

**Joint EGO CNAF/INFN CC-IN2P3/CNRS  
Computing Committee (JECC)**

Mid 2006 meeting

5<sup>th</sup> June 2006 teleconference Cascina-CNAF Bologna-CC-In2p3 Lyon

Meeting Minutes
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**All the JECC components are present:**

**Marie-Anne Bizouard (VIRGO representative)**  
**Stefano Cortese (EGO Head of Computing Department) - *Chairman***  
**Dominique Boutigny (CC-IN2P3 Director)**  
**Mirco Mazzucato (CNAF Director)**  
**Filippo Menzinger (EGO Director)**  
**Fulvio Ricci (VIRGO representative)**

**In addition Jean-Yves Nief was also present as technical reference for CC-IN2P3**

*Topics:*

- 1. Current estimate of resources usage up to the end of the year**
- 2. Status of the Virgo support person requested at CNAF**
- 3. Status and forecasts of mass storage systems and their interface with Virgo applications in the 2 centers**
- 4. AOB**

**1- Current estimate of resources usage up to the end of the year**

**CPU:** the computing usage in 2006 up to the present date is of about 3000 KSI2K.days in Lyon and 3700 KSI2K.days in Bologna.

This corresponds to about 50% of the total requested for 2006, in line with forecasts, and no variations in the total request is foreseen up to the end of the year.

Remarks: the total request for Lyon expressed in UI computing units should be corrected to 3,000,000 (instead of 6,000,000) because of a typo in the original Virgo Computing Needs document (the 6000 KSI2K.day figure is anyway correct).

It is observed that the current queuing of GRID jobs at Lyon allows a rate of the order of 100 simultaneous jobs without room for excess temporary rate, while some Virgo GRID calculations for

the periodics are currently organized in higher rates with spikes of 700 jobs that fit well at Bologna where there is a static preallocation of resources plus an excess rate.

It is agreed that the tuning of the GRID queue at Lyon will be re-examined instead of turning to local job submission that would imply a rethinking of the Virgo software.

It is requested also that the accounting web interface at CNAF will provide the CPU usage also in KSI2K.time computing energy units, besides the CPU hours, in order to verify more easily the real usage.

**Storage:** present allocation is of 38TB, including 27TB of run data up to 2005 and 11TB of 50Hz and trenddata transferred in 2006 and covering up to beginning of May.

The 67TB requested for 2006 will not be fully used because of the posticipation of the Virgo runs. The request for new space is therefore lowered to 33TB for 2006. Of these, 13TB will be used certainly for 50Hz up to the end of the year (10TB of these are already transferred).

## **2- Status of the Virgo support person requested at CNAF**

The selection is ongoing at CNAF and the result should be approved formally by CNAF Institution on 15 June or at the latest on 15 July. Hopefully the person should be available a short time later.

This would help a lot in maintaining the consistency of the access to the data for Virgo users of CNAF that is currently a weak point.

## **3 – Status and forecasts of mass storage systems and their interface with Virgo applications in the 2 centers**

In Lyon an XrootD caching software interface has been added in front of HPSS together with an additional server with 2TB of disk cache, increasing the average access speed at a level that is considered fine for data analysis. It is therefore not needed to increase anymore the physical disk cache or the number of tape drives.

The user interface is via special retrieve commands.

In Bologna a work of reordering of data and pointers to the directories on NFS mounted disks has been performed by EGO. This requires that all the volumes be mounted the same way from all the machines used by Virgo, but satisfies the need of interactive browsing through the data.

Another model of access to the data (analogous to HPSS) is proposed by CNAF using the Castor-2 system which is used by LHC experiments, but using a large disk cache in such a way that all the data still resides on disk.

This would in the end improve the manageability of the system and therefore the level of service.

Some tests will be performed and part of the oldest data are being copied to Castor-2.

Anyway the reference access data model for Virgo is still NFS disk mounting until the Castor-2 system will demonstrate to be stable and suitable for the Virgo needs.

## **4 – Other issues**

### **4.1 – Tape backups and replicas**

It is agreed that a single backup copy of the data on tapes is enough to provide crash/disaster recovery.

It is agreed that the backup copy is done in Lyon duplicating the tapes and putting 1 copy offline. This in addition to the on-line/near-line replicas would guarantee that:

- 3 copies of the data are available for 2 years old data: Bologna-disks, Lyon-HPSS, Lyon-tapes
- 2 copies are available for data older than 2 years: Lyon-HPSS, Lyon-tapes

without accounting for the copy in Cascina that should have a more limited lifetime.

### **4.2 – Overall 2006 Costs**

Lyon proposes a cost of 1 € / GB for the storage of new data into HPSS, that includes also the backup copy. This would amount to 33KE for new data. Older data have been already accounted for in the past bills, except for the additional copy on tape for backup that is charged 17750KE for the 27TB up to 2005. In addition the new caching system is charged 14KE.

CNAF will provide shortly the foreseen cost of its part.

### **4.3 – GRID transfer tests**

Tests are ongoing between Cascina and CNAF for transferring files and provide file catalogs using the latest GRID tools, in particular FTS. This should allow in the future to make more automatic the bookkeeping of files in the various centers.