Aim

- Understand Archive System
  - Different from your local drive or the cluster’s filesystems
- Foster a sensible use of this new tool
- Introduce the AOD Tools
- Give a little walkthrough the AOD tools
Spectra T959

- 3PB uncompressed dat capacity
- Expandable to a maximum 6PB
- IBM TS1150 Tapes
- 2 drives or robotic arms for r/w operations
Internals

- Hardware level and software level separated
- Required a archiving software on top: Commvault

Finally, on top of Commvault, Slurm FIFO
AOD Tools

- Submit archiving job
  - abatch

- Cancel archiving job
  - acancel

- Display partitions
  - ainfo

- Display history of operations
  - aquery

- Display archiving jobs running
  - aqueue
abatch: archive operation

- Specify action: **archive**
- Specify complete path of file to archive
- Once archived:
  - If single file, it removes it
  - If directory, keeps origin

```plaintext
#!
[operation]
action=archive
[objects]
/scratch/bsc/rramos/aodprueba.tar.gz
```
Specify action: **retrieve**

Specify job id of the data previously archived

Specify complete destiny path of retrieved file (**root_dir**)

Specify original complete path of file to retrieve

```bash
#!
[operation]
action=retrieve
jobid=122
root_dir=/some/path/scratch
[objects]
/scratch/bsc/rramos/aodprueba.tar.gz
```
abatch: purge operation

- Specify action: **purge**
- Specify job id of the data previously archived
- Specify original complete path of the archived data
- It removes completely from tapes the data archived with the specified id and the original source path

```bash
#!/bin/bash
[operation]
action=purge
jobid=122
[objects]
/scratch/bsc/rramos/aodprueba.tar.gz
```
AOD Tools: utilities

Display partitions (Ongoing configuration)

$ /opt/aod/bin /ainfo
PARTITION AVAIL TIMELIMIT NODES STATE NODELIST
main* up infinite 1 idle archive2
main* up infinite 1 drain archive1

Display archiving jobs status

$ /opt/aod/bin/aqueue
JOBID PARTITION NAME USER ST TIME NODES NODELIST(REASON)
179 main archive. oestevez R 0:07 1 archive2
### Display history of archives, retrievals, purges and current archiving quota

- Every operation has a job_id
- Every retrieve or purge will show the original archived

```bash
$ aquery -s
Usage: aquery [-p][-b][-q][-s]
-p Print Operations.
-b Print Objects.
-q Print quota.
-s
Print short output or parsable.
```

```bash
$ /opt/aod/bin/aquery -p
Operations:
```

<table>
<thead>
<tr>
<th>job_id</th>
<th>arch_job_id</th>
<th>action</th>
<th>date</th>
<th>end_date</th>
<th>status</th>
<th>transferred_bytes</th>
</tr>
</thead>
</table>
```
Considerations

**Complete FIFO scheduler**

**Initial 200TB AOD quota**

It is a mechanical system and, therefore, really slow:
- Each drive has a maximum of 200MB/s bandwidth
- If the data is just on one tape -> Bottleneck

Once archived
- It is not expected to retrieve the job immediately
- Your Lustre quota will not decrease immediately

Make a smart use of the resources
- Only files bigger than 2GB will be actually stored on tape
- Avoid archiving directories with a bazillion small files
  - Partitionate the data in different folders and archive independently

Still beta testing, so please report any issue :)

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Walkthrough: First archive

1) **Create an archiving script**

```bash
#!/
[operation]
action=archive
[objects]
<your_complete_path>
```

2) **Submit your archiving script**
   - `$abatch archive.cmd`

3) **Check your queue**
   - `$ aqueue`

4) **Keep track of your job id! Otherwise, once completed:**
   - `$ aquery -p`
Walkthrough: First retrieve

1) Did you forget your job id and from where it was retrieved?
   - /opt/aod/bin/aquery -b

2) Create a retrieve script

```
#!/
[operation]
action=retrieve
jobid=<job_id_from_archiving_job>
root_dir=<destiny_path_for_retrieve>
[objects]
<archived_object_original_path>
```

3) Submit your retrieve script
   - $ abatch retrieve.cmd

4) Check your queue:
   - $ aqueue
Walktrough: First purge

1) 1) Did you forget your job id and from where it was retrieved?
   • /opt/aod/bin/aquery -b

2) Create a purge script
   #!
   [operation]
   action=purge
   jobid=<job_id_from_archiving_job>
   [objects]
   <archived_object_original_path>

3) Submit your purge script
   • $ abatch purge.cmd

4) Check your queue:
   • $ aqueue
Thank you for coming

For further information please contact
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http://www.bsc.es/user-support/cnag.php