



## BNL ATLAS Database service update

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# Outline



BNL Databases and servers for ATLAS production ATLAS MySQL servers and DBs at BNL Tier1 Work on DataBase replication CERN-BNL \* Monitoring tools for MySQL servers: MySQLStat, Ganglia, BNL GridCat Oracle servers and Databases □ Resources Status of parcitipation in 3D testbed ✤ Plans and conclusions

### **BNL MySQL Servers/DBs for ATLAS** production



- BNL Tier1 site constantly contributes to ATLAS Data Challanges and Production on the GRID (GRID3 and OSG now)
- Details about DC2 and Rome production in the talk of Sasha Vaniachine and David Malon
- Following BNL DB MySQL servers are used:

□ dms01

# Xeon 2 CPU 3GHz, 2GB RAM, 250GB disk

# RHEL3, MySQL-4.0.23

# DBs: Globus RLS (both LRC and RLI), DQ1

□ db1

# P-III 2 CPU 1GHz, 1GB RAM, 100GB disk

# RHEL3, MySQL-4.0.25

\* DBs: Production VDC for Capone, Conitions DB (both IOV+payload), NOVA

#### □ dbdevel1

# P-III 2 CPU 0.7GHz, 0.5GB RAM, 20GB disk

# RHEL3, MySQL-4.0.25

# Magda File Catalog, ATLASDD

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# **ATLAS MySQL Database servers**



**\*** ATLAS MySQL servers at BNL dms01 (RLS, DQ1 for GRID3 and OSG) □dms02 ( DQ2, LFC for OSG) □db1 (ConditionsDB IOV+payload, GeometryDB NOVA, DBs for subdetectors LAr, TileCal, etc., production VDC, DialDB) □dbdevel1 (ATLASDD, MagdaFC) □dbdevel2 (TAG DB, PandaDB Archive) adbpro development mysql cluster (PandaDevDB) □ gums (GUMS DB for OSG and LCG) □ vo (VOMS DB for OSG and LCG)

# **Database replication at BNL**



- MySQL MySQL replication:
  - DataBases: Geometry DB NOVA, LAr subsystem DB
  - collected the first experience CERN-BNL ATLAS DB replication
  - procedure using both mysqldump and on-line replication
  - □ thanks to Wensheng Deng and Sasha Vaniachine for participation
- Oracle MySQL replication:
  - DataBase: TAG DB.
  - □ use case : Oracle CERN to MySQL BNL (push)
  - tool: Octopus replicator (Java-based extraction, transfomation and loading)
  - □ thanks to Julius Hrivnac and Kristo Karr for successful collaboration
  - More details in Twiki:

https://uimon.cern.ch/twiki/bin/view/Atlas/DatabaseReplication

## **MySQL** servers monitoring

We use different monitoring tools for MySQL servers:

- -MySQLStat (thanks to Jason Smith)
- -Ganglia

-BNL GridCat provides some info about production servers for GRID3 (thanks to Dantong Yu)

MySQL.				
Skins				

Windows

**Global** statistics

Semere

 Started:
 2004:12: 22 10:20

 Last Updated:
 2005:10: 13 23:18

 Total Questions
 8.10 GQ

 Total In
 684.03 Gb

 Total Out
 3908.67 Gb

Server	Start Time	Last Update	Uptime	Version
adbpro01.usatlas.bnl.gov	2005:09:19 12:30	2005:10: 13 23:18	36 days 13:27	4.1.14-standard-log
adbpro02.usatlas.bnl.gov	2005:09:19 12:30	2005:10: 13 23:15	36 days 13:30	4.1.14-standard-log
atlas11.hep.anl.gov	2005:04: 14 10:10	2005:10: 13 23:18	111 days 05:48	5.0.3-beta-max-log
atlas12.hep.anl.gov	2005:04: 14 10:10	2005:10: 13 23:18	108 days 10:24	5.0.7-beta-x509up-log
atlasdb.ijs.si	2004:12: 22 10:20	2005:10: 13 23:15	UNK	UNK
atlasdbdev.cern.ch	2004:12: 22 10:20	2005:10:13 23:18	48 days 12:12	4.0.25-standard-log
atlasdbpro.cern.ch	2004:12: 22 10:20	2005:10: 13 23:15	49 days 11:16	4.0.25-standard-log
atlaspo4.lps.umontreal.ca	2004:12: 22 10:20	2005:10:13 23:18	UNK	UNK
atimysql02.cern.ch	2005:06: 24 18:50	2005:10: 13 23:15	90 days 11:10	4.0.24-standard-log
atimysql03.cern.ch	2005:06: 24 18:50	2005:10: 13 23:15	111 days 10:40	4.0.24-standard-log
db1.usatlas.bnl.gov	2004:12: 22 10:20	2005:10: 13 23:18	9 days 07:57	4.0.25-standard-log
dbdevel1.usatlas.bnl.gov	2004:12: 22 10:20	2005:10: 13 23:18	9 days 07:58	4.0.25-standard-log
dbdevel2.usatlas.bnl.gov	2005:09:19 12:30	2005:10: 13 23:15	2 days 09:45	4.1.14-standard-log
mcfarm2.physics.smu.edu	2004:12: 22 10:20	2005:10:13 23:18	91 days 11:54	4.0.20-standard-log
osgserv04.slac.stanford.edu	2005:08: 09 07:00	2005:10: 13 23:15	72 days 03:24	4.0.24-standard-log

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## **MySQL** servers monitoring

Last 6 hours Last day Last week Last month Last year

MySQL.

#### Servers

Queries In/Out Query type Tmp tables usage Key reads Key writes Status

adbpro01.usatlas.bnl.gov adbpro02.usatlas.bnl.gov atlas11.hep.anl.gov atlas12.hep.anl.gov atlasdb.ijs.si atlasdbdev.cern.ch atlasdbdev.cern.ch atlaspo4.lps.umontreal.ca atlmysql02.cern.ch atlmysql03.cern.ch db1.usatlas.bnl.gov dbdevel1.usatlas.bnl.gov dbdevel2.usatlas.bnl.gov mcfarm2.physics.smu.edu

db1.usatlas.bnl.gov, Version: 4.0.25-standard-log, Uptime: 9 days 07:27 100 80 (1/sec) 60 Rate 40 20 n. Week 38 Week 39 Week 40 Week Queries (current=1 ave=5 max=96 Q/sec) New connections (current=0 ave=0 max=6 C/sec) Slow queries (current=O ave=O max=O Q/sec) Total threads (current=7 ave=9 max=61)

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# BNL Servers/DBs (Oracle, etc.)

#### ✤ Oracle

- □ oracle01
  - # Xeon 2 CPU 3GHz, 2GB RAM, 200GB disk
  - # Operating system : RHEL3 Oracle 10g (10.1.0.4)
  - ж DB: bnlsc3
    - Used in Service Challenge 3 (SC3) as the backend Database of FTS (File Transfer Service)

#### □ gridftp01

- # Xeon 2 CPU 1GHz, 2GB RAM, 200GB disk
- # Operating system: RHEL3 Oracle 10g (10.1.0.4)
- ⊯ DB: bnlorcl
  - Used for LCG 3D replication

#### PostgreSQL

Used by dCache system

## Status of participation in 3D testbed



- Oracle database (10.1.0.4) is installed with requried patch set for streams replication
- Streams setup will start this week
  - $\Box \quad \text{Oracle} \rightarrow \text{Oracle streams replication}$
- ATLAS Databases and applications to work with
  - COOL
  - □ TAG (?)
  - □ Geometry DB (?)
  - □ Others (?)
- ✤ Feedback
  - Useful installation scripts and documents
  - Thanks to Eva Dafonte for the help and participation

# **Plans and Conclusion**



BNL Tier1 is very interested in ATLAS GRID-based production, databases services support and LCG applications validation

Several new production servers (4-5 both MySQL and ORACLE) will be installed and used soon (end of 2005). Configuration:
Xeon 2 CPU 3GHz, 2GB RAM, 200GB disk
Operating system : RHEL3