Title: Restic tape backend

Description: CERN IT Backup Service is the current safe for all the critical data of the organization. Its resilience is mainly a property of its storage backend based on tape technologies. Unfortunately its current implementation caps the storage capacity and prevents us from possible service extension to end users.

But things are changing: CERN IT MALT project is shifting services storage backend to distributed disk infrastructures which are currently lacking a tape backup.

In parallel to this, the IT storage tape section (IT-ST-TAB) is developing CERN Tape Archive (CTA): a tape archival system for CERN physics data that would be the ideal new safe for new backup use cases.

The project will consist of evaluating the possible use of restic (https://restic.net/) or rclone (https://rclone.org/) to backup and restore data to and from a CTA tape backend for various sources. This work will first focus on implementing an xrootd rclone backend to restic that offers support for disk and tape backends, evaluate the performance of restic backup lifecycle management, improve it and if time allows it, evaluate various classical backup optimization techniques in the context of restic.

Project content: 70% Computing, 30% Engineering.

Training value: You will have the opportunity to contribute to open source projects written in GO programming language in the perfect context. All backup, xrootd protocol, storage backend experts (EOS, ceph, S3, CTA…) are just a few offices away.

Skills and assets: Programming in GO and use of Linux OS. Ability to work autonomously and efficiently. Absorb a lot of knowledge from experts.

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Useful links:

MALT Project: https://home.cern/news/news/computing/migrating-open-source-technologies

CERN Backup Service: http://information-technology.web.cern.ch/services/Backup-Restore-Service