DSS
Data Storage Services

Huawei Cloud Storage

Seppo Heikkila (CERN), Maria Arsuaga Rios (CERN)

HUAWEI CERN openlab

One of the main aims of CERN Openlab is the evaluation of cloud storage systems against current mass storage solutions. The analysed Huawei UDS (Universal Distributed Storage) shows a linear scalability in metadata and data transfer, and capability to serve as a back-end to CernVM File System (CVMFS).

Raw performance

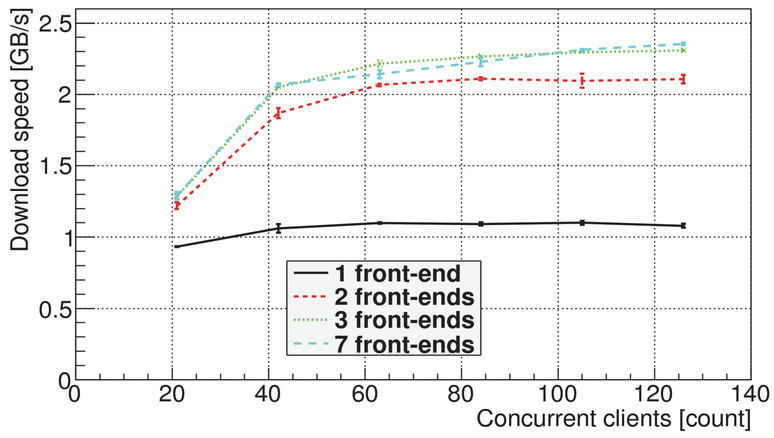
Maximum system performance

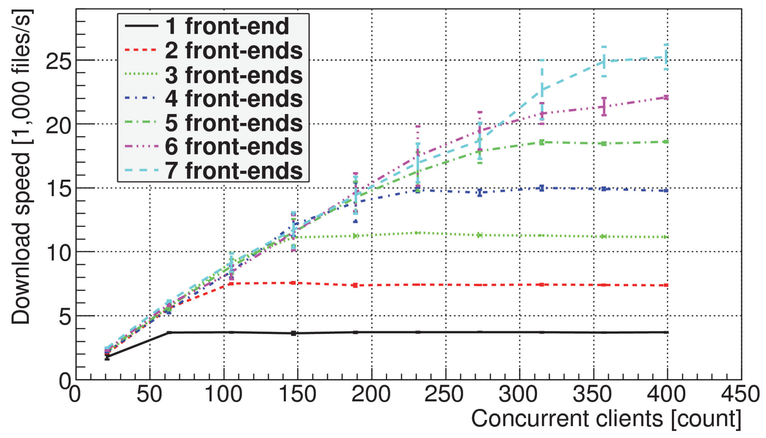
- Download 25,000 files/s
  2,300 MB/s
- Upload 2,500 files/s
  1,800 MB/s

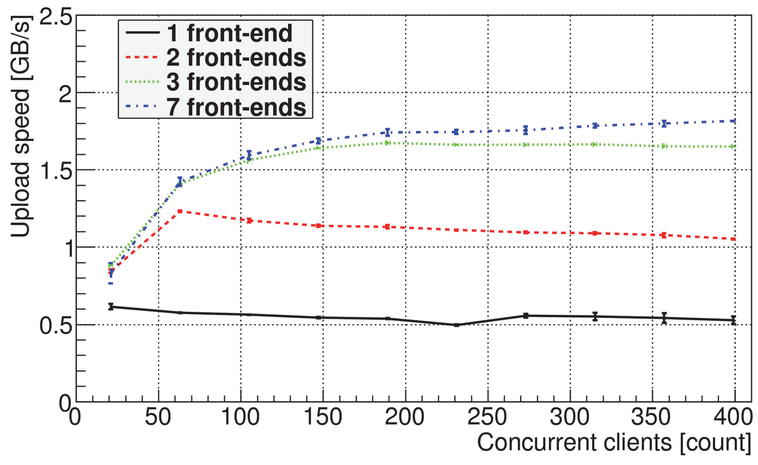
Linear scalability!

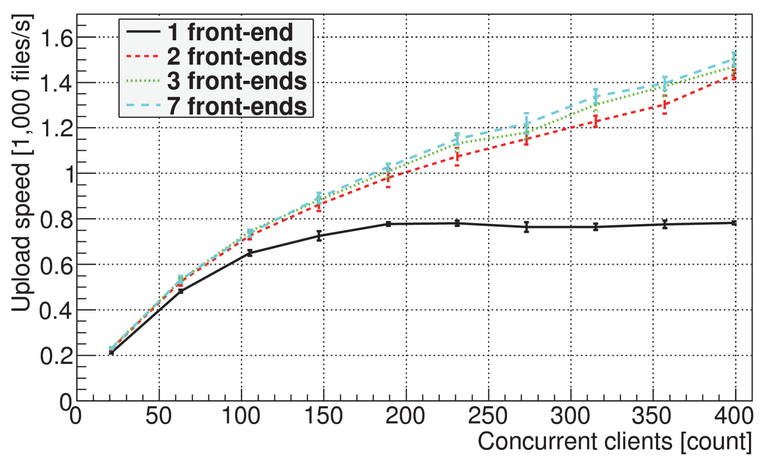
Each additional front-end can

- Download 1,100 MB/s
  3,500 files/s
- Upload 550 MB/s
  800 files/s



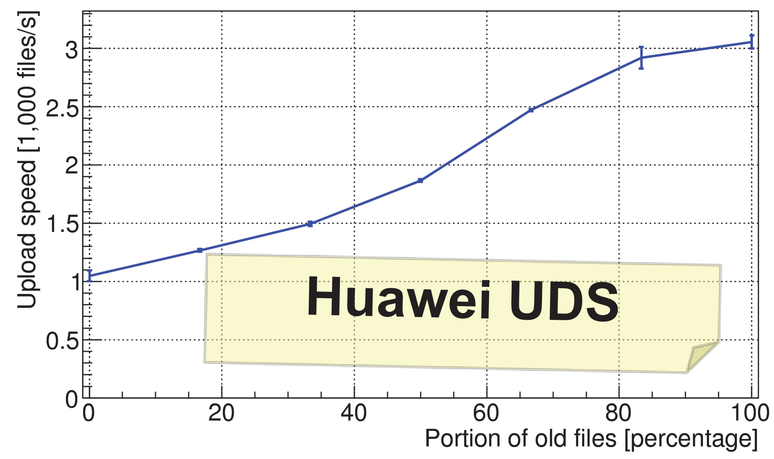


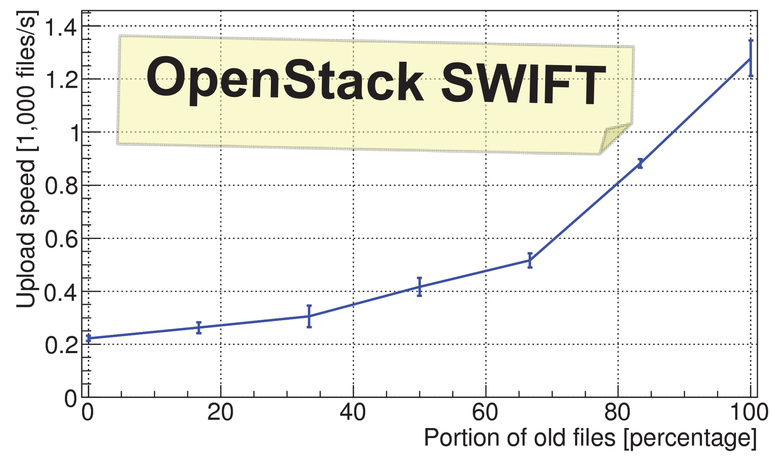




CVMFS integration

Huawei UDS was tested as CernVM File system (CVMFS) back-end. The achieved publishing speeds are shown on the right. Possibility to switch from one S3 backend (Huawei UDS) to another (OpenStack SWIFT) was also demonstrated.

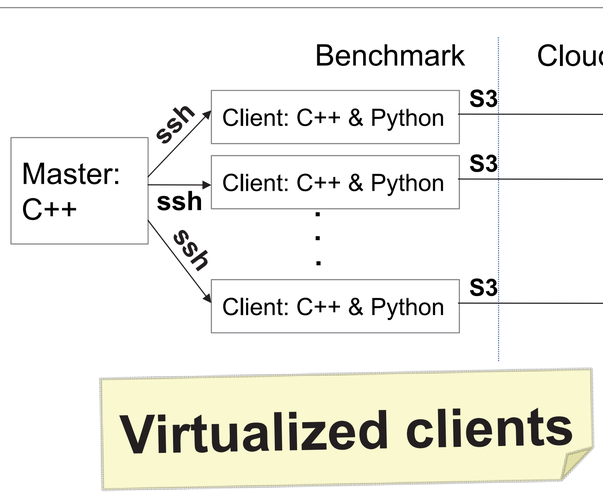




New UDS system at CERN

Second UDS setup with similar architecture

- Front-end nodes, where S3 protocol is implemented
- Storage nodes, each with 3.5” disk and an ARM processor



Virtualized clients

Testing infrastructure upgrades

- Client machines from physical servers to virtual machines
- Multiple client ROOT file access testing
- Parallel asynchronous data transfer using only single thread

Future work plan

- Compare performance of old and new version of UDS
- Replication tests between two cloud storage systems
- Integration and testing with real user applications (ROOT files, CVMFS, etc.)

CERN IT Department
CH-1211 Genève 23
Switzerland

http://cern.ch/it-dss

http://www.cern.ch/openlab

CERN