

CERN wants to evaluate if cloud storages could outperform the current mass data storage solutions. The Huawei UDS (Universal Distributed Storage) was tested for this purpose and found to show scalability both in metadata and data transfer. The ability to recover from a chassis failure was also demonstrated.



## Huawei UDS and tests

Composed of two components

- OSC (front-end nodes) where S3 protocol is implemented
- SOD (storage nodes). The design combines a 2 TB disk, an ARM processor and a memory with each disk.

Type of tests

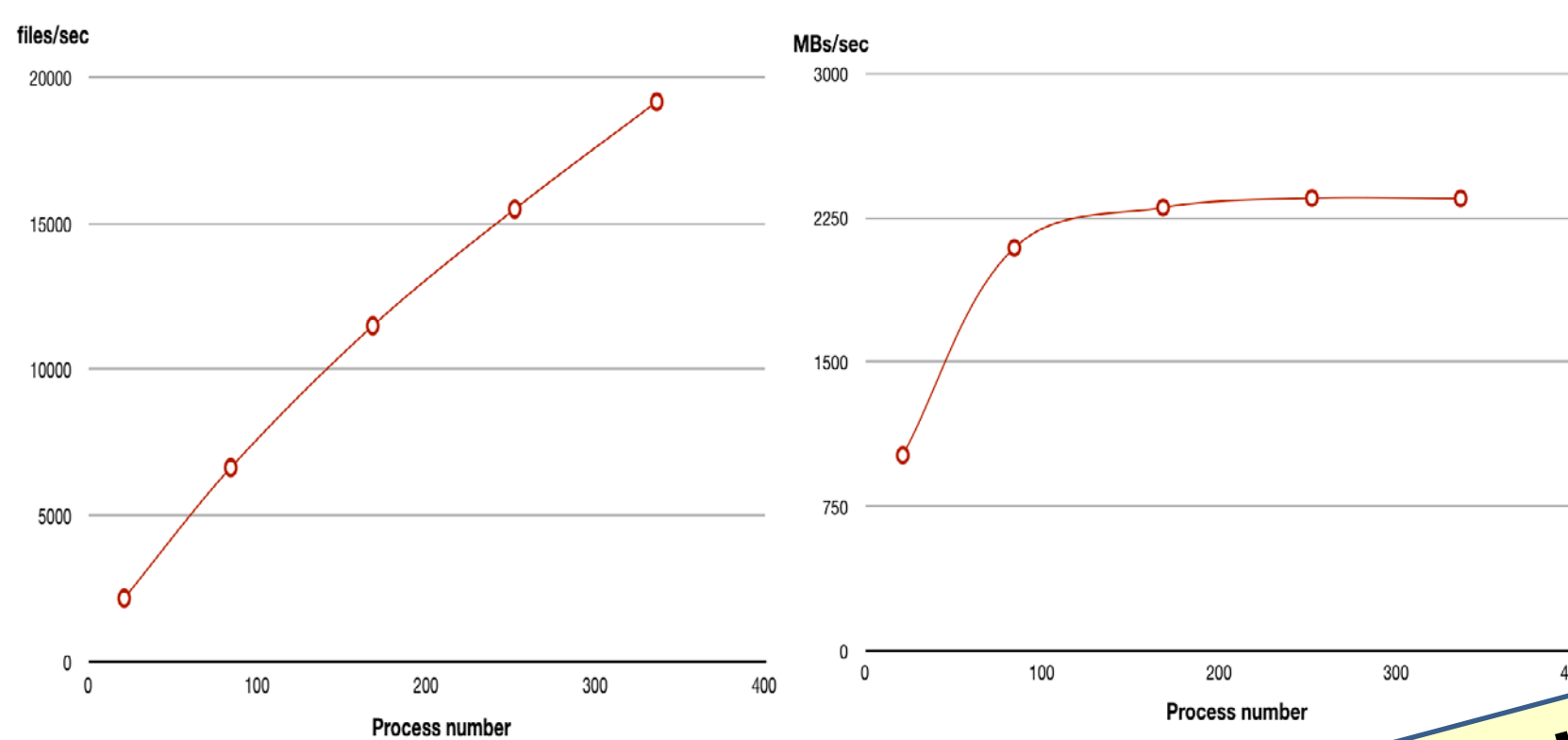
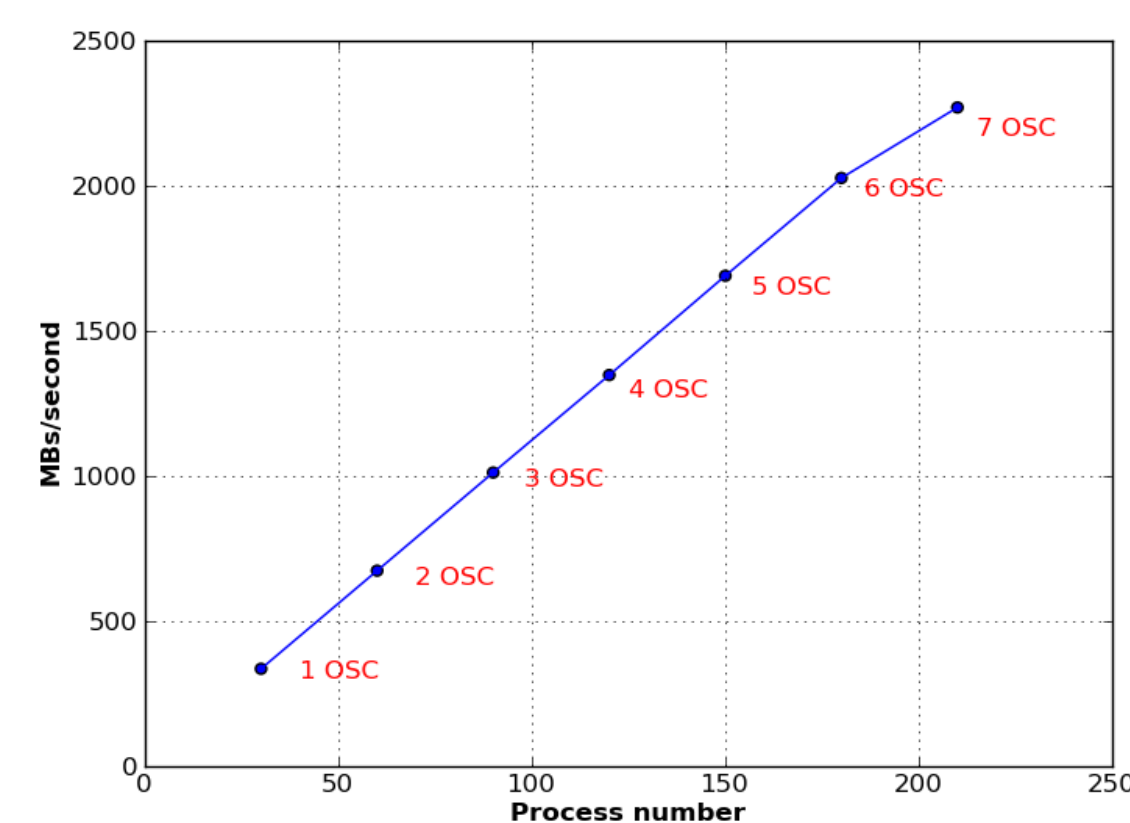
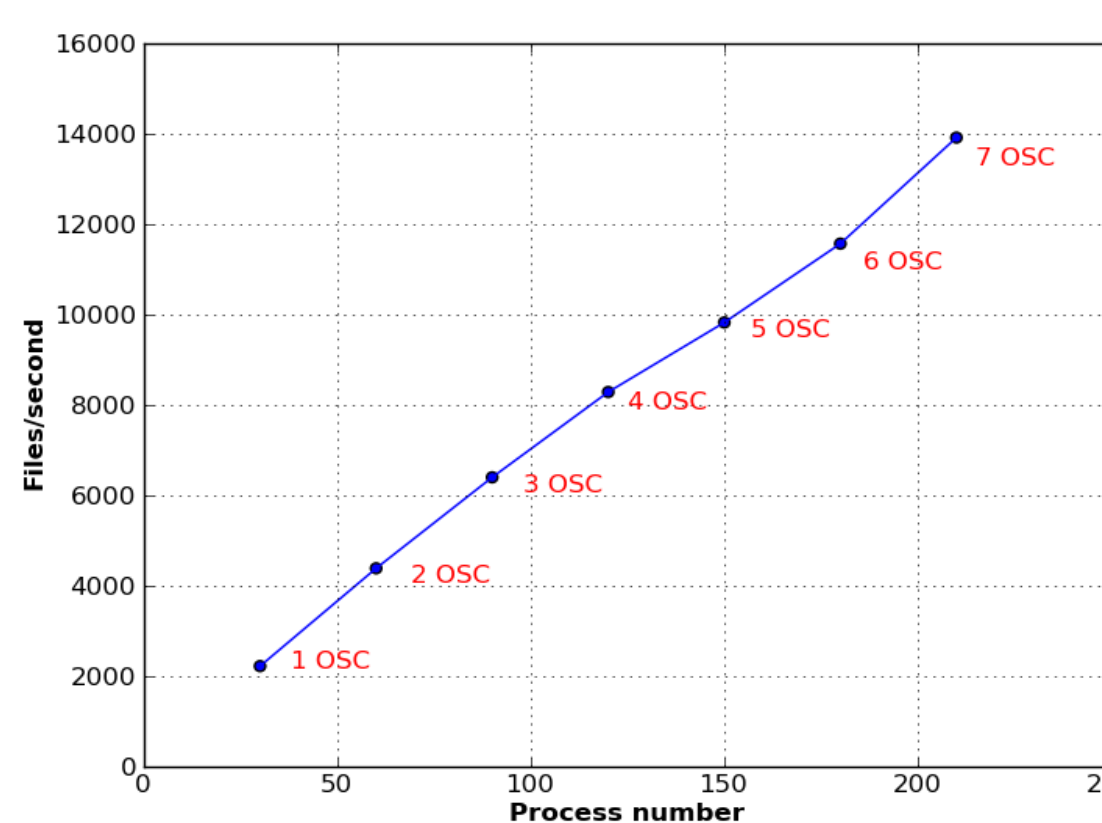
- Scalability of metadata with files of 4 KBs
- Throughput of data with files of 100 MBs

## Scalability of front-ends

Linear scaling as each OSC downloads:

- Around 2000 files/s (metadata)
- Around 350 MB/s (data)

**Linear scalability!**



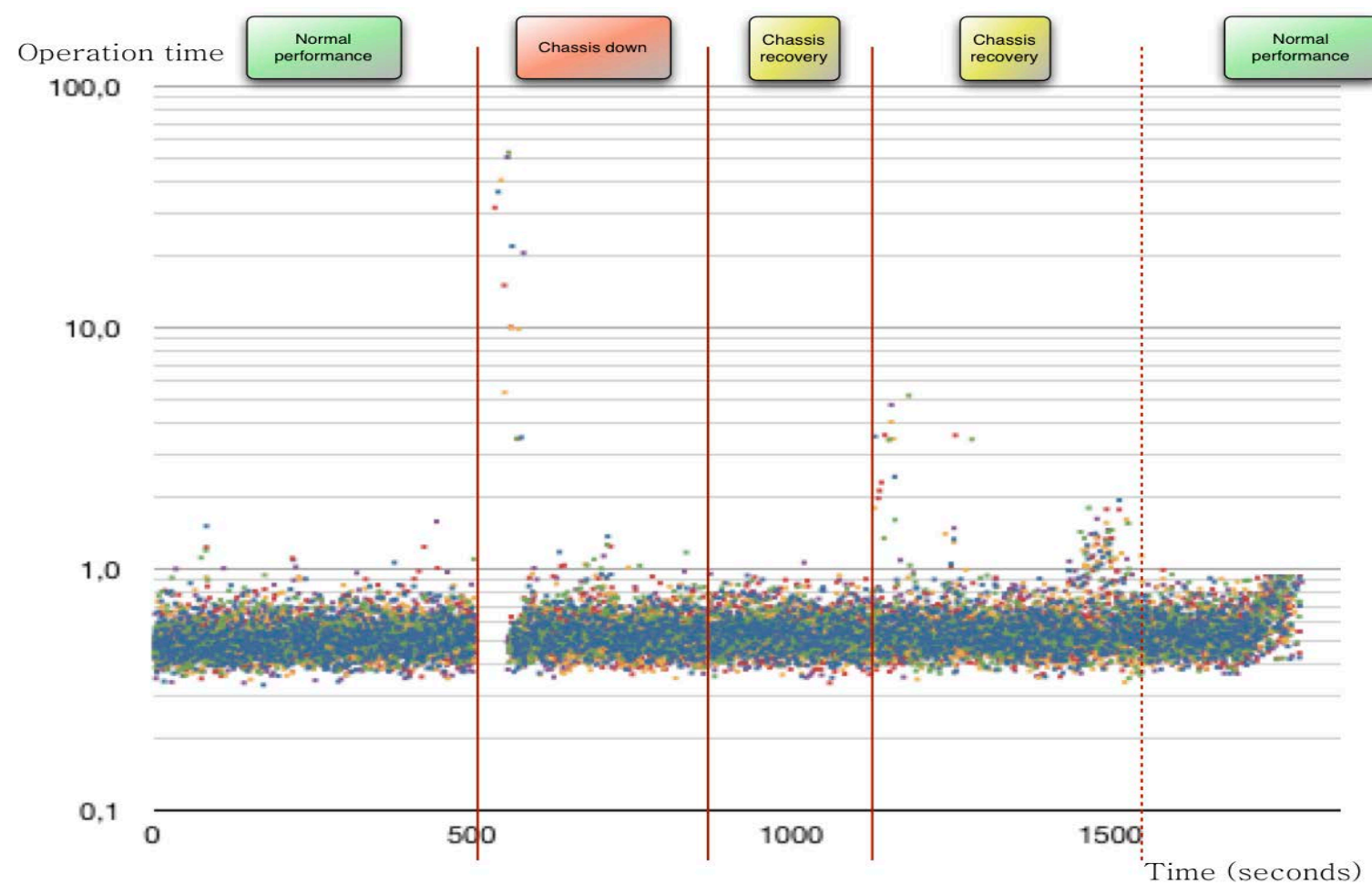
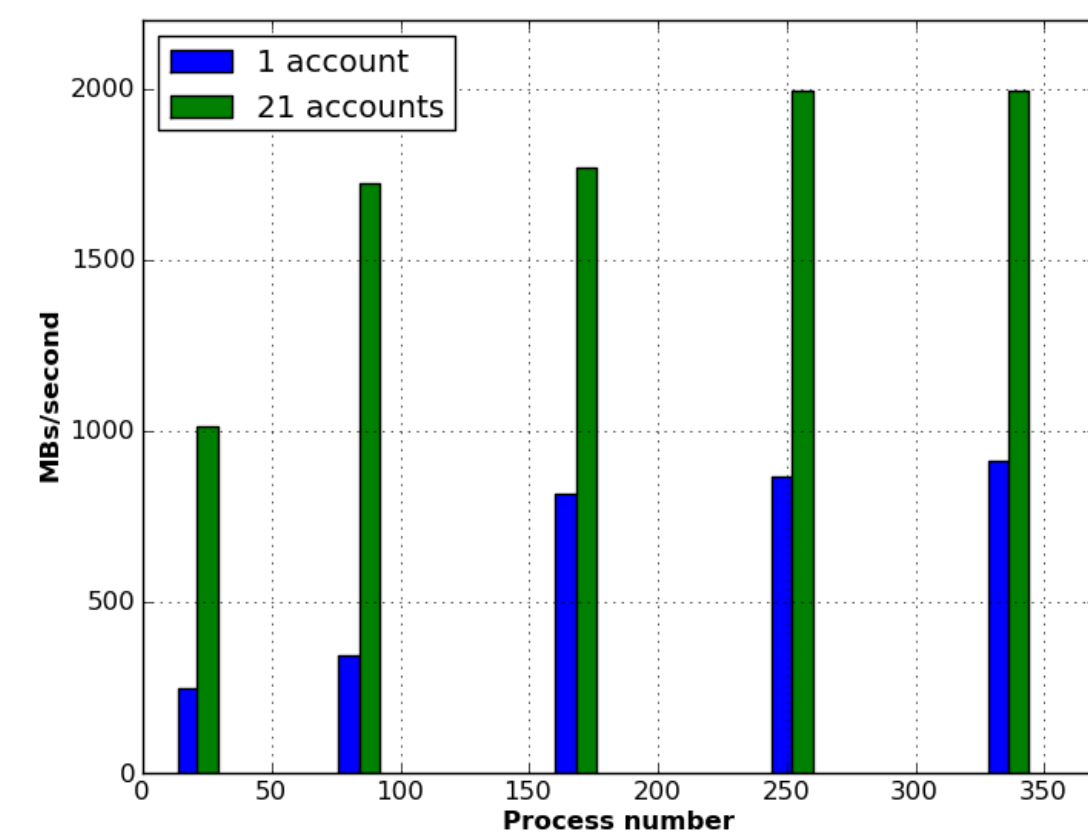
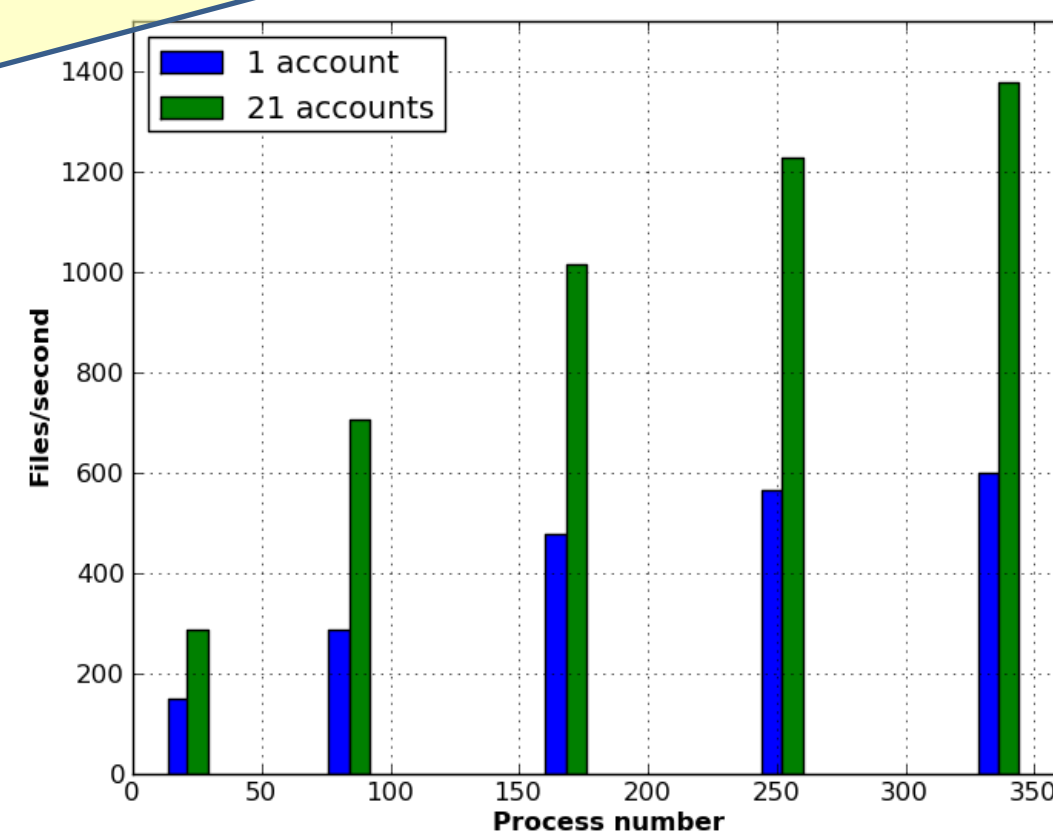
## Download of data

Metadata scales up to **18000 files/second** while throughput of data reaches bandwidth limit and stays flat.

**Up/download scaling!**

## Upload of data

Metadata scales up to **1400 files/second** and bandwidth limit is reached in throughput of data. 21 accounts gives double the performance of one account.



## Recovery after chassis failure

- Transfer of data continued normally even without a chassis working
- Re-balancing worked
- Less impact to downloads than to uploads

**Transparent recovery!**

## Future work plan

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

**TCO evaluation ongoing**