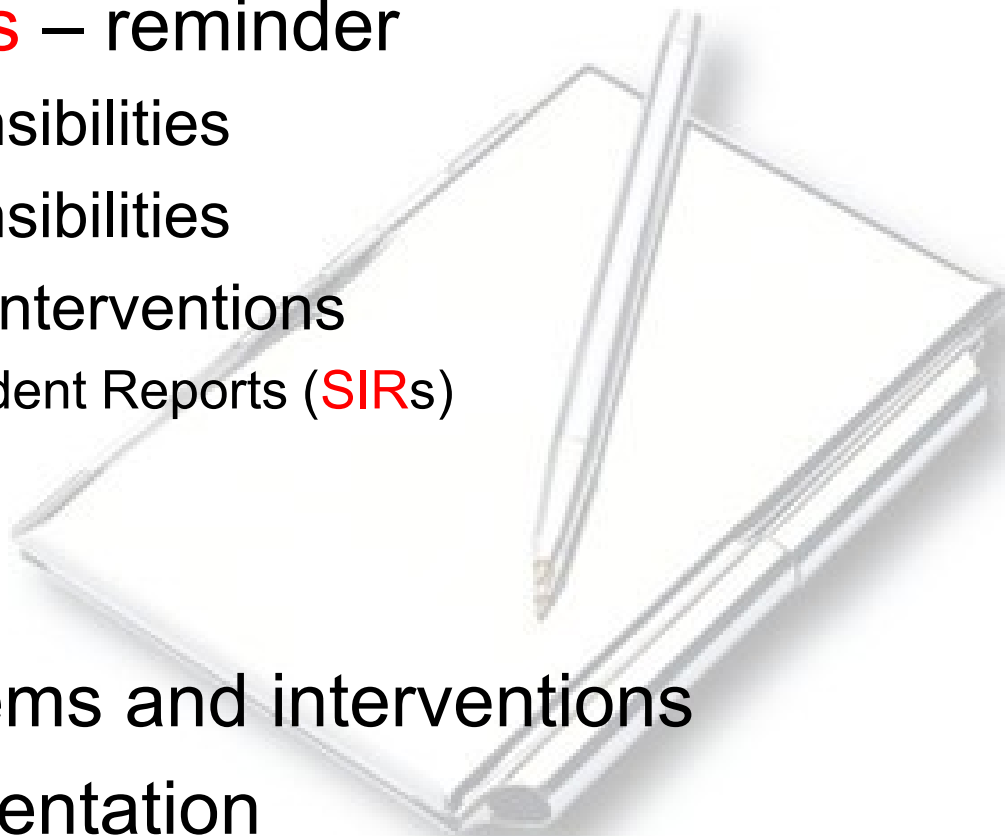# Streams Status Report

Distributed Database Operations Workshop
CERN, 17th November 2010

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- ## 3D Operations – reminder
  - ### Tier0 Responsibilities
  - ### Tier1 Responsibilities
  - ### Announcing Interventions
    - Service Incident Reports (SIRs)

- ## Procedures

- ## Monitoring

- ## Recent problems and interventions

- ## Useful documentation

Tier0 responsibilities

- Initial Streams setup
- Adding new schemas to the Streams environment
- Split & Merge procedures
- Streams resynchronization
  - Split & merge
  - Coordination role between voluntary site and affected one
- Analyze and test new features and optimizations
- Validate upgrades and patches
- Monitoring
  - Oracle Enterprise Manager for 3D
    - Agent installation and configuration is Tier1 responsibility
  - StreamMon

Tier1 Responsibilities

- Interventions

  - Before – announce

  - After – check and re-enable Streams processes

    - Apply
    - Propagation – use "STRMPROP_<TIER1>" account to connect to the downstream database (i.e. STRMPROP_PIC for PIC Tier1)
    - Enable the capture process when site is split

- Maintain the 3D OEM operational

  - Check agents status (recommender version is 10.2.0.5)

  - Configure targets

- Streams resynchronization

  - Collaborate with voluntary Tier1 on re-synchronizing streams

  - Update Tier0 on resynchronization progress

Announcing interventions

- Announce DB-related interventions
  - Schedule new intervention using 3D Twiki
  - Submit EGEE broadcasts
  - Register outages in the CIC portal
  - Long interventions – contact Tier0 to analyze if it is necessary to split the Streams setup

- Unplanned downtime – contact Tier0
  - Problem description, progress and expected duration

- Report regularly
  - Feel free to ask for a specific help from Tier0 and Tier1 DBAs

Service Incident Reports

- ## Service Incident Reports (SIRs)
  - Unexpected database downtime > 4 hours
  - Unexpected streams outages caused by hardware or software problems
    - Create SIR for site resynchronization
    - Create SIR for any streams outage caused by Oracle bug or not known issue
    - Do not create SIR for apply problems after node reboots and 'user' errors caused by modifying read-only data
  - Log SIRs to:
    - https://twiki.cern.ch/twiki/bin/view/PDBService/ServiceIncidentReportT1
  - Template:
    - https://twiki.cern.ch/twiki/bin/view/PDBService/TemplateSIR

Procedures - resynchronization

- ## Procedures
  - See https://twiki.cern.ch/twiki/bin/view/PDBService/ServiceDocs

- ## Streams resynchronization
  - https://twiki.cern.ch/twiki/bin/view/PDBService/TransportableTablespacesforScalableResynchronization
  - Resynchronize a Tier1 site which is out of the Streams recovery window using transportable tablespaces
  - For Tier1-perspective and experience see talk from Alexander & Carmine
  - Please remember to instantiate streamed schemas after copying to destination!

- ## Recovery procedures in Streams environment

  - https://twiki.cern.ch/twiki/bin/view/PDBService/3DStreamsRecovery

  - Recovery is not transparent in Streams environment

    - Always notify Tier0 when attempting recovery
    - Changes that had already being applied but lost by the recovery must be re-applied
      - Split required and new capture with different SCN needs to be created

  - If replication is re-enabled without notifying Tier0

    - Apply aborts, SCN information is updated, last correct SCN applied is lost
   - Streams re-configuration is not longer possible

Monitoring

- ## OMS 3D

  - ### Cleanup required

    - 33% targets seen as unknown (132 targets)
    - 3% targets seen as down (12)
    - Tier1s affected: CNAF, IN2P3, MICHIGAN, RAL, INFN, SARA, TRIUMF

  - For the moment we stay on OMS 10.2.0.5

- ## StreamMon – new features

  - Better streams time statistics (capture time, replication delay, time since last LCR)
  - DB PGA monitoring
  - Sessions metrics (total, sessions/s)
  - Schema statistics – LCRs per schema

- ## Weekly reports for Tier1s
  - ### Provide
    - CPU and IO usage statistics (per domain/user)
    - Service usage
    - Simple session statistics
    - Password expiration
    - Space usage

  - ### Installation instructions
    - https://oms3d.cern.ch:1159/admin/t1reports.php?install

  - ### Access
    - https://oms3d.cern.ch:1159/admin/t1reports.php

  - ### Please install if you haven't done it yet
    - Not obligatory though

- More transparent interventions at Tier1s in 2010 (64% of total, compared to 48% in 2009)
- Decreased total number of interventions and interventions requiring more downtime
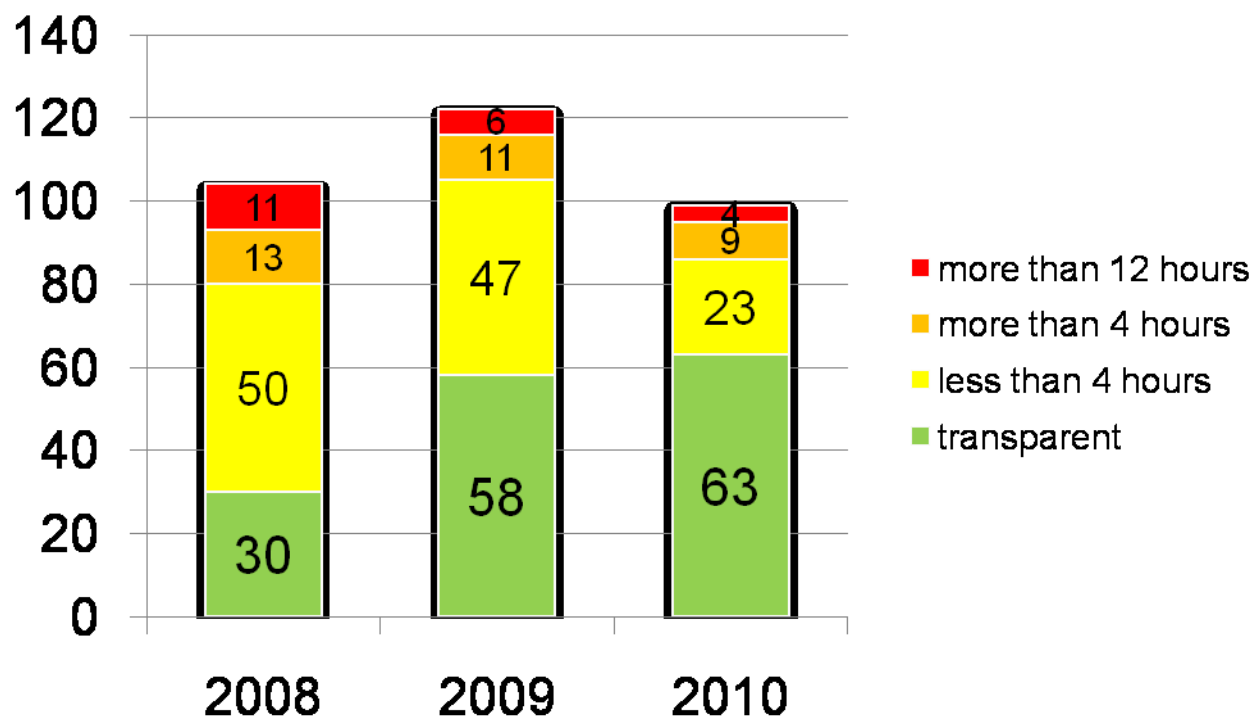
- ## RAL – 20th of July 2010

  - Multipath reconfiguration intervention

  - After the intervention only few LCRs were applied before the ORA-01403 was hit.
    It looked like another instance of the bug where the LCRs are consumed but not physically applied on the database. A service request (3-1950544531) was open with oracle under the CERN support ID.

  - No LCRs were applied until the database was resynchronized on 21st July 2010

Problems and interventions

- SARA – 18th of August 2010
  - DB crashed with datafile corruption
  - Extensive analysis conducted at SARA found potential storage problems
  - DB has been later restored to different hardware
  - RAL helped SARA to recover using transportable tablespaces
  - 8th of September – SARA replication is back

- SARA – 26th of October 2010
  - Apply failed with ORA-01403: no data found
  - Some data was found to be missing from the time of last resynchronization with RAL (between export and import)
  - Resynchronized selectively from Tier0
  - Problem traced down to missing instantiation at destination
    - Transportable tablespaces procedure needs an update

Problems and interventions

- ASGC – 24th of September
  - Site-wide power cut, after half an hour abnormal DB shutdown as UPS's battery run out
  - Several problems during data recovery
  - Decision taken to re-synchronize from full backup from RAL
  - Problems with transferring the backup to ASGC
  - Network is not fast enough on normal links, decided to put backup in Castor and ship data via FTS
  - 17th October – ATLAS decided to drop conditions DB at ASGC and use Frontier instead

- ## PSU July 2010 (PSU4)
  - Two issues not caught during PSU4 validation
    - Non-rollingness of the patch (bug 9827988) – patched instance hangs in mount state, affecting the whole cluster
      - Oracle Support recently confirmed PSU4 is not rolling if installing, in a fully supported configuration, with shared ASM and Oracle home
    - ORA-7445 and high contention during logoff with multiple sessions in one process (bug 6196748) – whole cluster unresponsive
      - affecting COOL and other applications using multiple sessions in one server process
      - Fixed by one off patch, tested; fixed in 10.2.0.5
  - We are now pushing for more comprehensive validation and gained much more experience

Useful documentation

- 3D wiki – Streams operations manual
  https://twiki.cern.ch/twiki/bin/view/PSSGroup/ServiceDocs

- Overview for Troubleshooting Streams Performance Issues (metalink note 730036.1)

- Streams monitoring
  https://oms3d.cern.ch:1159/streams/main

- Streams health check report
  - metalink note 273674.1

- 3D OEM
  http://oms3d.cern.ch:4889/em/console/

- Ask questions to grid-service-databases mailing list or use Tier1 Service Coordination Meeting to raise any outstanding DB-related issues