




Tier0 responsibilities




- Initial Streams setup
- Add new schemas to the Streams environment
- Split & Merge
- Streams re-synchronization
- Analyze and test new features and optimizations
- Validate upgrades and patches
- Monitoring

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Tier1 responsibilities



- Announce interventions
 - schedule new intervention using 3D wiki
 - 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: update Tier0
 - problem description, progress and expected duration
- Report regularly
- Read-only replica: ensure only reader account is open

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DM Tier1 responsibilities

- Maintain the 3d OEM operational
 - check agents status
 - configure targets
- After an intervention: check and re-enable Streams processes
 - re-start apply process @destination
 - re-enable propagation job @downstream box

When SPLIT:

- re-start capture process @downstream box

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DM Tier1 responsibilities

```


# connect as streams administrator @destination
strmadmin@db> select apply_name, status fr

Apply Process Name      Status
-----
STRMADMIN_APPLY_STREVA  DISABLED

strmadmin@db> exec dbms_apply_adm.start_ap
PL/SQL procedure successfully completed.
                
```

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DM Tier1 responsibilities




account with privileges to re-start the Streams components @downstream database - one per Tier1 site


```
# connect as strmprop user @downstream database
strmprop_cern@db> select propagation_name,
Propagation Name          Status
-----
STREAMS_PROP_STREVA_DWSDB  DISABLED
STREAMS_PROP_STREVA_STRMTEST  ENABLED

strmprop_cern@db> exec dbms_propagation_admin.start_propagation('STREAMS_PROP_STREVA_DWSDB');
PL/SQL procedure successfully completed.
```

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DM Tier1 responsibilities




- ensure you can connect using your strmprop account (password, connection string)
- check that you are using the correct process name

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What do I have to do?




Hi all,
it looks like it is our turn now...
So, what do I have to do?
Cheers,
Olli

Streams Monitor wrote:
> Streams Monitor Error Report
> Report date: 2008-09-25 14:43:09
> Affected Site: NDGF-T1
> Affected Database: ATLAS.DB1TIER1.NDGF.ORG
> Process Name: STRMADMIN_APPLY_ATLN
> Error Time: 25-09-2008 15:42:51
> Error Message: ORA-26714: User error encountered while applying
> Current process status: ABORTED


1. Check Streams monitoring
2. Check Streams Service Manual for Tier1s
3. Ask for help

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What do I have to do?





- Apply process status: ABORTED
 - “user error encountered while applying”
 - get more details: `exec print_errors.sql` as streams administrator @destination
 - human errors
 - » ex: modifications to system-generated names, updates by users which don't exist at destination,...
 - destination schema is overwritten
 - » ex: statement is executed first at the destination, then at the source (online – offline), Tier1 database is not read-only, ...

ORA-01403: no data found
ORA-00955: name is already used by an existing object


→ check with Tier0 which actions are needed

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What do I have to do?




- **Apply process status: ABORTED**
 - “user error encountered while applying”
 - database administration related
 - » ex: unable to extend tablespace, deadlock waiting for resource, ...


```
ORA-01652: unable to extend tablespace
ORA-00060: deadlock detected while waiting for resource
```

→fix the problem
→re-execute the error and re-start apply process


```
exec dbms_apply_adm.execute_all_errors('STRMADMIN_APPLY');
exec dbms_apply_adm.start_apply('STRMADMIN_APPLY');
```

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What do I have to do?





- **Propagation is DISABLED after 16 attempts:**

```
ORA-00257: archiver error. Connect internal only,
until      freed
ORA-12514: TNS:listener does not currently know of
service requested in connect descriptor
ORA-12545: Connect failed because target host or
object     does not exist
ORA-12170: TNS:Connect timeout occurred
ORA-12560: TNS:protocol adapter error
```


→fix the problem
→re-enable propagation

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What do I have to do?




- Check our wiki:
 - <https://twiki.cern.ch/twiki/bin/view/PSSGroup/StreamsServiceReview>
- Oracle Streams Documentation
 - Oracle Streams Concepts and Administration 10g Release 2
 - Oracle Streams Replication Administrator's Guide 10g Release 2
- Send us an email with your questions
- Help us to maintain the wiki updated
 - you can also update it !!!

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Recent problems




- Missing primary keys / indexes
 - Apply is aborted because of duplicated rows
 - cannot identify an unique row to apply the change
 - Apply performance seriously impacted
 - apply server performs full table scans
 - ➔ Delay on the whole replication system
 - dependent transactions have to wait
 - ATLAS has already implemented an automatic job to detect tables without primary key

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Interventions




- LFC migration out of SRM v1 endpoint
 - Streams replication stopped
 - Data updated at source and all destinations
 - problems with RAL, where data was finally imported from CERN
- CNAF, PIC and IN2P3 hardware migration
 - re-synchronization using transportable tablespaces
 - Tier1 sites should consider the use of Data Guard in order to minimize the impact

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Bugs related to Streams



- Fixed:
 - ORA-600 when dropping propagation
 - ORA-26687 no instantiation SCN provided when drop table (2 streams setup between same source and destination databases)
- To be fixed:
 - <BUG:6402302> create view on schema not in streams is replicated
 - drop view is not replicated!

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Recommended patches

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Metalink note 437838.1

- 7363767 addresses performance improvement for capture process and logminer: merge label requesy on top of 10.2.0.4 for Bugs:
 - Bug:7345904 Streams capture slow processing direct path insert, high cpu for logmnr builder
 - Bug:6683178 High latencies in Streams capture, while capturing primary workload with a lot of DDL activities such as truncates of empty tables
 - Bug:6994160 Capture reader process constantly writing messages to trace file
 - Bug:6413089 Restarting a logminer session can be slow if the session has fallen behind
 - Bug:6650256 Parallel DDL (PDDL) transactions can cause logminer memory spill for Streams, or run slowly during adhoc log mining
- 7263055 + 7480651 in order to fix ORA-600 [KWQBMCRCPPTS101] when dropping propagation
- 5933656 Propagation ora-600 [KWQPCBK179], [1], [1369]
- 6827260 Excessive memory usage for lcr cache due to large freelists
- 7219752 ORA-26773 Malformed redo on capture of long
- 6452375 ORA-26687 No instantiation scn provided when drop child table
- 7033630 Apply aborting with ORA-600 [KNLQDQM2USR:4] after installing 10.2.0.4 patchset

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Pending requests

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- MUON sites replication to CERN
 - master: 3 Tier2 sites (Rome, Munich, Michigan)
 - target: ATLAS offline
- AMI replication to CERN
 - master: Tier1 Lyon
 - target: ATLAS offline
- Resources:
 - currently 2 apply process @ATLAS offline
 - 4 more to be added!!
- Service level:
 - problems must be addressed to the master side

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New 11g features




- Combined Capture and Apply
 - capture sends LCRs directly to apply
 - only 1 target, detected automatically
 - big performance improvement
 - rate: 14.000 LCRs/sec (before 5.000 LCRs/sec)
- Split/Merge of Streams
- Cross-database LCR tracking
- Source and Target data compare & converge
 - compare rows in an object at 2 databases
 - converge objects in case of differences

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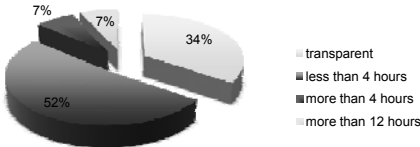


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Summary



- Keep the monitoring operational
 - spot problems quickly, understand bottlenecks, ...
- Coordination with Tier0
 - complex streams environments where the activity at one point might impact the whole system



Interventions during 3 last months

Category	Percentage
transparent	52%
less than 4 hours	34%
more than 4 hours	7%
more than 12 hours	7%

- Feedback!!!
 - and collaboration to improve the documentation and the service

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