



UNIVERSITY OF
CAMBRIDGE

Information Services

Techlink

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Working together for excellence in education, research
and operations through Information Services



Institution Storage

- A committee of School representatives will be formed
- Collective decisions on the roadmap of storage services
- Phil Shore technical lead for requirements capture and definition
- Solve the most beneficial requirements

Institution Storage – University Requirements

- Improve **power** efficiency through use of centralized resources
- Improve **space** efficiency through use of centralized resources

Institution Storage – University Benefits

- Reduce procurement time – ie virtualize storage
- Reduce overall cost through economy of scale
- Reduce overall cost through efficiency of use – use only what you need
- Improve data reliability
 - “alarming amount of USB drives”
- Improve data security

Institution Storage – Requirements

Sources of requirements:

2015 research	Committees
User Needs	Technical

Institution Storage –

- Design by Committee doesn't work
 - See original storage tender
- A number of different targeted solutions are expected
- Ensure WE pick features that work together, are reliable and achievable

Institution Storage – University Benefits

- Focus on:

**File System
as a Service**

Institution Storage – Requirements

Requirement Topic Areas:

Resilience
Restore
Control
Quota
Collaboration
Access

Institution Storage – Access

Property	Comments
Single AZ/site resilience	
Multi-AZ resilience	Increased cost, but reduced downtime
RTO – time to Return to Operating	Out of hours? Automation. Restore time.
Give choice of resilience?	You choose if replicated, backed up.

Institution Storage – Restore

Property	Comments
Snapshots of entire filesystem	Every n periods
Backups	Externally to protect against corruption
Individual file restore	By user, dept admin, UIS
File and folder versioning	By user, dept admin, UIS
RPO – Restore Point Objective	What period of data can be tolerated?
Control quantity of backups	Can dept admin decide, or system wide?
Snapshot backup	Necessary?

Institution Storage – Control

Property	Comments
How to enable a new share	
Who controls user permissions	By user, dept admin, UIS
Authentication	Single AD or Dept ADs (virtual filer). By user or system?

Institution Storage – Quota

Property	Comments
Per Share	Easy
Per Folder	
Per Team	
Per User	

Institution Storage – Collaboration

Property	Comments
Individual	
Team members in the same dept	
Cross dept collaboration	Requires Blue AD or other shared AD
University wide Access	NO see other more suitable sharing services

Institution Storage – Access

Property	Comments
Managed Devices. PC, Mac, Linux	CIFS, but no Unix +x extensions
BYOD tablets, phones	Drop Box, One Drive etc
Home Computers personally owned	VPN in to map network drive. Cannot block this easily.
Eduroam, Lapwing, At Home/VPN	
Public Network incl mobile	
http/web	Maybe WebDAV, OwnCloud

Institution Storage – Performance

Property	Comments
IOPS	
Latency	
Time to transfer a large file	What is acceptable?
Use cases:	Office Apps, Database (from MS Access to Oracle), Video viewing, editing(!), Archive store
Workgroup – parallel access	Performance matters
Tiering	UIS can adjust performance. Can departments choose?
Scale	Eg XFS on Redhat - 100TB shares

Institution Storage – Strawman Proposal

Property	Property
File system	CIFS, no NFS.
Resilience	Resilience Single AZ/Site, with redundant hardware
Restore / Backup	Backed up. 6 week max for disaster recovery. RPO 24hr.
Quota by Share	Quota by Share, not folder/team/user
Control, Collab'tn	Single AD or Multi AD ?
Access	CUDN, VPN etc elsewhere
Access	Managed and personal Windows, Linux, Mac.
Performance	Complementary filespace, office files. Not for C:drive, databases. Bandwidth to dept required.
Price	£? TB/yr

Institution Storage – ... and many more

Property	Comments
[your ideas here]	

Institution Storage –

- Likely choices
 - Appliances
 - Build our own modular virtual filer
- Nexenta

Your comments:

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Or feedback through your representatives or RMs