LHC File Catalog Service for LHCb – Principles

This document outlines the key characteristics of a File Catalog Service for the LHCb collaboration that could be provided on a timescale of Q4 2006. It assumes:

1. A global file catalog at CERN using the LFC, with one or more application server front-ends (where the LFC logic runs) together with a database back-end;

2. One or more R/O 'copies' of this catalog at Tier1 sites by mutual agreement between the site and LHCb, using a similar deployment scheme (i.e. application server front-ends and DB back-end);

3. An asynchronous replication mechanism between the R/W 'master' at CERN and the R/O 'slaves'. The exact mechanism is to be agreed between the LCG 3D project and the LHCb collaboration, together with the LFC middleware supporters, in case of implications on the middleware or its deployment as a service. A production service based on the agreed mechanism will be provided as part of the WLCG 3D service.

4. By definition, such a mechanism implies inconsistencies between the master and slaves – updates and / or deletes made to the master will normally be propagated to the slaves within an agreed time interval. However, during periods of service degradation, a significantly larger skew may occur between the master and certain slaves.

5. The responsibility for handling such inconsistencies lies entirely with the LHCb collaboration.

6. At least in the first instance, LHCb shall determine which instance of the catalog to connect to. Such functionality could eventually be implemented in a layer such as GFAL, but this is not considered likely on the required service data (October 2006). (The enhancement to GFAL/lcg_util has already been discussed in the TCG and was agreed. It is therefore in the development program of work, but there is no date defined yet.)

7. The responsibility for monitoring, back-up and recovery of the LFC application front-end and database backend lies entirely with the site involved.

8. Should cross-site recovery be required, it will be agreed with and be the responsibility of the WLCG 3D service.

9. Any resynchronisation issues – due to system downtimes or recovery – shall be the responsibility of the host site in conjunction with the WLCG 3D service.