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Title	UBC IT Storage Options and Specifications		

Introduction

This document was prepared through a combination of reference to public facing documents and conversations with a UBC IT representative. The Digital Preservation Working Group acknowledges that more work needs to be done to have official policies to fulfill the needs of the repository.

1. EduCloud

(https://it.ubc.ca/services/web-servers-storage/educloud-server-service/educloud-faq#backup)

EduCloud Server offers six different storage profiles based on performance, backup and cost. The separation of storage allows you to choose the best combination of resources for your requirements. For example, you may choose a less expensive disk for your development and verification data, and a higher performance, more expensive disk for your production data.

For more information about storage profile pricing, please see the EduCloud Server Service Pricing Model page.

Performance Tier

High Performance Storage

High performance is our highest performing tier designated for more demanding virtual machine workloads.

Use cases

- Moderate to High I/O performance
- Database servers, I/O demanding applications

Standard Performance Storage

Standard performance is our middle of the road disk tier to be used for everyday applications.

Use cases

- Low to Moderate I/O performance
- File Servers

Backup Rotation

Backup Type	Local Snapshots Retained	Remote Snapshots Retained
No backup – no backup is taken	0	0
Local Backup - crash consistent snapshot is taken every morning at 3am	6 daily and 1 weekly	0
Local and Remote Backup - crash consistent snapshot is taken every morning at 3am and vaulted over to a remote location at midnight the same day	6 daily and 1 weekly	24 daily and 12 weekly

Snapshots allow you to preserve the state of the virtual machine so you can return to the same state repeatedly. The most common use for snapshots is to preserve system state before making major changes or applying operating system patches. Please note that snapshots are not backup systems – they only contain deltas of changes between the time the snapshot was taken and current state.

You can take a snapshot of a virtual machine either on a virtual machine level or a vApp level. Please note that you can only take one snapshot at a time – subsequent snapshots replace previous snapshots of the VM or whole vApp. vApp snapshot will take a snapshot of each VM contained within it, thus replacing any individual VM snapshots taken previously.

After you take the snapshot, you can revert a virtual machine to the most recent snapshot or remove the snapshot. Remove the snapshots as soon as possible, especially on high-transaction virtual machines (e.g. email or database servers).

Note: Snapshots do not capture NIC configurations.

2. Virtual Server Services

(https://it.ubc.ca/services/web-servers-storage/virtual-server-service/virtual-server-services-faq#q5)

Backup snapshots to disk are performed daily and weekly.
Daily backups are stored for 28 days while weekly snapshots are kept for 12 weeks. Longer archival backup is available if you need it.
To request a recovery from backup snapshots, submit your request using the IT - System Operations team Request Form.
All replicated data is stored locally in British Columbia.

3. Storage Grids: USG (NFS volumes)

(https://it.ubc.ca/services/web-servers-storage/storage-grid/faq)

A storage grid provides network-attached storage (NAS) which is readily scalable and users can quickly accommodate increases and decreases in their storage needs.
Network Attached Storage (NAS) uses RAID connected to a network, which is also protected using snapshot technologies.
Tier I and II are fully managed USG service offerings.

Tier I disk is the highest performing USG disk, comprised of Fiber and SAS drives. The primary target for this service offering is high transaction database servers. The cost of this disk is $0.80 per GB/year, which includes an additional copy of the data in a secondary location, for backup purposes.

Tier II disk is a great performing disk, and is comprised of large SATA disks. This type of disk is best suited for file services, application services, and email systems. The cost of tier II disk is $0.35 per GB/year, which also includes an additional copy of the data in a secondary location, for backup purposes.

The UBC Storage Grid is a fully-managed service, so service users only need to purchase space and use it. The actual storage and security of data is handled exclusively by Information Technology.

(applicable to tiers 1 and 2)

The UBC Storage Grid supports FC, iSCSI, NFS and CIFS protocols.

The UBC Storage Grid uses several proprietary software applications:

FlexVol software ensures high data scalability, by managing on-the-fly increases and decreases of storage volume. *Snapshot*™ software increases data backup speed by making time-stamped copies of data. *SnapRestore*™ software allows large quantities of data to quickly be restored to earlier versions. *SnapVault*™ software provides the link between the primary and secondary storage sites.

In the future, we anticipate being able to mirror critical data between UBC's Vancouver and Okanagan campuses, whereby each campus would be able to act as the other's disaster recovery site.