CERN storage architecture is evolving to address run3 and run4 challenges. CTA and EOS integration requires parallel development of features in both software that needs to be synchronized and systematically tested on a specific distributed development infrastructure for each commit in the code base.

CTA Continuous Integration development initially started to run functional system tests against the freshly built software. But its importance grew over time to include all development, testing and deployment aspects.

### CERN Tape Archive

- Data archiving at CERN
  - **ad aeternum** storage
  - Current use: 340 PB
  - Exponentially growing

### EOSCTA Kubernetes Instance

- Tightly coupled software → tightly coupled developments
- Extensive and systematic testing is paramount to limit regressions

- Implement a framework based on a single generic docker image
- Use Kubernetes to build an EOS CTA instance out of it
- Flexible enough to accommodate any supported resource (database, objectstore, tape library)
- Part of CTA code repository. CI tests are evolving along with CTA code.

### OTHER USE CASES

**DEVELOPERS**

- Entirely runs on an offline developer laptop
- Instantiates Kubernetes framework in a K8s/Docker Virtual Machine
- Offline resources only:
  - local Postgres instance
  - local file based objectstore
  - MHVTL
- When instance ready run specific developer test

**STRENGTHS**

- Much shorter learn curve for new comers that can focus on their work
- Test deployment practices included.
- Successfully used for:
  - Objectstore developments
  - Database catalogue backend developments (‘MySQL’, ‘Postgres’)

### CONTINUOUS INTEGRATION

- Implemented in CERN Gitlab instance
- Deploys Kubernetes framework on a custom gitanb runner
- When instance ready run a test that:
  - archive 10k files to EOSCTA
  - delete the 10k disk copies
  - retrieve 10k files from tape

The full continuous integration pipeline runs at every commit and exercises its code along with its installation procedures until the final archical+retrieval test.

All git branches are tested, allowing developers to continuously test their branch and the merged result.

**MORE USE CASES**

- Very powerful approach that addresses and federates all our development/ testing use cases
- Fast, flexible, isolated and self contained in software repository

**PRODUCTION USAGE?**

- Deploy CERN production EOSCTA instances inside kubernetes?

For more information
Web: https://cern.ch/eoscta
Contact: julien.leduc@cern.ch

---

For more information
Web: https://cern.ch/eoscta
Contact: julien.leduc@cern.ch