

Digital Data Storage Options at Monash

Decision points							Storage options							
Are you working with ¹ very large datasets?	Are you using ² active data?	Are you using the Monash Windows ³ SOE?	Are you using ⁴ sensitive data?	Are you sharing your data?	Are your research partners external to Monash?	Do you require remote access?	S: Drive	Local Drives (Desktop, My Documents, etc.)	Monash's Google Apps (Google Drive, Gmail, Sites, YouTube)	LaRDS (and other managed solutions or other archival options)	Customised solution (case-by-case basis)	Transportable Devices (CDs, DVDs, USBs, Ext HDs)	AARNet's CloudStor service (data transmission only)	
¹ Yes	ⓘ Seek advice at this point →									✓ eSolutions Service Desk for referral				
No	No	ⓘ Seek advice at this point →								✓ Library for referral				
No	Yes	No	ⓘ Seek advice at this point → ³ For non-Windows SOE users (including Mac users) available storage options include those ticked. For non-standard or complex data storage arrangements, seek advice from the eSolutions Service Desk.						✓	✓ eSolutions Service Desk for referral			✓	✓
No	Yes	Yes	Yes	Yes	Yes	Yes				✓ eSolutions Service Desk for referral				
No	Yes	Yes	Yes	Yes	No	Yes	✓ Multiple owners recommended					✓ Encrypt device		
No	Yes	Yes	Yes	Yes	No	No	✓ Multiple owners recommended					✓ Encrypt device		
No	Yes	Yes	Yes	No	No	No	✓ Multiple owners recommended							
No	Yes	Yes	No	Yes	Answer can be Yes or No	Answer can be Yes or No	✓ Multiple owners recommended		✓			✓	✓	
No	Yes	Yes	No	No	No	Yes	✓		✓			✓	✓	
No	Yes	Yes	No	No	No	No	✓	✓	✓					

1. Dataset size (guide only): 'small', up to 30GB; 'medium', between 30GB and 100GB; 'large', greater than 100GB up to 500GB; and, 'very large', greater than 500GB.

2. For the purposes of this document, active or working data are defined as data that require ongoing access for modification, analysis, compilation, etc. Archival storage solutions are more appropriate for 'end state' data.

3. Monash recommends use of the Monash Windows SOE and can only provide limited support for data stored on non-SOE and non-Monash controlled environments. Mac users - the Mac OSX SOE is not yet certified.

4. For "sensitive" data classifications, refer to the following legislative definitions: [Information Privacy Act 2000 \(Vic\), Schedule 1](#); [Privacy Act 1988 - SECT 6 Interpretation](#); and, the Monash interpretation in the [Electronic Information Security: Responsibilities, Classifications and Standards Procedures](#).



Digital Data Storage Options at Monash

Storage Options	Benefits	Limitations
<p>S: Drive</p> <ul style="list-style-type: none"> For Monash staff and students: requires authcate access Networked share drive: replacement for faculty drives, e.g. V: & U: Recommended to have at least two owners per shared folder 	<ul style="list-style-type: none"> Is appropriate for research datasets Is suitable for 'sensitive' (critical) data⁴ where the data are used within Monash Suitable for small to large datasets¹ Backups occur 11am and 5pm (twice daily snapshots); previous versions are self-recoverable from last backup snapshot and are available for 30 days from when the file was last modified or deleted External accounts are available for sharing non-sensitive data 	<ul style="list-style-type: none"> No direct allocations to undergraduates, but S: drive account owners (Monash staff) may grant access to students and other staff members without eSolutions Service Desk (SDO) mediation No direct allocations to non-Monash users, but a request for an external account can be made through eSolutions Service Desk (for non-sensitive⁴ data only)
<p>Local Drives</p> <ul style="list-style-type: none"> For Monash staff and students on the Monash Windows SOE Desktop, My Documents, My Pictures, not music or videos 	<ul style="list-style-type: none"> Windows 7 SOE: security is centrally managed – encryption uses BitLocker and TPM chipset Backups: data saved to the Desktop, My Documents, My Pictures are synchronised with the network server in real time when online, immediate on next logon Suitable for small to large datasets¹ 	<ul style="list-style-type: none"> Not recommended for 'sensitive' (critical) data⁴ Short-term storage for working data; not a permanent storage solution Local hard drives can fail from time to time
<p>Monash's Google Apps</p> <ul style="list-style-type: none"> For everyone with a Google account, or invited by University staff Monash's Gmail, Google Drive, Google Sites and YouTube 	<ul style="list-style-type: none"> Cloud-based: provides access to files locally and remotely for sharing and collaboration Backups: three copies of virtual files are kept on the GFS (Google File System) across multiple Google data centres Google Docs, Sheets and Slides are kept forever (all older versions are self-recoverable) Versions can be managed automatically No cap on the number of versions kept (limited only by storage quota) Google provides robust storage 	<ul style="list-style-type: none"> Not suitable for 'sensitive' (critical) data⁴ Data requiring long-term retention should be stored on other University storage services, such as shared drives Suitable for small to medium datasets – allocation is capped at 30GB¹ and shared across the Apps i.e. cannot purchase additional space Backups: process is proprietary, therefore undisclosed Once a file is deleted and removed from the recycle/trash bin, it is gone forever
<p>LaRDS</p> <p>Mediated storage solution – contact your eSolutions Service Desk or the Monash eResearch Centre merc@monash.edu</p> <ul style="list-style-type: none"> For Monash staff and post graduate students Access to other services through eResearch include: <ul style="list-style-type: none"> High Performance Computing (HPC) and Visualisation - Monash Sun Grid (MSG), MASSIVE, NeCTAR Research Cloud, CAVE 2 Collaboration tools – JIRA, Confluence, Sakai Research Data Management – MyTardis, Research Data Storage Infrastructure (RDSI) 	<ul style="list-style-type: none"> Backups: 2-4 copies are kept across two data centres; 30 day history For archiving modest to very large research datasets¹ For supporting research data applications, instrumentation backup and visualisation For the generation and analysis of research data 	<ul style="list-style-type: none"> 24-48 hour snapshot of changes Mainly for archival data – may experience restoration delays
<p>Customised Solution</p> <p>For datasets that have complex information security requirements, particularly where data is shared outside Monash or has non-standard remote access requirements. Allocations are provided case-by-case.</p>	<ul style="list-style-type: none"> Suitable for 'sensitive' (critical) data⁴ Suitable for small to large datasets¹ 	<ul style="list-style-type: none"> Mediated storage solution for very specific data storage requirements. Service design (where applicable) is determined on a case-by-case basis; contact your eSolutions Service Desk for an appropriate referral
<p>Transportable devices</p> <p>CDs, DVDs, USBs, Ext HDs</p>	<ul style="list-style-type: none"> Readily available and cheap to buy 	<ul style="list-style-type: none"> Responsibility lies with the owner/purchaser, e.g. security and backups Longevity is questionable; devices are prone to failure, theft and obsolescence, therefore not suitable for long-term storage Not recommended for master copies of datasets Encryption is required for 'sensitive' data⁴ - BitLocker to Go (Win7) can be used on USBs and external hard drives Not suitable for large to very large datasets¹
<p>AARNet's CloudStor service</p> <p>Authcate access or invite by authcate user</p>	<ul style="list-style-type: none"> Up to 100 email recipients to share a file Maximum file size is 100GB 	<ul style="list-style-type: none"> Not a storage solution – transmission of data only Not suitable for 'sensitive' (critical) data⁴ as encryption only occurs during transmission Files and vouchers expire at a maximum of 20 days Maximum 1 file per upload Not suitable for master copies of data

Note: The records management system TRIM has not been included in the Storage Matrix. TRIM is for Monash administrative staff only and is suitable for University corporate records. For more details see the TRIM website: <http://www.adm.monash.edu.au/records-archives/trim/>

1. Dataset size (guide only): 'small', up to 30GB; 'medium', between 30GB and 100GB; 'large', greater than 100GB up to 500GB; and, 'very large', greater than 500GB.

2. For the purposes of this document, active or working data are defined as data that require ongoing access for modification, analysis, compilation, etc. Archival storage solutions are more appropriate for 'end state' data.

3. Monash recommends use of the Monash Windows SOE and can only provide limited support for data stored on non-SOE and non-Monash controlled environments. Mac users - the Mac OSX SOE is not yet certified.

4. For "sensitive" data classifications, refer to the following legislative definitions: [Information Privacy Act 2000 \(Vic\), Schedule 1](#); [Privacy Act 1988 - SECT 6 Interpretation](#); and, the Monash interpretation in the [Electronic Information Security: Responsibilities, Classifications and Standards Procedures](#)