Maintaining consistency in an EOSCTA system
EOSCTA Namespace Reconciliation

Richard Bachmann
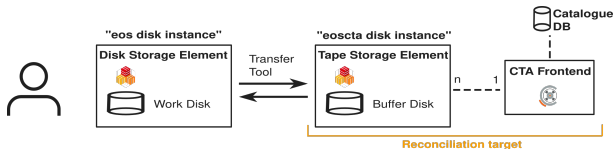
CERN IT-ST-TAB
EOS Workshop, March 2022

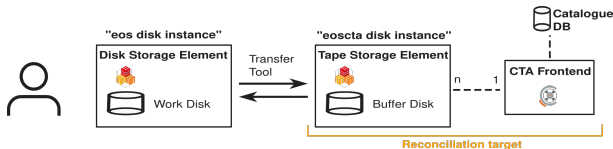09.03.2022

Motivation

EOSCTA System:

Motivation

EOSCTA System:

Accidents happen.

1. "Line of defence" after transfer tool feedback
2. Know before user if archival has gone wrong
3. Give proof that data is safe and sound after transfer
   - Regularly updated "table of contents"

EOS Namespace and CTA Catalogue

EOS:

- Source:
  - The MGM's QuarkDB
- Exported using 'eos-ns-inspect scan'

Critical Metadata

- *archive_file_id*
- *path*

CTA:

- Source:
  - Catalogue DB
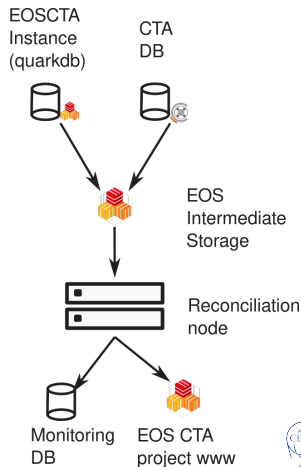- Exported using DB query

Critical Metadata

- *archive_file_id*
- *storage_class_name*

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Reconciliation Process
●o

Implementation
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Outputs
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Questions
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Reconciliation Process

Steps

For each Virtual Org.

1. Create raw dump
   - Store raw archives on EOS
2. Merge
   - On *archive_file_id*
3. Validate
   - Run validator scripts
4. Produce export dump
   - Trimmed version of merged dumps
5. Upload JSON logs
   - Upload with Fluentd
   - Store in InfluxDB

EOSCTA
Instance
(quarkdb)

CTA
DB

EOS
Intermediate
Storage

Reconciliation
node

Monitoring
DB

EOS CTA
project www

Richard Bachmann

Maintaining consistency in an EOSCTA system

Validation Process

Presently we check

1 Presence in namespace
  - EOS only?
  - CTA only?
  - Incorrectly marked as archived?
  - CASTOR import?
2 Metadata properties
  - Checksum, file size, file IDs, ...

3 Number of copies

  - Do we have the promised number of copies?

4 Broken tapes

  - Is the file completely unavailable due to broken tapes?

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Run steps in containers

Advantages

- Encapuslates dependencies
- Per-VO isolation
- 'root'-less with Podman

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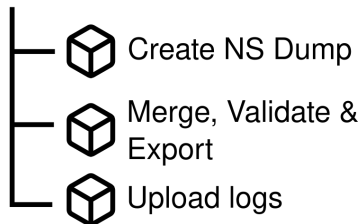o●

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Implementation

Orchestrate with Rundeck

- Scheduled workflows
    - Weekly for now
- Version controlled with git
    - Schedule
    - Config

�RUNDECK

Create NS Dump

Merge, Validate & Export

Upload logs

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Reconciled dump

EOSCTA Namespace Dump Archives

■ LZMA-compressed JSON archive of valid merged file records

v1.0 format

```
{ "eoscta_namespace_export": { "disk_instance": "eosctaalice" ...
{ "adler32": "8ac7845f", "on_tape": true, ...
{ "adler32": "2ab4ac13", "on_tape": true, ...
```
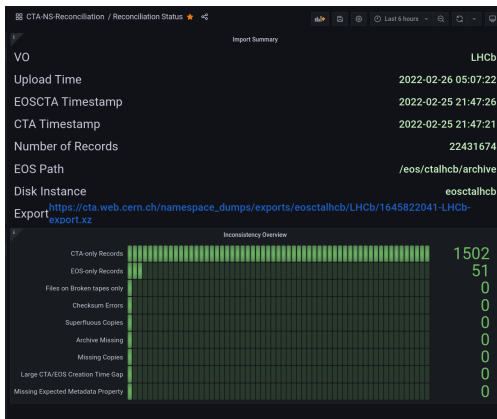
v1.0 Single record

```
{
    "adler32": "8ac7845f",
    "on_tape": true,
    "path": "/eos/ctaalice/archive/some_file.txt",
    "size": 47120561
}
```
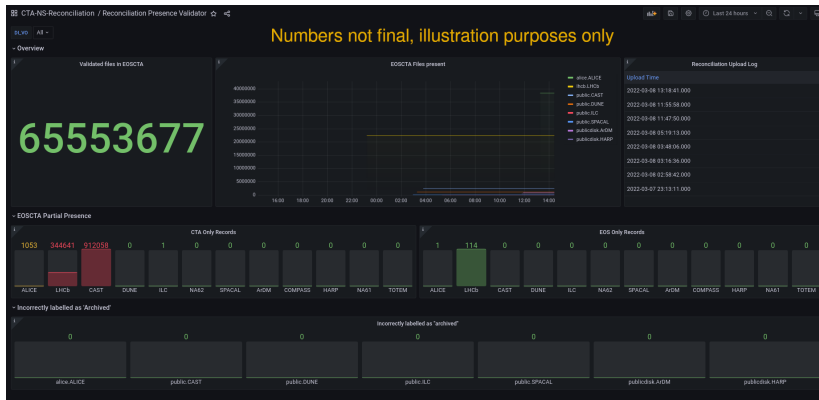
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Operator Dashboard

Grafana VO Dashboard

- View for operators

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Operator Dashboard

Grafana Presence Dashboard

Comments & Questions

■ Exported namespace dump article: KB0007876

We have

- Set of validation scripts
- Containers to run them
- Rundeck workflow
- Regularly exported merged dumps
- Grafana monitoring (work in progress)