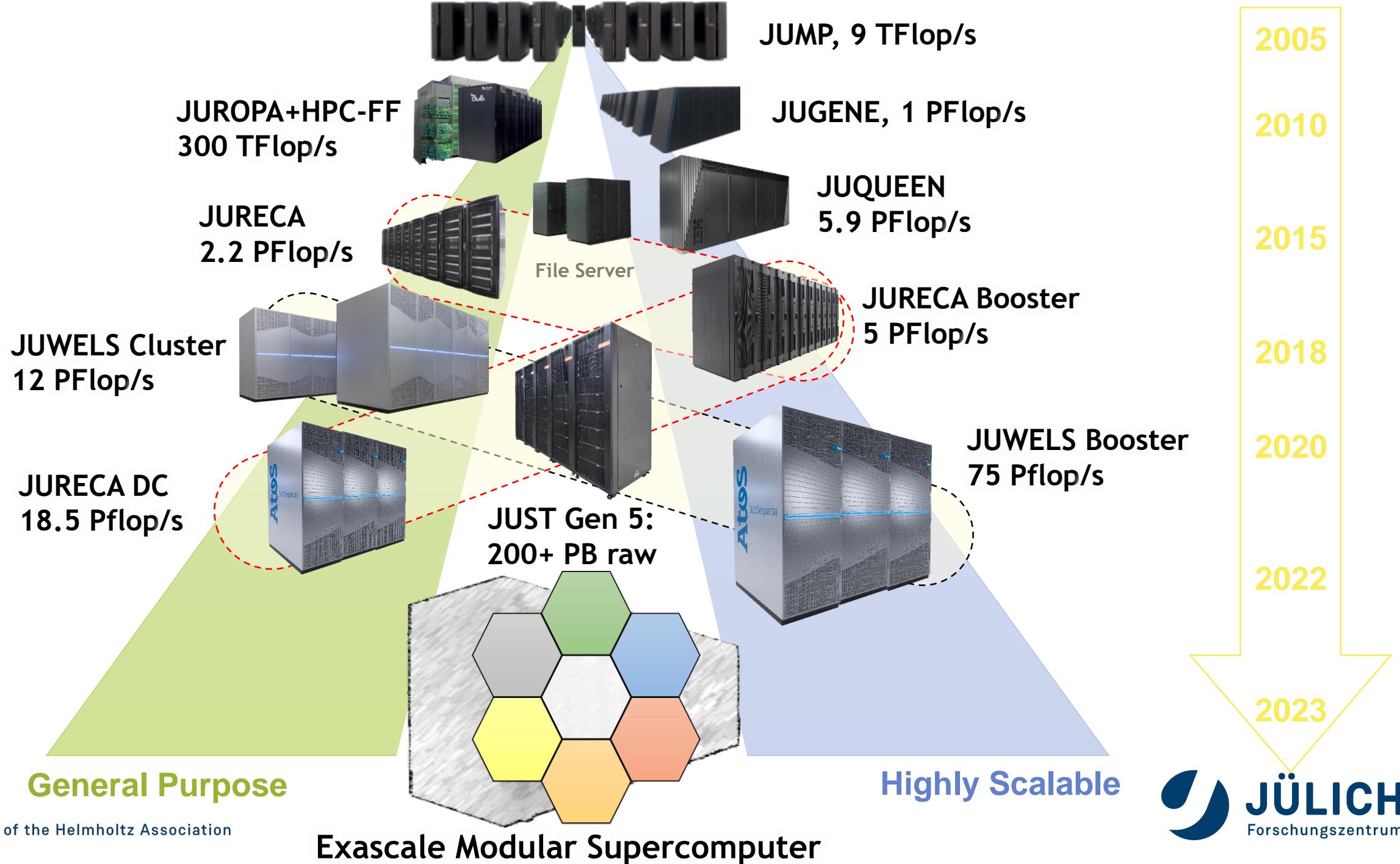
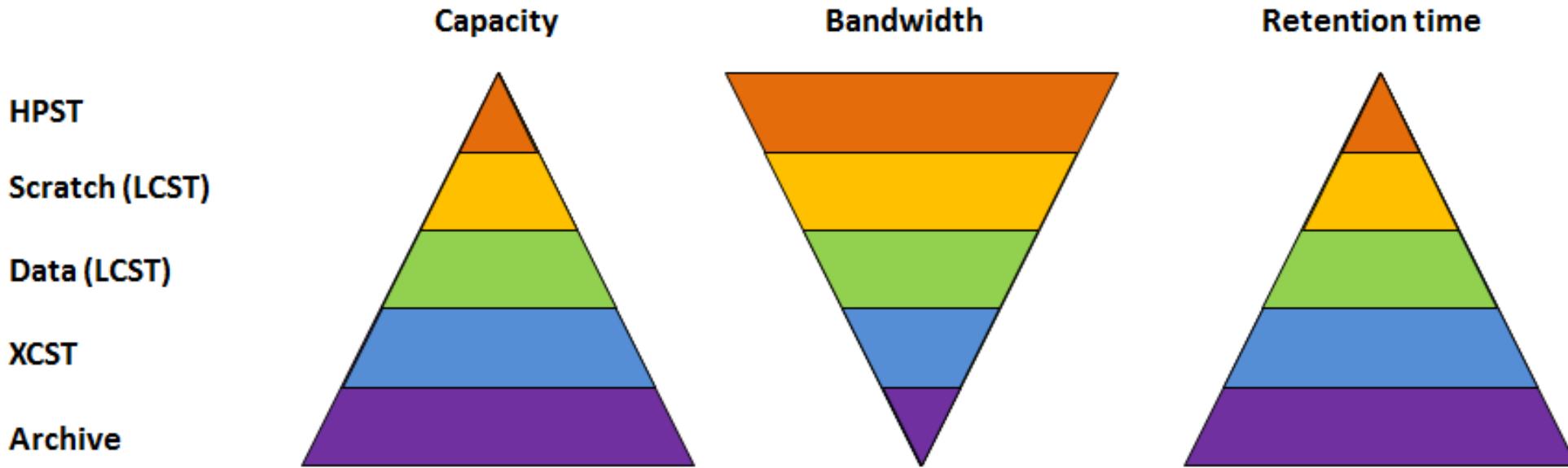


CES BASED OBJECT STORE JUELICH STORAGE CLUSTER JUST

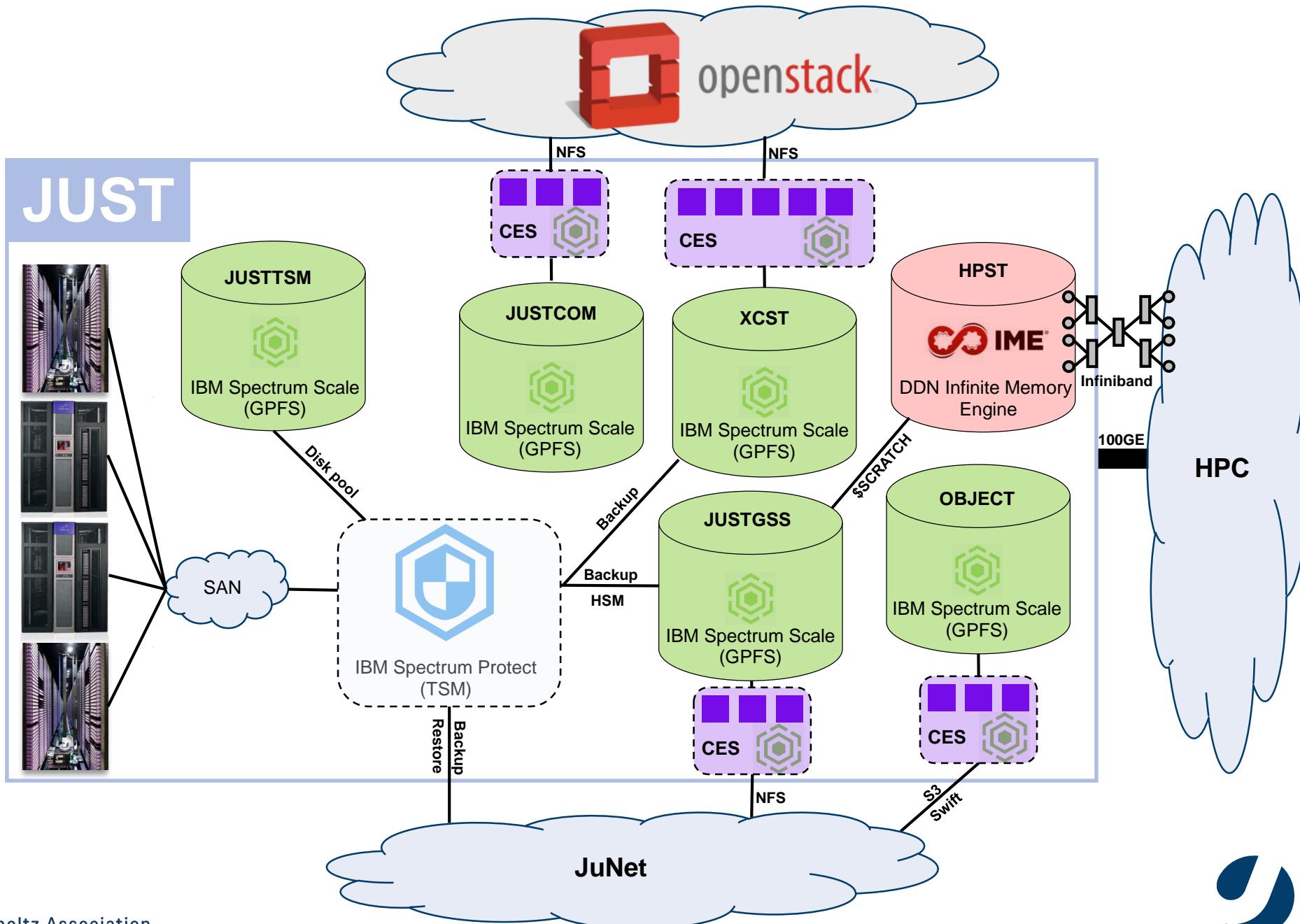
22. MARCH 2023 | STEPHAN GRAF (JUELICH SUPERCOMPUTING CENTRE)

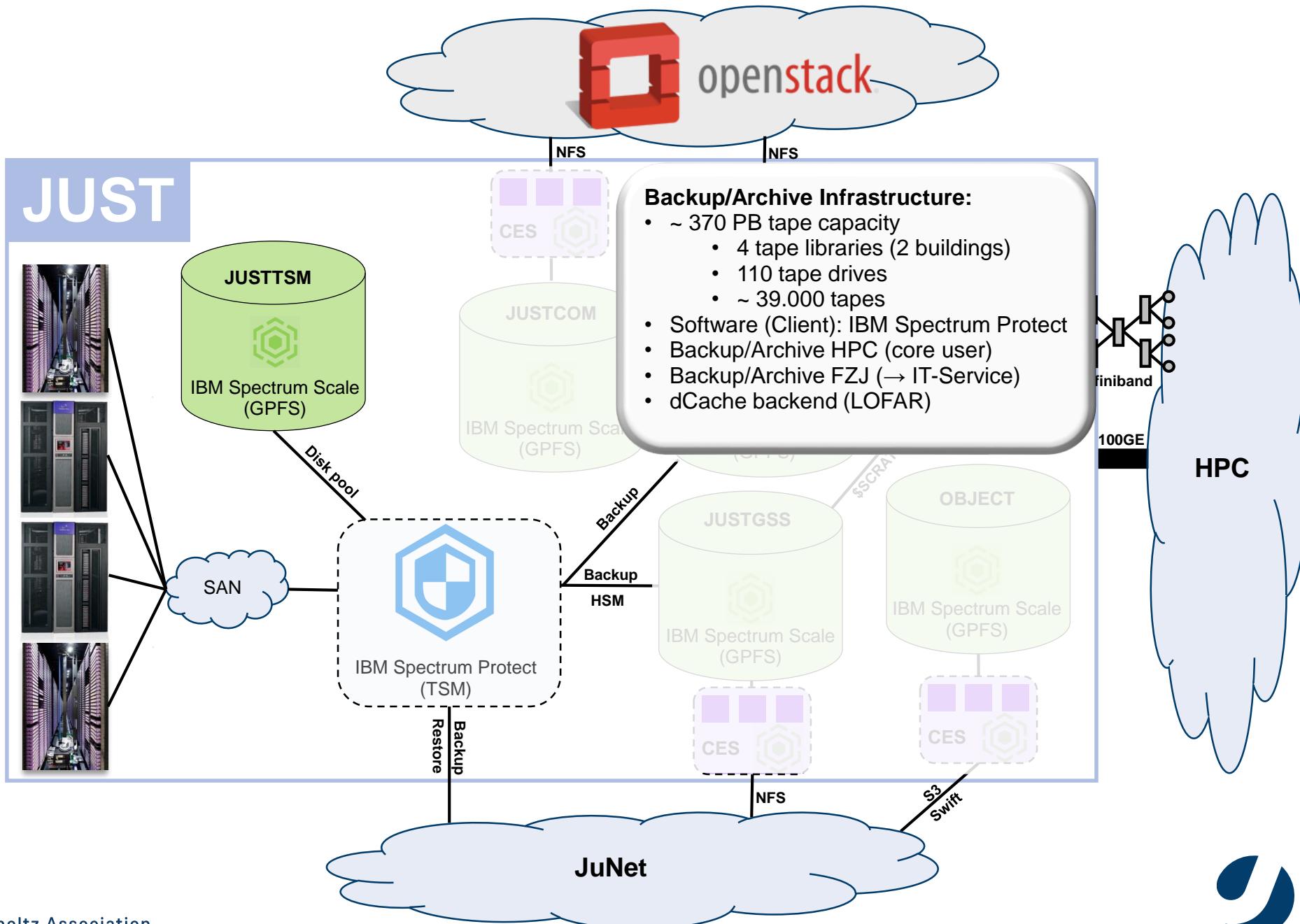


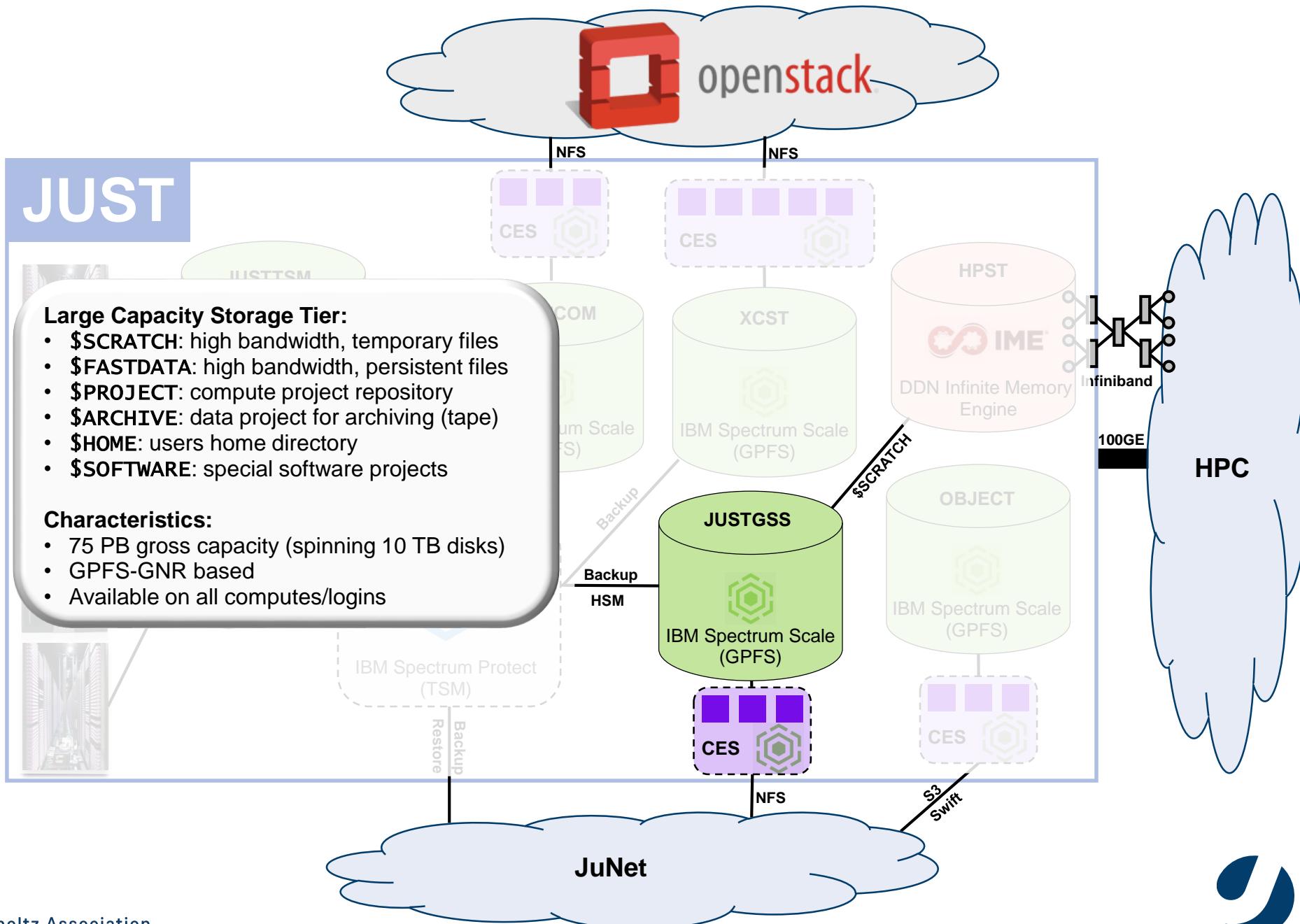
TIERED STORAGE OFFERING

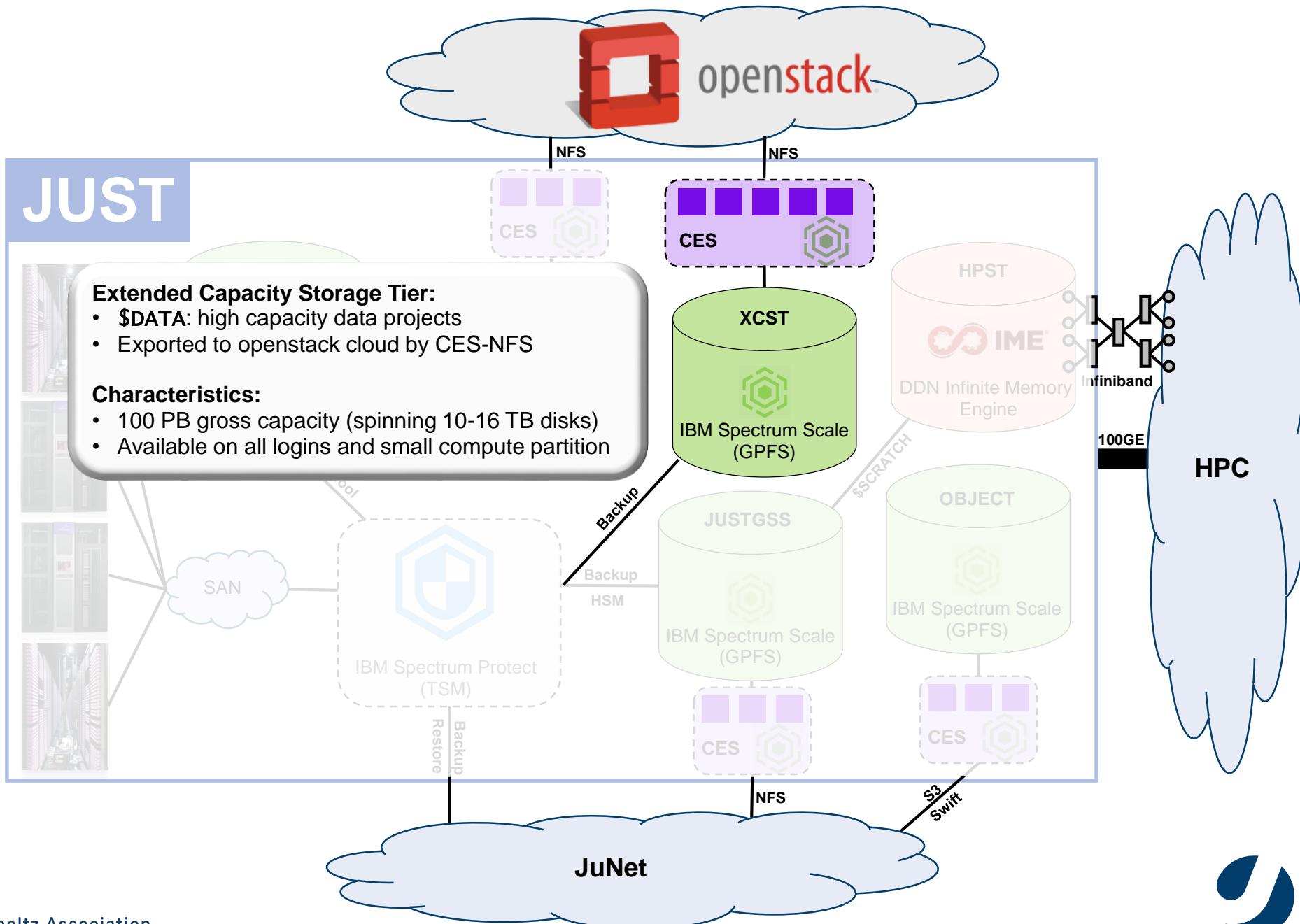


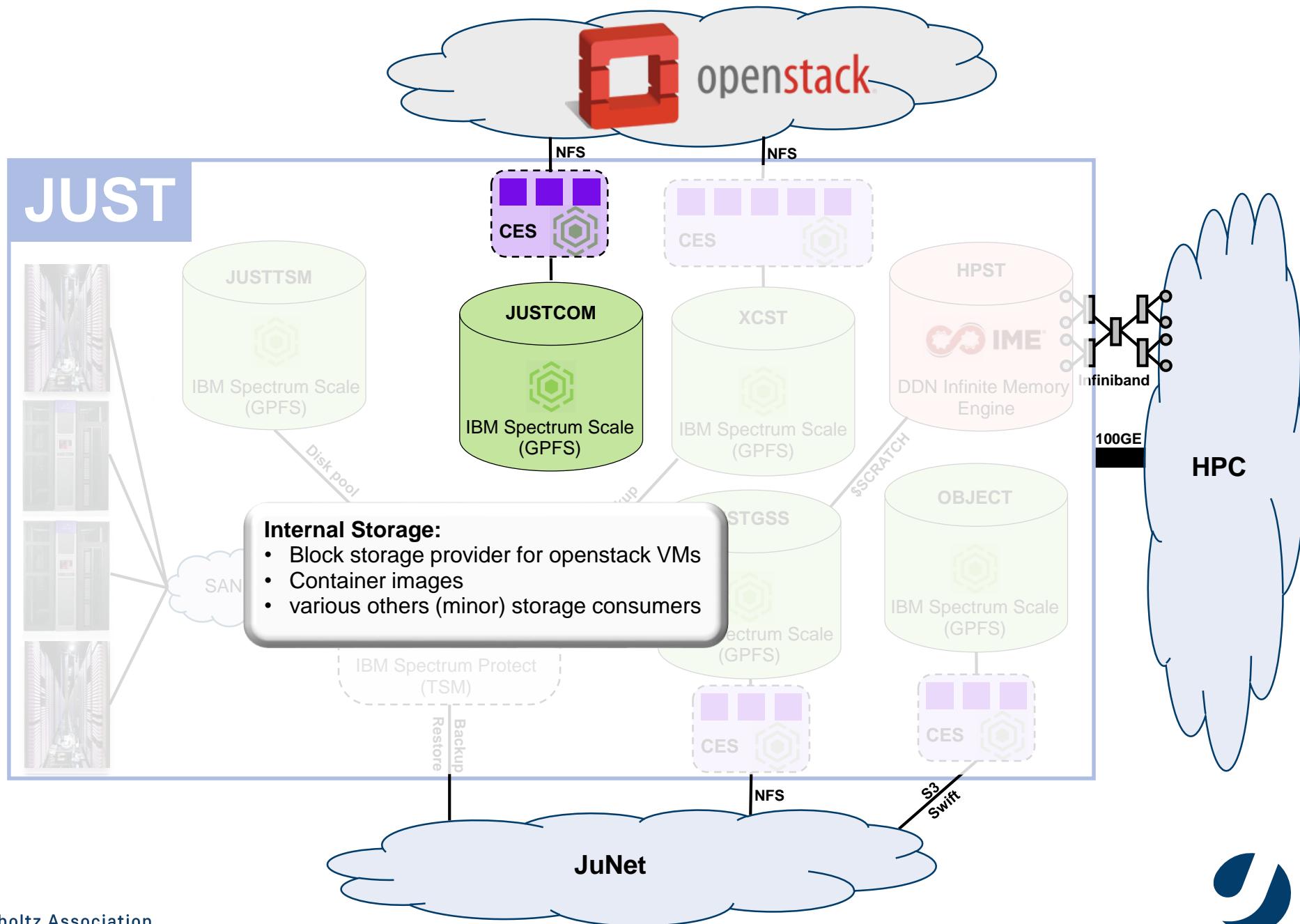
- High Performance Storage Tier (HPST): NVMe based Storage (low latency+high bandwidth) based on DDN IME
- Large Capacity Storage Tier (LCST): Lenovo DSS Cluster (GNR, 5th Gen. of JUST, bandwidth optimized) → LCST
- Extended Capacity Storage Tier (XCST): GPFS Building Blocks (target: capacity) → XCST
- Archive: Tape storage (Backup + GPFS&TSM-HSM)

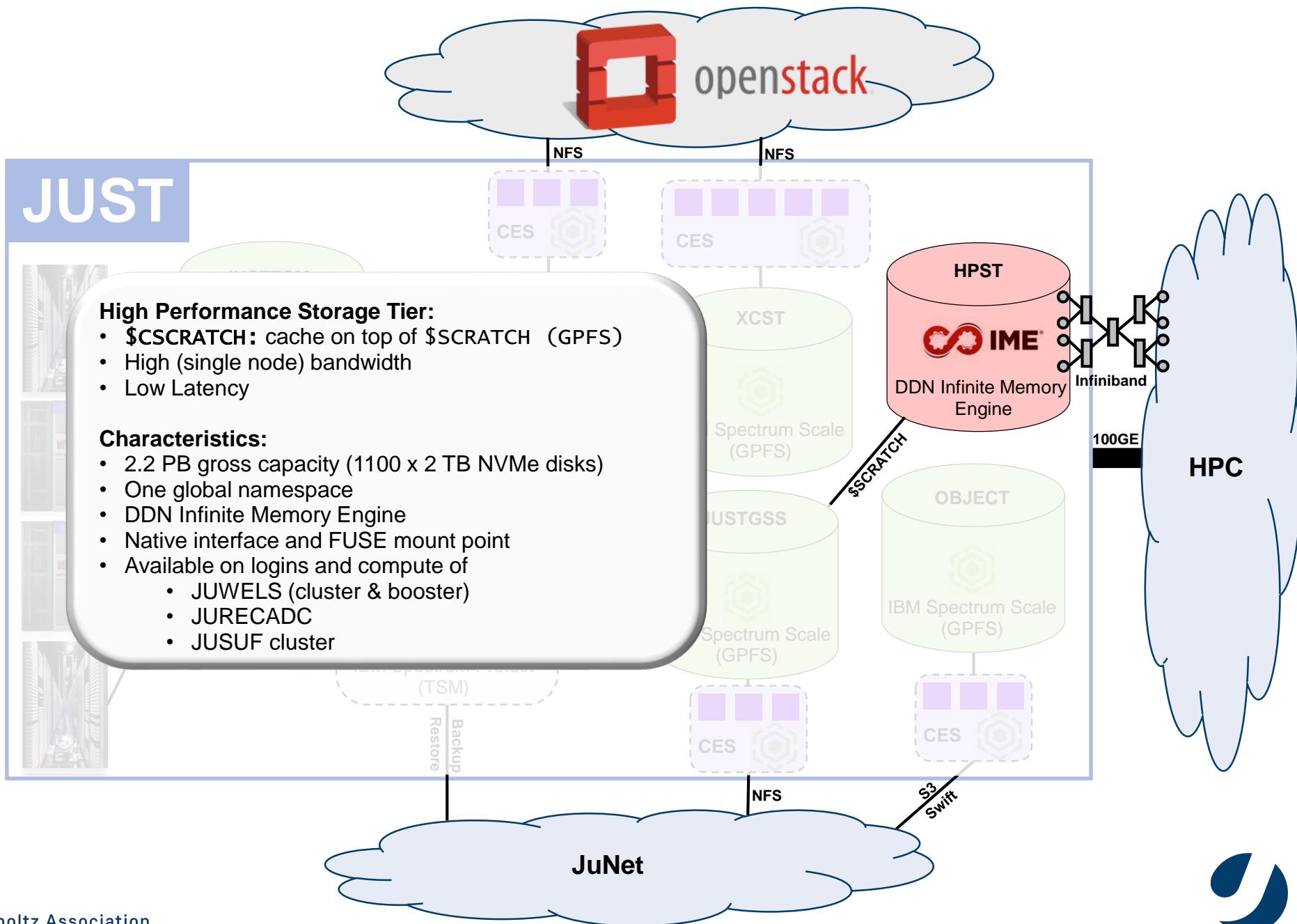


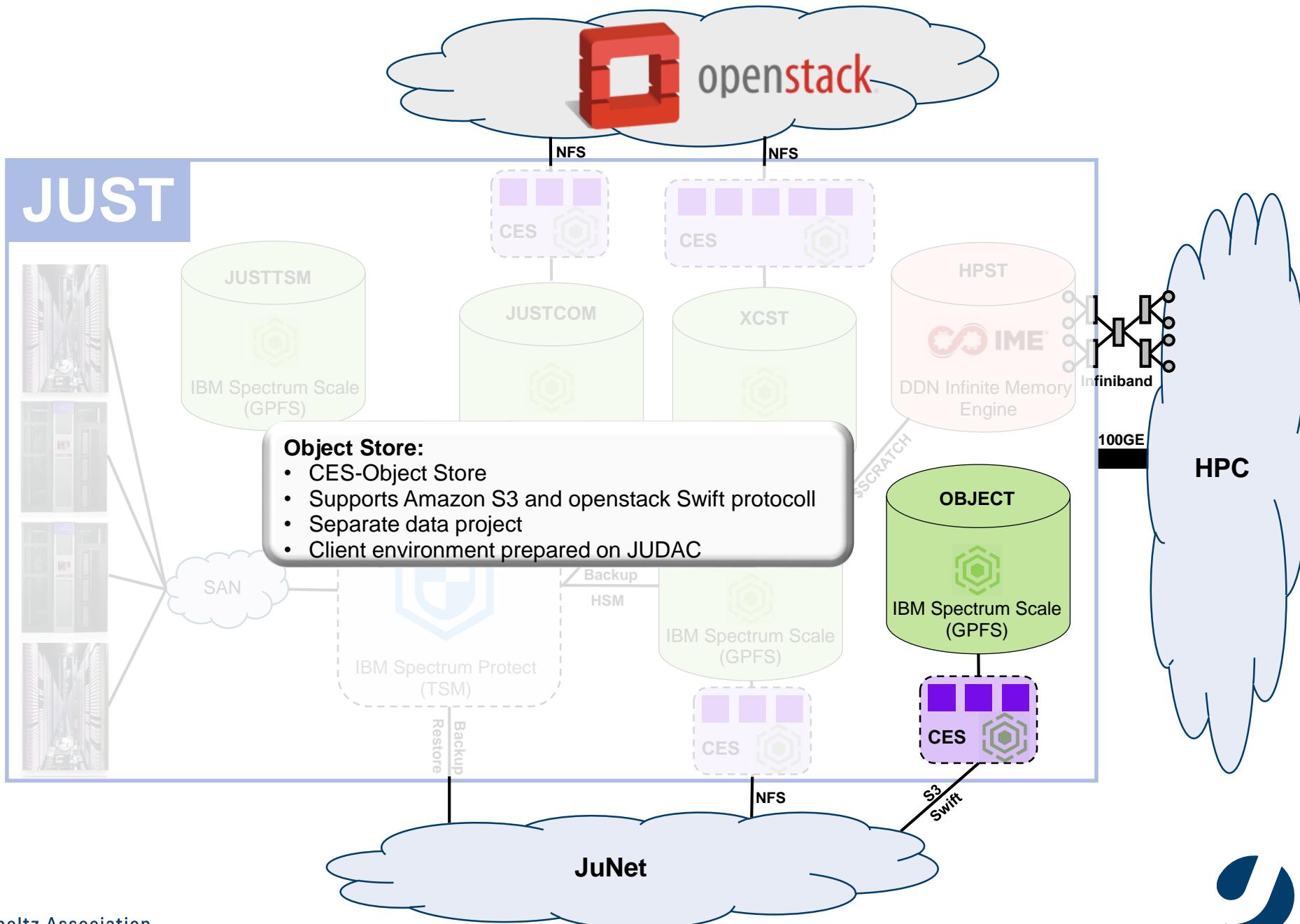




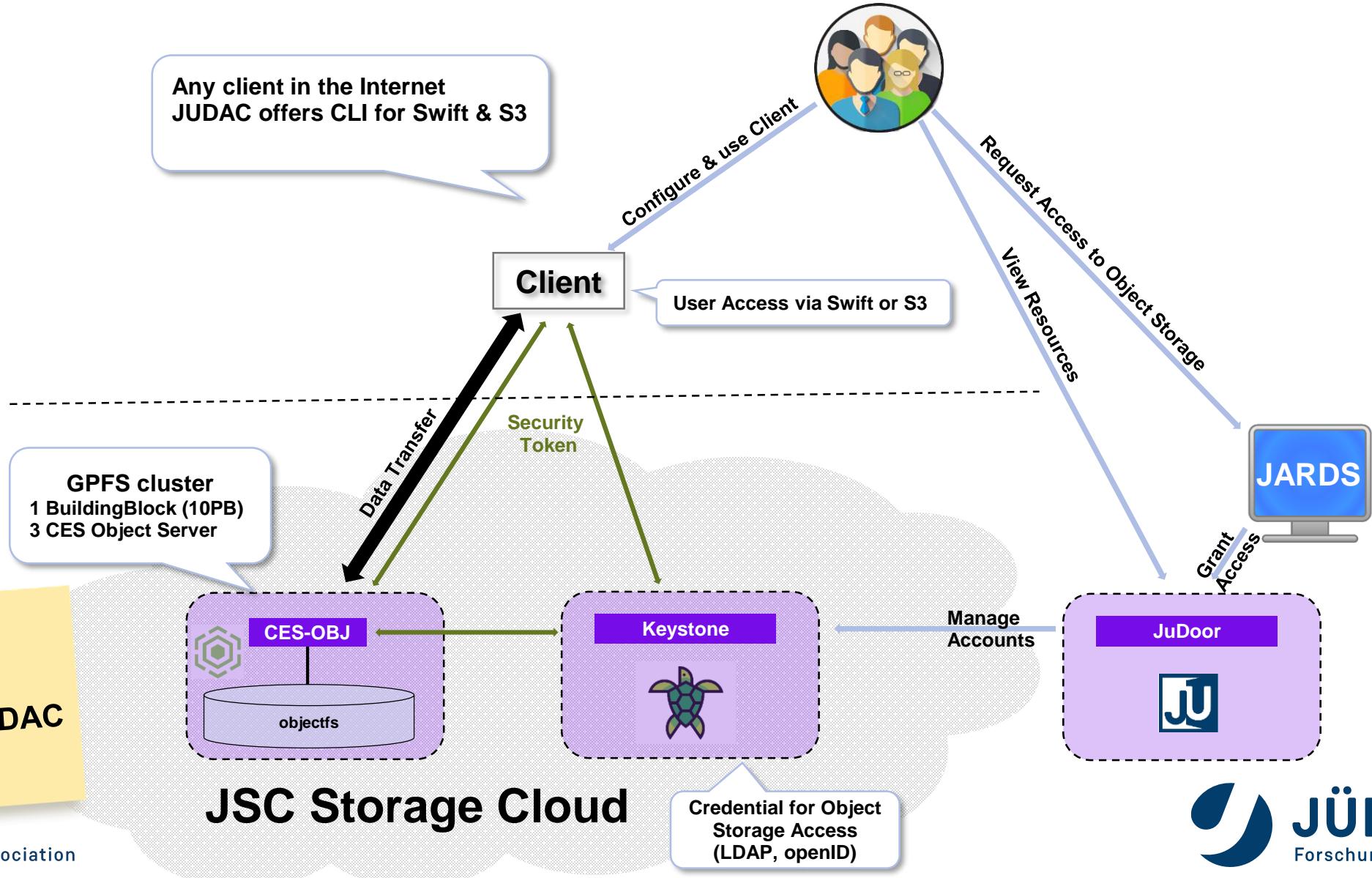




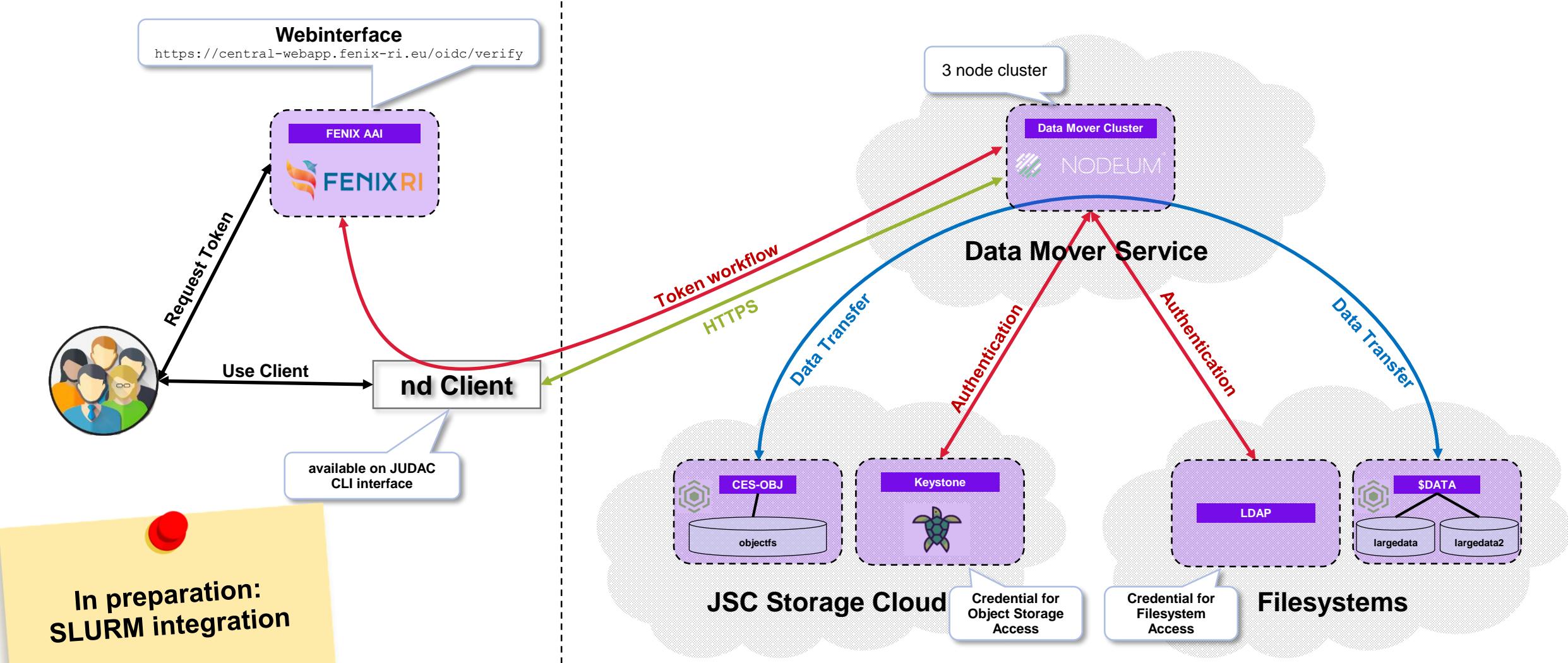




OBJECT STORAGE SERVICE



JSC DATA MOVER SERVICE



CHALLENGES ON THE WAY TO PRODUCTION

- 2020/2021 setup Object Store using external keystone
 - Part of XCST setup
 - Separate CES-Object cluster
- Upgrade RHEL 7 + GPFS 5.0.5.4 to RHEL 8 + GPFS 5.1.1.3
 - Dependency problems on upgrade RHEL 7 → 8 (TS005854039)
 - CES-OBJ failed to start after update (TS006903229)
 - Unsupported setup: CES-Object must be part of storage cluster
- 2022: reinstall using 3 CES + 1 BB (single cluster)
- Start production
- S3 V4 protocol not supported (TS010654127)
 - Still open, PowerPC-LE problem?

CES OBJECT STORE - SUMMARY

- **Object store based on GPFS CES Object is in production, but**
 - CES-Object deprecated
 - CES-Object is based on OpenStack Swift, but the trend is Kubernetes OpenShift
 - New Storage Scale feature: High Performance Object (HPO, DAS- S3 object access)
 - Based on Kubernetes NooBaa (How to integrate)
 - no keystone, LDAP, ... support yet
- **We are looking in parallel at CEPH based Object store (may be intermediate solution)**
- **Final solution not decided yet.**