

Report sent on Aug, 1st to: [wlcg-scod@cern.ch](mailto:wlcg-scod@cern.ch)

**Type of Incident: Database**

**Location: IN2P3-CC**

**Duration: 3 days**

**Date: July, 19<sup>th</sup> 2011**

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## Description

Several disk failures lead to outage of thirteen Oracle databases including '3D databases'.

## Timeline

Mon, July 18 22:37 UTC	First hard drive failure on Oracle disk array. Redundancy process starts. Due to corruption of data files, system files and archive logs, the daily backup process failed. System raised many errors that made databases becoming unstable.
Tue, July 19 11:37 UTC	Second hard drive failure on disk array.

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## Grid services database (hosting LFC, FTS, VOMS)

Wed, July 20 12:23 UTC	Corruption on undo segments involves severe crash of Oracle database.
Thu, July 22 11:34 UTC	After analysis, complete restore is considered impossible due to high number of corrupted archive logs. Unique solution is to apply an incomplete restore (i.e. a recovery time before the crash time) dated July, 18 <sup>th</sup> 10:00 UTC.
Thu, July 22 14:26 UTC	Restoration has succeeded. Database is opened.

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## DBLHCB database (COOL and CONDDB + LFC for LHcb)

Mon, July 19 23:01 UTC	Many corruption errors have been detected on online redo logs, system files and archive logs.
Tue, July 19 02:34 UTC	The DBLHCB apply process crashes.
Wed, July 20 09:28 UTC	Analysis concludes that the only way to repair the DBLHCB is to restore it on July, 18 08:26 UTC.
Wed, July 20 14:37 UTC	CERN team provides dump in order to resynchronize data.
Wed, July 20 16:37 UTC	DBLHCB stream is restarted.

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## DBATLAS database (COOL and CONDDB + LFC for Atlas)

Tue, July 19 02:49 UTC	From this date, archive logs, system files and control files have been corrupted.
Thu, July 21 09:39 UTC	Database was restored on July, 18th 05:00 UTC.
Thu, July 21 13:05 UTC	CERN database staff restarts the DBATL stream.

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## AMI database

Tue, July 18 23:14 UTC	The database crashes with many critical errors (corruption on redo logs and on archive logs). The replication from CC-IN2P3 to CERN is broken.
Tue, July 19 10:55 UTC	Database is restored on July, 18th 19:00 UTC.
Tue, July 19 11:37 UTC	Second Hard Drive failure on Oracle disk array.
Wed, July 20 13:21 UTC	AMI database crashes due to corruption on undo segments.

Fri, Jul 22 09:58 UTC

Database is restored a second time on July, 18<sup>th</sup> 19:00 UTC and is opened.

## **Analysis**

Storage staff is in contact with the provider of our disk array to find out the root of the corruption.

## **Impact**

- 3D databases degraded from Monday night until Friday (see timeline).
- LFC, FTS, VOMS: Unstable since Monday night. Stopped on Wed July, 20<sup>th</sup>. Restarted July, 21<sup>st</sup> 13:00 UTC.
- Operation portal degraded; EGI notifications working on and off from 19/07 to 07-22-2011.
- Unavailability and degradation of several databases for non-LHC experiences.
- Unavailability and degradation of some IN2P3-CC internal services.

## **Precautionary Measures**

Waiting for a corrective action from the disk bay provider, it was decided, in order to decrease the recovery delay, to multiplex redologs, archivelogs and rman backups to some other disk bay.