The CTA Tape Alerting System

Automatic actions and notifications for operators

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on behalf of the CTA team

The TAS use case

Who watches the tape drives, do *you*?

- Are you making sure a tape is safe after something goes wrong with cta-taped?
- Are you checking and correlating tape infra problems by hand?
- Will you be adding new machines, making the above harder?

TAS and Monitoring

Purpose

Higher-level CTA monitoring and automated response

Goals

- Minimize hardware wear/damage
- Safety net, just in case

Features

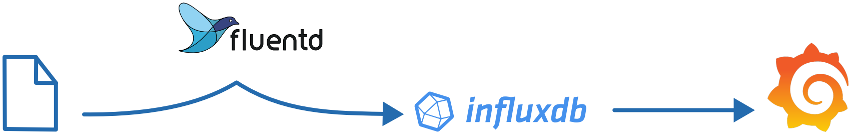
1. Automatic review of drive sessions in the past 24h
2. Hook for instant action in the event of a drive going `Down`

Log file

Classify and adjust

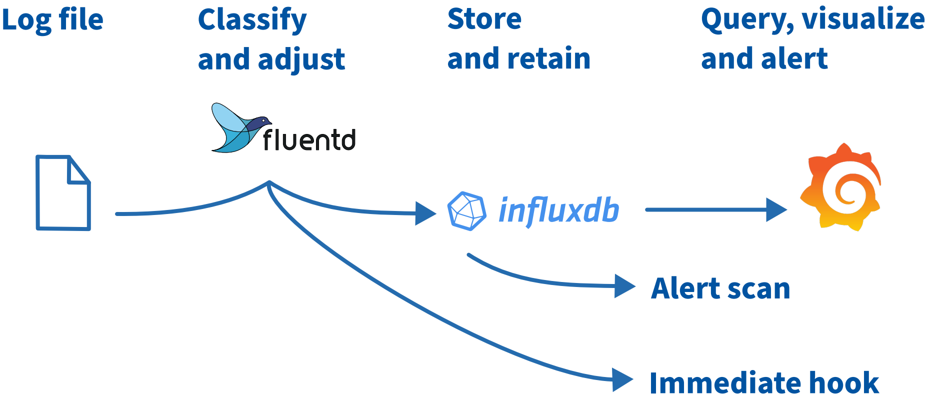
Store and retain

Query, visualize and alert



Previously presented at:

EOS 2023 Workshop



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Store and retain

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Alert scan

Immediate hook

The TAS Tool

```
$ cta-ops-tape-alerting-system
```

- Part of the CTA Operations Utilities
- Install where cta-taped logs are available
    - Tape servers
    - Central log aggregator

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External Components:

- CTA logs:
  - JSON format
- Time series DB:
  - InfluxDB
- Orchestrator:
  - Cron
  - Rundeck
- Hook actuator:
  - Fluentd

Alert Scan — Failed Session Analysis

Each execution:

1. Load already raised alerts and session data from cache
2. Fetch new session data from InfluxDB
3. Run alert condition checks on each new session
4. Update local cache

The **Alerts**

Alerts Produce:

- Configured action
- Operator notification (email)
- Monitoring entry

For administrators and 2nd line support

servicenow

Configuration

```
cta-ops-tapealerting:
  # General configuration options
  debug: false
  # Specify the instance type to run against. Allows separation between
  # production/preproduction/etc. environments.
  instance: "production"
  suppress_emails: false
  ...
  alerts_raised_file: "/var/tmp/tape-alerting-system-raised-alerts.cache"
  last_processed_tape_sessions_file: "/var/tmp/tape-alerting-system-last-processed-tape-sessions-cta.cache"
  drive_down_email_template: ""  # Provide path to a custom template
  # Configure individual alerting jobs
  # Consecutive Failed Sessions of a Tape (FAILURE only), action: disable tape
  jobs:
    check_consecutive_session_failed_tape:
    template: ""          # Provide path to custom template
    target: "tape"
    threshold_times: 3    # Number of distinct occurrences
    threshold_units: 2    # Number of distinct tapes/drives
    disable: true         # Disable the target upon alert raised?
    rolling_window_hours: 24
    max_sessions_mail: 20  # Limit items listed in email
    disable_reason_explanation: "$times consecutive failed sessions in $units different drives over the past
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The Alerts — Consecutive failed sessions

Have we experienced a suspect number of failed transfer sessions for a given tape/drive?

Underlying Cause

- Tape/drive hardware failures

Response

- Disable tape/drive

Mitigates

- Single-unit service degradation

The Alerts — Repetitive tape mounts

Is a tape being repeatedly mounted and unmounted?

Underlying Cause

- Software bugs
- Misconfiguration

Response

- Disable tape

Mitigates

- Damage tape media and drives

The Alerts — Too many positioning alerts

Is a tape/drive showing repeated positioning issues?

Underlying Cause

- Tape/drive hardware failures

Response

- Disable tape/drive

Mitigates

- Data loss

The Alerts — Too many Tape Alerts

Has CTA reported on specific issues related to this tape?

Underlying Cause

- Any lower-level error
- 58 SCSI tape alerts

Response

- Disable tape/drive

Mitigates

- Data loss

The **Hook**

CTA-taped has put its drive Down: Act NOW.

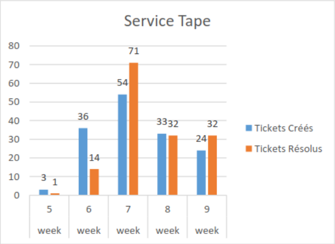
```
$ cta-ops-tape-alerting-system \
--drive-down-alert-file <path>
```

- Supply a file containing the log entry json at `<path>`
- Executed by log parser (Fluentd)

Summary and Q&A

EXPERIMENTAL

- TAS provides automatic alerting and damage mitigation actions for CTA deployments
- Part of the CTA Operations Utilities
- Available from version 2.0



Installation:

```
python3 -m pip install --extra-index-url \
https://cta-public-repo.web.cern.ch/cta-operations/pip/simple/ tapealerting
```