to operate with tracker zero suppression off because it was unknown if the current hardware zero suppression would work for high occupancy heavy ion events. The trigger rate was normally 120Hz-150Hz and the raw event size was 10MB to 13MB per event. Combined with the reconstructed events, the rate into Castor was nearly 2GB/s during running, though it averaged over the time between fills. The reconstruction time averaged about 10s per event and with 2000 processor cores the rate from Castor routinely hit 3-5GB/s to feed the reconstruction farm. Castor performed extremely well during this time. The IO improvements made to CMSSW during the summer also contributed to the good performance. The heavy ion sample was divided into express, core physics (the most central collisions), and the bulk. The core physics sample was replicated as raw and reco to a Tier-1 for custodial storage and distribution to analysis Tier-2s. During the first quarter of 2011, the complete sample will be zero suppressed offline and replicated to a dedicated heavy ion center.

The analysis continued well at the Tier-2s centers. The number of analysis jobs at Tier-2s continued to average close to 150k jobs per day until the CERN holiday shutdown in December. The analysis operations team began the transition to hosting exclusively AOD data in the central space. Physics groups are free to subscribe any format to group controlled space.

Preparations are ongoing for 2011, which is expected to have many more pile-up interactions per crossing. The number of pile-up events increases the reconstruction and the simulation times as well as the event sizes.

LHCb Report
Nov 2010 – Jan 2011

February 2011

- In Q4 the principle activities in LHCb were:
  - **i)** a complete re-processing of the data taken during 2010 and
  - **ii)** the launch of a major MC production campaign
  - **iii)** a data clean up
- The re-processing took place in Nov/Dec and finished just at the Xmas break. This proceeded well and delivered according top plan in time for the winter conference physics analysis. All of this work took place at the T1s.
- The MC campaign saw a continuous submission of MC requests which have been running at T2 and T1 centres, as well as many non-pledged resources. This has proceeded well with no major disruption.
- In anticipation of 2011 running we have mounted a disk data clean up campaign to remove copies of data deemed to no longer be needed on disk (principally older reconstruction passes) according to our computing model. Even with this we have had to reduce the number of copies of data held due to the increased event size caused by the high pileup running.
- The only issue arising was properly in 2011Q1 but highlights an important effect. We have performed a re-stripping (not re—reconstruction) which results in a high rate of data access on disk storage. This caused problems at (mainly) CERN and has been the subject of work by both CERN and LHCb. This is ongoing.