



## LFC AND FTS STUDY

In collaboration with CERN, we will consider the possibilities to have the LFC and FTS databases installed with oracle RAC 10GR2 and on the same cluster. First, we'll take a look to the user needs for each services at a database level (not at application level) and after the technical implication it results.

### I User side considerations

#### A LFC

LFC is used by the community experiments as an index. The database runs in read only-mode for the great majority of the queries and stores the LFN-PFN mapping information of all the files created in the grid. We can will suppose assume that all files stored at a given site (both on tape and on disk) are indexed in the LFC, so accessed only via the information in the LFC index gives (site, path, name, weigh checksum etc) will be queried for every file access. The importance of having this service always up is appear therefore clearly.

Now theThe LFC database backend is currently running in mysql at PIC but maybe the same database runs with oracle in other data centers. There is a procedure to migrate the LFC from mysql to oracle, which we are currently testing. At PIC we planned to install ALL our Oracle databases under RAC technology, including the LFC one. The LCG-3D projet gave the impulse to do that.

#### B FTS

FTS is used as a temporary queue and log trace of the job transactions file transfers. The database runs in read/write mode and stores the information of all the jobs-transfers (status status retries, etc...). This service is completely different from the LFC, because when the job-transfer is achieved finalized, all the data about this job is never reused (it is only temporary kept in the database as a log trace). The user needs is to have always the service up. It's not catastrophic to lose data The data contained in the database is not precious, since it essentially consists of the current status of ongoing transfers. However In any case, the backup procedure is fully safe, and in case of crash, we are able to restore the data as with any other database.

### II Technical implications

#### A LFC

As a read only database, LFC will have some own tuning a bit different than FTS, for exemple the DB\_BLOCK\_SIZE can be different, and the data should be stored as max as possible in memory. For the backup we can configure RMAN to execute some backups as often as possible. The objective is a delay of recovery very small. Maybe we can introduce the streams (as 3d project) in order to have a online copy of the data of each TER1.

#### B FTS

FTS is a R/W database, the recovery availability is not likewise important than LFC. We can tune the DB\_BLOCK\_SIZE and memory not equivalent as LFC. No streams here, and a backup configuration witch permit recover the database rapidly.

If the database is installed in RAC, the recover is not the priority in this case. But the NUA yes. (NUA=Node Up Again).

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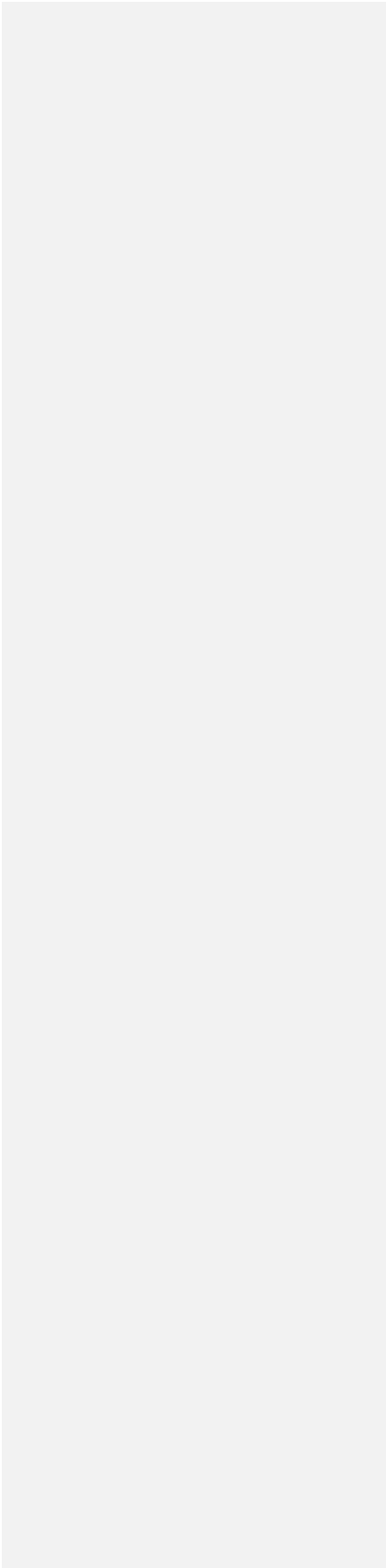
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### III Two instance in the same cluster?

In order not to have too many clusters, we can discuss of installing the LFC and FTS instances in the same cluster.

*Config:*

2 nodes (x84 64) 4 G RAM, 2 Eth card 1 Gb, raid 1 170Go

Array disk: Volume in Tb without backup and redundancy.

	2007	2008	2009
LFC	1	1,5	2
FTS	1	1,5	2

As each services hace a diferent instance, we can suppose the tuning can be different for each one. The backup is individual too, RMAN use the ORACLE\_SID to connect with the target database. For online patch applying it's the same we can stop one instance and let the other running. So the unic question should be:

In case of a Node full stop (hard incidence patch who need to have the database full closed to be installed), what happends ?

Maybe the repercussions are not the same for FTS than LFC.