

## CERN Fabrics

### Plans and Schedule

11/3/2005

ID	Date	Milestones: Description and Verification	Status Progress	Notes Comments References Hyperlinks Dependent Milestones
<b>DATA RECORDING</b>				
DR-1	30.11.05	<b>Definition of T0 building blocks</b> The building blocks of the Tier-0 Centre are defined, their performance and their interactions are established (disk server, tape server, tape drives and the Castor software), decision on the best way to solve the 'impedance' problem between disk and tape server.		
DR-2	30.09.05	<b>750 MB/s data recording demonstration at CERN</b> Data generator disk tape sustaining 750 MB/s for one week using the CASTOR 2 mass storage system. Internal milestone for DRC2. Use the building blocks to setup a system to run at 750 MB/s to tape for at least a week, where 750 MB/s means the average over one week with a maximum of 4 periods of a maximum of 12 h (each) where the speed drops below 700 MB/s (minimum 600 MB/s).		This will use the different available types of tape drives (LTO-3, Titanium, 3592A and 9940B). A certain number of IT test programs (~100-150) would fill the disks pools via Castor 2 using RFIO and ROOT protocols and then Castor would migrate the data to tape.
DR-3	31.12.05	<b>T0 buffer performance of 500 MB/s</b> Expand this system to the T0 buffer setup. The disk pool would be filled by about 100 streams and in parallel the data would be read by three different client systems (emulation of the T1 export, tape		This infrastructure should be large enough to cope safely with 500 MB/s (== 500 MB/s in to the pool and 1.5 GB/s out of the pool) and should also run for about one week.
DR-4	31.12.05	<b>Production of 3 experiments migrated to CASTOR 2</b> The test and migration plan agreed in June 2004 is behind schedule. This milestone needs commitment from three experiments to staff their test and migration process.		
DR-5	28.02.06	<b>1.0 GB/s data recording demonstration at CERN</b> Data generator disk tape sustaining 1.0 GB/s for one week using the CASTOR 2 mass storage system and the new tape equipment. This is the internal milestone for DRC3.		
DR-6	30.04.05	<b>T0 buffer performance of 1 GB/s</b> Expand this to the T0 buffer setup at 1 GB/s.		
DR-7	30.06.05	<b>Migration to CASTOR 2 complete for LHC experiments</b> This requires commitments from all experiments to allocate staff to testing and migration.		
DR-8	31.08.06	<b>1.6 GB/s data recording demonstration at CERN</b> Data generator disk tape sustaining 1.6 GB/s for one week using the CASTOR 2 mass storage system and the new tape equipment. This is the internal milestone for DRC4.		
<b>DAQ - TIER 0 - TIER 1</b>				
DTT-1	31.12.05	<b>Architecture and Plan for the DAQ – Tier-0 Integration and Testing</b> Document providing: 1. a detailed architecture for the integration of the four DAQ systems with the Tier-0 facility in the Computer Centre 2. implementation plan 3. testing plan with milestones to demonstrate nominal LHC data rates by end December 2006 and full operational capability by end April 2007.		

DTT-2	31.12.05	<b>Testing Plan for the end-to-end DAQ – Tier-0 – Tier-1 system</b> 1. testing plan with milestones to demonstrate full data path from DAQ to Tier-0, recording on tape, reconstruction, distribution to Tier-1s, recording on tape at Tier-1s 2. <b>by end July 2006</b> – at least 2 experiments each with at least 3 Tier-1s (Level 1 milestone), 200 MB/sec aggregate throughput (should include the conditions database) 3. <b>by end Feb 2007</b> – all Tier-1s, full functionality and nominal data rates (see Figure 3). By this time the conditions database must be included		
DTT-3	30.04.06	<b>ALICE DC at 1 GB/s</b> Run the ALICE DC at 1 GB/s in ROOT format and with the ALICE DAQ at Point 2. 1 GB/s is the average over one week measured as the input data rate into the Castor managed disk pool (consistent with the tape data rate). There are at most 4 periods of a maximum of 12 hours where the average data rate is below 1 GB/s and at the minimum of 800 MB/s.		
<b>TAPE EQUIPMENT ACQUISITION</b>				
TAPE-1	31.01.06	<b>Installation of SC4 tape equipment from two vendors</b> The two pilot installations from STK and IBM with a capacity of $\geq 5000$ robot slots (each) and 40 tape drives (each). Equipment installed and in operation.		
TAPE-2	31.08.06	<b>Decision on “start-up” Tape Configuration</b> Following an evaluation of the equipment installed in January 2006 decide on the supplier(s) and plan the final (start-up) configuration – to be presented to Finance Committee by the end of the year and installed in January 2007.		
TAPE-3	30.11.06	<b>Acquisition of start-up tape equipment</b> agreed by Finance Committee		
TAPE-4	31.01.07	<b>Full tape equipment configuration</b> for start-up installed and in operation This is expected to include 200 drives.		
<b>COMPUTER CENTRE INFRASTRUCTURE</b>				
CC-1	31.10.05	Electrical Installation, including sub-station, commissioned		
CC-2	31.05.06	Cooling and ventilation upgrade complete		
CC-3	30.06.06	First part of the physics service UPS installed (800 KW)		
CC-4	30.09.06	Second part of physics service UPS (+800 KW)		
<b>DATABASE SERVICES</b>				
DBS-1	30.11.05	Design for the Database Services at Tier-1 Centres		(Work of the 3D Project) This area is still evolving, but decisions must be made this year in order to give time for the services to be set up and tested. There are likely to be different approaches by the different experiments. The decisions will be taken at or just after the October workshop. A major issue called, tested and in full operation
DBS-2	30.11.05	Implementation and Testing Plan		

**PROCESSOR AND DISK ACQUISITION**<http://cern.ch/purchasing>

<b>ACQ-1</b>	<b>15.02.06</b>	Processor and disk equipment must be installed, tested and in full operation		
<b>ACQ-2</b>	<b>15.09.06</b>	Processor and disk equipment must be installed, tested and in full operation		
<b>ACQ-3</b>	<b>15.02.07</b>	Processor and disk equipment must be installed, tested and in full operation		
<b>ACQ-4</b>	<b>15.09.07</b>	Processor and disk equipment must be installed, tested and in full operation		
<b>ACQ-5</b>	<b>15.02.08</b>	Processor and disk equipment must be installed, tested and in full operation		
<b>ACQ-6</b>	<b>15.09.08</b>	Processor and disk equipment must be installed, tested and in full operation		

Preceding these dates the following steps are required, which will be monitored through a Web page (<http://cern.ch/lcg-purchasing> - accessible only from CERN).

- Market survey carried out once in 12 months
- Discussion and decision on choice of equipment
- 2 weeks preparing the tender documents
- 6 weeks tendering process
- 2 weeks sample equipment tests
- 2 weeks synchronization with finance committee meetings in June and November
- 2 weeks internal CERN order processing
- 6 weeks delivery time
- 4 weeks installation and acceptance tests