



# Tier-1 SC4 planning

## Update on the planning material

GDB meeting  
CERN 8.11.2005

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# Background information



- Sites submitted plans at the GDB in Bologna
  - Different format
  - Quite different content

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US-ATLAS\_Orig.pdf CC-IN2P3\_Orig.pdf SARA-NIKHEF\_Orig.pdf

US ATLAS Tier 1 SC4 Plans and Schedule

Date	Expected Install Capacity		
	CPU (kSI2K)	Disk (TB)	WAN->Disk (MB/sec)
1-Jul-05	500	150	
1-Aug-05	SRM, FTS, FTS server installed and operated LCF, ATLAS VObox installed		
N-xxx-0N	As ATLAS VObox applications become available As new versions of any of above become available		
1-Nov-05	Begin procurement of expanded LAN infrastructure Begin procurement of new Tape subsystem		
15-Dec-05	Begin installation of expanded LAN infrastructure Begin installation of new Tape subsystem		
15-Jan-06	Expanded LAN infrastructure operational New Tape subsystem operational		
15-Jan-06	500	150	
1-Apr-06	Begin CPU/dCache disk expansion procurement Begin Central disk expansion procurement		

GDB - October 11<sup>th</sup>

CC-IN2P3 Tier 1 SC4 Plans and Schedule

Installation goals

Date	Installation plans	Notes
15.07.05	VOBoxes installed for the 4 LHC experiments	
15.09.05	FTS 1.3 installed	
01.10.05	dCache production starts	dCache disk 4
17.10.05	dCache disk expansion	dCache disk 1
	LFC installed, tested, and published in IS. SRM SE published in IS	
31.10.05	FTS installed, tested, T1-T2s channels created	
	Xrootd disk space	Xroot disk 10
20.11.05	dCache space expansion	dCache disk 3

SARA-NIKHEF\_Orig.pdf

SC4 Plans of the SARA/NIKHEF

Ron Trompert, Mark van de ...  
SARA

Version 0.3  
Date: October 4<sup>th</sup> 2005

FZK\_Orig.pdf

Planning SC4 hardware expansion GridKa

Resource	Delta	In service	Status
Network	Lightpath to CERN	Jan 2006	Waiting for G
CPU	Expansion with 500 kS of existing 130 kS	April 2006	Procurement s
Disk	Expansion with 200 TB for dCache of existing 45 TB	April 2006	Procurement s
Tape	Expansion with 250 TB of existing 620 TB	Jan 2006	Procurement s
Tape IO	Expansion with 320 MB/s of existing 300 MB/s	Jan 2006	Procurement s
	Expansion with 640 MB/s	April 2006	Procurement s
Write Pool	Expansion with 100 MB/s to 250 MB/s	April 2006	Procurement s

GridKa operates a joint cluster for LHC and non-LHC HEP experiments. Worker nodes are also used by CDF, BaBar and D0.  
The SC3 started the integration into the LCG production environment. The integration and migration to a single production environment is in progress and will be finished in January 2006.  
We plan to operate a single database engine (Oracle) to consolidate several separate databases within the LCG frame. Planning is dependent on progress of LCG 3D work.

US-CMS\_Orig.pdf

USCMS Tier1 Short term facility plans.

The USCMS facility uses production storage and compute resources. The facility allows testing in a real environment with users and has problems that would not have appeared in a segregated environment. We intend to continue with this mode for the resources listed below are available for SC4, actual production work and user analysis priorities have not been determined yet. In the past, effective sharing was possible work was completed - we expect this to continue to SC4

October 2005:

CPU: 555 kSI2K

Data Disk: 91 TB + 17.4 TB resilient

User Disk: 6 TB managed + 6 TB physical space

MAN->Disk: 750 MB/s demonstrated. There is not a single use case for this node and we are not working on it.

Tape: 229 TB on tape, we recycle tapes regularly has been written.

MAN->Tape: 7 9940B drives are for CMS priority use, 8 general FNAL non-CMS experiments. We see around 1/4 to 1/2 max drive rate. We expect HSM/pool traffic shaping to be introduced to improve this effective rate to 3/4 max

Service Challenge Phase 4 Planning:  
INFN

Tiziana Ferrari  
on behalf of the SC team at INFN

INFN CNAF

GDB, Bologna, Oct 12 2005

# Templates for Planning



- The MB agreed to change the way projects do planning and are monitored and reviewed
  - Milestone tables for each site/area/project
  - Templates to have the same format
  - Review of the plans in order to have consistent content, naming, timescale
  - Compare with the needs of the users
- Converted all plans to the templates
  - Added high-level milestones
  - Capacity, bandwidth, service availability

C26 2007

SITE								
Plans and Schedule								
							11/9/2005	
ID	Date	Expected install capacity/performance Milestones: Description and Verification				Status Progress	Notes Comments References Hyperlinks Dependent Milestones	
		CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)			WAN=>Tape (MB/sec)
2006								
	01.01.06							
SC4-1	31.01.06	SC4: All required software for baseline services deployed (for 28.02.06)					SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA	
	01.04.06							
SC4-2	30.04.06	SC4: Set-up complete and basic service demonstrated						
	01.07.06							
2007								

H10 fx

**IN2P3\_Plan.xls**

CC-IN2P3							
Plans and Schedule							
ID	Date	Expected install capacity/performance Milestones: Description and Verification					Status Progress
		CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)	WAN=>Tape (MB/sec)	
2P3-1	31.12.05	Dedicated network link to CERN of 10 Gbps in service					
<b>2006</b>							
	01.01.06		150			na	
2P3-10	01.01.06	Start procurement of additional tape drives and tape servers					
2P3-10	01.01.06	Start evaluation for automated cartridge library upgrade					
2P3-10	01.01.06	Compute nodes and disk servers purchase starts					
SC4-1	31.01.06	<b>SC4: All required software for baseline services deployed</b>					SRM
2P3-10	28.02.06	Complete procurement of additional tape drives and tape servers					
2P3-20	01.04.06	Disk extension to 50 TB For xrootd, HPSS and dCache					
	01.04.06	1171	516	200	535	75	
SC4-2	30.04.06	<b>SC4: Set-up complete and basic service demonstrated</b>					SRM
2P3-20	28.05.06	810	327		258		

**INFN\_Plan.xls**

INFN							
Plans and Schedule							
ID	Date	Expected install capacity/performance Milestones: Description and Verification					Status Progress
		CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)	WAN=>Tape (MB/sec)	
10		US-ATLAS					
<b>US-ATLAS</b>							
Plans and Schedule							
ID	Date	Expected install capacity/performance Milestones: Description and Verification					Status Progress
		CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)	WAN=>Tape (MB/sec)	
13	15.12.05	UA-7	Begin installation of expanded LAN infrastructure				
14	15.12.05	UA-8	50				
15	15.01.06	UA-9	Expanded LAN infrastructure operational				
16	15.01.06	UA-10	New Tape subsystem operational				
	31.12.05	UA-11	500	150	200	300	200

**PIC**

Plans and Schedule								
ID	Date	Expected install capacity/performance Milestones: Description and Verification					Status Progress	Notes Reference Depend
		Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)	WAN=>Tape (MB/sec)			
		Castor disk-cache expansion operational						
		new tape drives operational						
		41.5	30	85	48			
<b>2006</b>								
		100				na		
		start deployment of additional CPU						
		<b>All required software for baseline services deployed</b>					SRM 2.1, LFC, FTS	
		additional CPU operational						
		41.5	30	85	48			
		start deployment of additional 1Gbps WAN infrastructure						
		new 2Gbps WAN infrastructure operational						

**TRIUMF\_Plan.xls**

TRIUMF							
Plans and Schedule							
Date	Expected install capacity/performance Milestones: Description and Verification					Status Progress	No Refer Deper
	CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)	WAN=>Tape (MB/sec)		
4.10.05	10G Foundry R4 switch ordered						
31.10.05	LFC + VOBOX installation/configuration + ATLAS initial SC3 tests						
30.11.05	Last mile D/WDM optics for TRIUMF/BCNET						
30.11.05	ATLAS / SC3 phase 2						
31.12.05	ATLAS / SC3 phase 2 (?)						
31.12.05	2 Persons hired to support development and operations(sys admin + grid)						
<b>2006</b>							
01.01.06		50				na	

# Planning for SC4 (and beyond)



- Each plan needs to be completed by every site
- Adding information
- Verify if they are consistent with the High Level plan
- Check if they meet the needs of the experiments
  
- Used at least to discuss on clear and organized information
- Used to plan, monitor and report the status
  
- The goal is to identify problems (and react) as soon as possible

<https://uimon.cern.ch/twiki/bin/view/LCG/SitePlansGdbBologna>

## Plans submitted by T1 Sites (GDB 11-12 Oct. 2005)

At the GDB Meeting in Bologna ([agenda](#)) the Tier1 sites submitted their plans for SC4 (some sites until end of 2006).

The column **Original Plan** links to these documents.

Instead each **Milestones Table** follows the [template](#) provided for the site plans.

Tier 1 sites are requested to:

1. download the corresponding table;
2. review and modify the milestones, add comments, project status and progress;
3. [submit](#) the modified table.

Site	Original Plan	Milestones Table
CC-IN2P3	<a href="#">CC-IN2P3 Orig.pdf</a>	<a href="#">CC-IN2P3 Plan.xls</a>
CERN	<a href="#">CERN Orig.pdf</a>	<a href="#">CERN Plan.xls</a>
FZK	<a href="#">FZK Orig.pdf</a>	<a href="#">FZK Plan-v2.xls</a>
INFN	<a href="#">INFN Orig.pdf</a>	<a href="#">INFN Plan.xls</a>
PIC	<a href="#">PIC Orig.pdf</a>	<a href="#">PIC Plan-v2.xls</a>
RAL	<a href="#">RAL Orig.pdf</a>	<a href="#">RAL Plan.xls</a>
SARA-NIKHEF	<a href="#">SARA-NIKHEF Orig.pdf</a>	<a href="#">SARA-NIKHEF Plan-v4.xls</a>
TRIUMF	<a href="#">TRIUMF Orig.pdf</a>	<a href="#">TRIUMF Plan.xls</a>
US-ATLAS	<a href="#">US-ATLAS Orig.pdf</a>	<a href="#">US-ATLAS Plan.xls</a>
US-CMS	<a href="#">US-CMS Orig.pdf</a>	<a href="#">US-CMS Plan.xls</a>





## Planning, Monitoring and Reviewing in LCG Phase 2

### Proposal

- Latest version ([doc](#), [pdf](#))
- Changes from the previous version ([pdf](#))

### Examples and Templates

- [EXAMPLE: Site Plan](#)
- [EXAMPLE: Area Plan](#)
- [EXAMPLE: Experiment Plan](#)
- [TEMPLATE: Change request](#)
- [TEMPLATE: Project Quarterly Report](#)

### Plans Available

- [High Level Milestones](#)
- [Milestones from T1 Sites](#)

# Examples



- Adding information
  - Clear capacity and performance availability at key dates  
SC3: Jan 06, SC4: April 06, Jul 06
  - Clear planning of installations and changes in the services provided  
SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA
  - Several steps needed to set-up hardware or a service  
(ex: choose, procure, start install, end install, make operational)
  - Include important infrastructure not only software and computers

PIC								
Plans and Schedule								
							11/09/2005	
ID	Date	Expected install capacity/performance Milestones: Description and Verification					Status Progress	Notes Comments References Hyperlinks Dependent Milestones
		CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)	WAN=>Tape (MB/sec)		
	15.12.05	Castor disk-cache expansion operational						
	15.12.05	new tape drives operational						
	15.12.05	150	41.5	30	85	48		
<b>2006</b>								
	01.01.06			100		na		
	10.01.06	start deployment of additional CPU						
SC4-1	31.01.06	<b>SC4: All required software for baseline services deployed (for 28.02.06)</b>						SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA
	01.02.06	additional CPU operational						
	01.02.06	250	41.5	30	85			
	01.02.06	start deployment of additional 1Gbps WAN infrastructure						
	01.03.06	new 2Gbps WAN infrastructure operational						
	01.03.06	250	41.5	60	85	48		
	01.04.06	Start of SC4-setup phase						
	01.04.06	Add tape capacity						
	01.04.06	250	41.5	60	130	48		
	01.04.06	250	136	100	158	75	SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA	
SC4-2	30.04.06	<b>SC4: Set-up complete and basic service demonstrated</b>						
	01.07.06	250	136	100	158	100		
	01.08.06	Add tape Capacity						
	01.08.06	250	41.5	60	158	48		

**Clear capacity and performance availability at key dates**

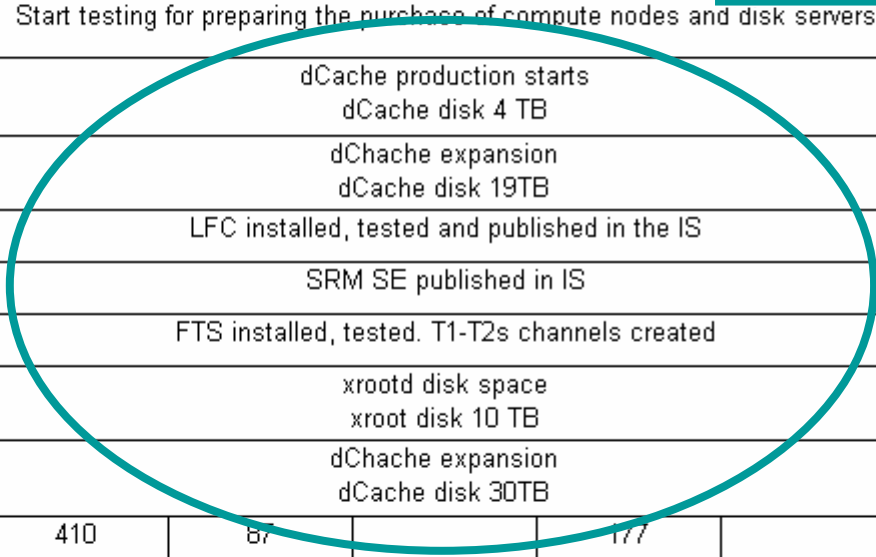
119

**CC-IN2P3**

**Plans and Schedule**

Expected install capacity/performance Milestones: Description and Verification					
ID	Date	CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)
IN2P3-3	1.10.05				
IN2P3-4	1.10.05				
IN2P3-5	17.10.05				
IN2P3-6	17.10.05				
IN2P3-7	17.10.05				
IN2P3-8	31.10.05				
IN2P3-9	31.10.05				
N2P3-10	30.11.05				
N2P3-11	31.12.05	410	87	177	
N2P3-12	31.12.05				
N2P3-13	31.12.05				
N2P3-14	31.12.05				
N2P3-15	31.12.05				
<b>2006</b>					
N2P3-16	01.01.06		150		na

**Clear planning of installations and changes in the services provided**



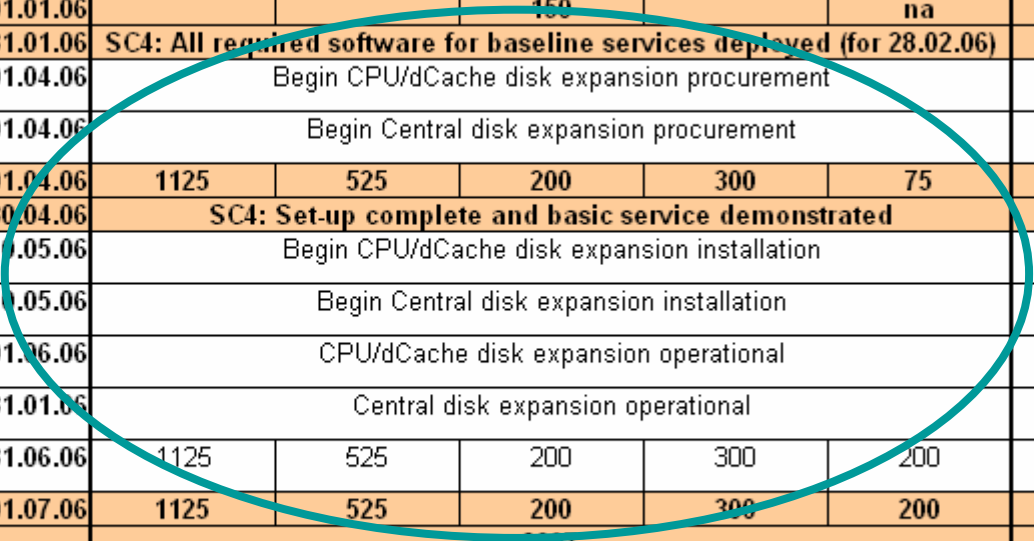
**SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA**

RAL								
Plans and Schedule								
							11/9/2005	
ID	Date	Expected install capacity/performance Milestones: Description and Verification					Status Progress	Notes Comments References Hyperlinks Dependent Milestones
		CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)	WAN=>Tape (MB/sec)		
	15.12.05	Delivery of Resiliant Hardware for Critical Services						
	15.12.05	New Tape Robot Delivered						
<b>2006</b>								
	01.01.06			150		na		
	15.01.06	On-Call System in Place						
	15.01.06	Airconditioning Capacity Upgrade						
	15.01.06	Tier-1 Connected to Site Edge Router at 10Gb/s						
	15.01.06	493	120	150		100	WAN 4x1 GB/s	
	15.02.06	3D Service Moves to Production Hardware						
	15.02.06	1st Disk and CPU delivery						
SC4-1	31.01.06	<b>SC4: All required software for baseline services de</b>						BDII, RGMA
	15.03.06	Completion of Phase I Service Harder						
	15.03.06	Test Castor Service Commences provides back end service to dCache SRM						
	01.04.06	980	450	150	664	75		
	15.04.06	2nd Delivery of Disk, CPU						
	15.04.06	Delivery of (6?) Tape Storage Bricks and Media						
SC4-2	30.04.06	<b>SC4: Set-up complete and basic service demonstrated</b>						SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA
	15.05.06	1st CPU Upgrade In Production						
	15.05.06	493+448	120	150	229	150	WAN 4x1 GB/s	

Include important infrastructure not only software and computers

US-ATLAS							Plans and Schedule	
							11/9/2005	
ID	Date	Expected install capacity/performance Milestones: Description and Verification					Status Progress	Notes Comments References Hyperlinks Dependent Milestones
		CPU (kSI2K)	Disk (TB)	WAN=>Disk (MB/sec)	Tape (TB)	WAN=>Tape (MB/sec)		
UA-7	15.12.05	Begin installation of expanded LAN infrastructure						
UA-8	15.12.05							
UA-9	15.01.06							
UA-10	15.01.06							
UA-11	31.12.05	500						
2006								
	01.01.06		450			na		
SC4-1	31.01.06	SC4: All required software for baseline services deployed (for 28.02.06)						SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA
UA-12	01.04.06	Begin CPU/dCache disk expansion procurement						
UA-13	01.04.06	Begin Central disk expansion procurement						
	01.04.06	1125	525	200	300	75		
SC4-2	30.04.06	SC4: Set-up complete and basic service demonstrated						SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA
UA-14	10.05.06	Begin CPU/dCache disk expansion installation						
UA-15	10.05.06	Begin Central disk expansion installation						
UA-16	01.06.06	CPU/dCache disk expansion operational						
UA-17	31.01.06	Central disk expansion operational						
UA-18	31.06.06	1125	525	200	300	200		
	01.07.06	1125	525	200	300	200		
2007								
	01.01.07	2258	1108	200	603	200		

Several steps needed to set-up hardware or a service (ex: choose, procure, start install, end install, make operational)



# First version of the plans



- Plans have to be enriched with more milestones and information
- Identify the people in charge

- M.Vetterli (Canada, TRIUMF)
- F.Hernandez (France, CC-IN2P3)
- H.Marten (Germany, FZK)
- M.Mazzucato (Italy, CNAF)
- K.Bos (Netherlands, Sara-Nikhef)
- B.Vinter (NDGF)

- G.Merino (Spain, PIC)
- T.Cass (Switzerland, CERN)
- S.Lin (Taipei, ASGC)
- A.Sansum (UK, RAL)
- B.Gibbard (US, BNL)
- I.Fisk (US, FNAL)

# Next Steps



- **Today:** Ask sites to review/add milestones (urgent)
  - Capacity and bandwidth available (Jan 06, Apr 06, Jul 06)
  - Services installations and upgrades: SRM 2.1, LFC, FTS, CE, RB, BDII, RGMA
  - Operations organization, installation, deployment
  - Procurement milestones
  - Details and comments
- **16 Nov 05:** Send me a new version in one week
- **Nov 05:** I will contact on what is missing/unclear, discuss in order to complete the plan
- **Dec 05:** Review, ask questions, discuss with the users, compare with the needs/schedules (capacity, services etc.) of the experiments
- **Jan 06:** Used to plan, monitor and report
- **Summary at the GDB meetings**