Data storage options at UCL

1. It is the responsibility of the data owner to ensure data is stored appropriately.

2. Special consideration must be given to Personally Identifiable Data, Special Category or other data designated as 'Sensitive' to comply with the Data Protection Act 2018 (DPA) and GDPR. Dropbox and Google Docs are not appropriate for storing these types of data.

3. This guidance does not include the storage of Enterprise System data (e.g. HR, Finance systems) or the use of collaborative tools.

4. An index of the world's domain specific research data repositories can be found at https://www.re3data.org/

5. For video or audio streaming, use Media Central

Service Name	UCL SharePoint and UCL Teams	UCL OneDrive for Business	Filestore@UCL N: drive	Filestore@UCL S: drive	Electronic Document & Records Mgt System (Documentum)	Research Data Storage Service (RDSS)	UCL Research Data Repository	Data Safe Haven	HPC 'Home' directory	Jill Dando Institute Research Laboratory	Commercial Cloud Storage, for e.g. Dropbox and Google Docs	Portable / personal storage devices
Purpose	Collaboration environment and storage – allocated for group-based work. No restriction on type of data file – image, spreadsheet, document etc. Access to sensitive data must be sufficiently restricted via Access Control *or* encrypted - consult UCL's webpage on Encryption. *Research data may be stored in a number of services, but the use of RDSS is strongly encouraged*	Collaboration environment and storage. Allocated to individuals. No restriction on type of data file – image, spreadsheet, document etc. Access to sensitive data must be sufficiently restricted via Access Control *or* encrypted - consult UCL's webpage on Encryption. *Research data may be stored in a number of services, but the use of RDSS is strongly encouraged*	This is a personal drive and does not allow sharing. Personal storage for work files. Automatically mapped to Desktop@UCL. *Research data may be stored in a number of services, but the use of RDSS is strongly encouraged*	Shared storage space, enabling staff to share files across UCL. Folders can be restricted to named individuals. Automatically mapped to Desktop@UCL. Access to sensitive data must be sufficiently restricted via Access Control *or* encrypted - consult UCL's webpage on Encryption. *Research data may be stored in a number of services, but the use of RDSS is strongly encouraged*	Document and Records Management in UCL. Currently stores HR and Student Records. Finance documents such as Invoices & Delivery Notes. Access to application and documents is restricted.	Shared storage space for research projects. Hosts research data during the active phase of a project. Suitable for very large data volumes and files. Access to data is restricted via Access Control. Sensitive data must be sufficiently encrypted - consult UCL's webpage on Encryption. Consider using the Data Safe Haven. *Research data may be stored in a number of services, but the use of RDSS is strongly encouraged*	Archive for preserving, accessing, and discovering significant research datasets. Data stored for 10+ years. Publishing research datasets for re-use.	Storing and handling personally identifiable, special category research information in a secure environment. Information which requires the security of the DSH will remain secure after active research has ended. For personally identifiable research data.	For active nonsensitive research data only. Home directories – backed up storage of software and data sets in use on the HPC services. Scratch space - large working area for temporary storage of datasets. Not backed up.	Hosting confidential crime data and other highly sensitive datasets for the purposes of research and analysis. Storage requests may require a rationale as to why it needs to be on the servers. A data sharing agreement may be required whereby aggregated data can leave the facility for further analysis.	Short term sharing of non-sensitive data or documents with people outside UCL. Before using Cloud services, consult UCL's webpage on Security of Cloud Services	Off-site staff or for data transfer outside of UCL where no other good solution is present. Discouraged due to risk of loss of data. Before using portable media, consult UCL's webpage on Storage of Sensitive Data on Portable devices and Media

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Access mechanisms	Web interface, Microsoft Office, Mobile Access Teams Client	Web interface, Microsoft Office, Mobile Access Teams Client	Automatically mounted to Desktop@UCL and Desktop@ UCL Anywhere as N: Other desktops can either map share directly or apply group policy if centrally controlled. Instructions as follows: www.ucl.ac.uk/ isd/services/file-storage-sharing/ home-n-drive Accessible from anywhere on UCL network (inc VPN) Accessible via Citrix workspace on mobile devices	Automatically mounted to Desktop@U and Desktop@UCL Anywhere as S: Other desktops can either map share directly or apply group policy if centrally controlled. Instructions as follows: www.ucl.ac.uk/ isd/services/file-storage-sharing/ groupfolders-shared-s-drive Accessible from anywhere on UCL network (inc VPN) Accessible via Citrix workspace on mobile devices	Web, APIs	Accessed from within the UCL network or via VPN if outside UCL. May be mounted as a network drive (CIFS) or accessed via SSH or SFTP. A mount to Myriad is being tested (for High Throughput Computing).	Via web interface or API. An uploader app is provided for depositing large files.	Accessed via Citrix remote desktop. Can be accessed from anywhere with an internet connection	Directly mounted on login/ transfer/comput e nodes. Access to login/ transfer nodes via SSH	Only accessible on premises	Easy to set up and accessible from everywhere	Physical connection
Sharing ability	Sharing data across UCL and beyond. Access controlled using UCL identity.	Sharing data across UCL and beyond. Access controlled using UCL identity.	This is a personal drive and does not allow sharing. Access controlled using UCL identity.	Sharing data across UCL. Access controlled using UCL identity. Granular access permissions applied.	Sharing data across UCL. Access controlled using UCL identity.	Sharing data across UCL. Access controlled using UCL identity.	Sharing data across UCL and beyond. Primarily for data publishing - DOIs assigned as standard. Depositing requires UCL identity.	Across UCL and beyond. Access and permissions are based on research projects. DSH has its own AD. Authentication uses this and 2 factor authentication.	Sharing data across UCL. Access controlled using UCL identity	Metropolitan Police approved physical separation of storage and compute. No sharing of data unless incorporated into original DSA. Security vetting and training is required before physical access is granted. System access controlled using access card and PIN, separate from standard UCL identity (controlled by JDIRL)	Sharing is easy but discouraged for research, work or personally sensitive data. Data publishing is unknown. Access control can be configured but risk of accidentally publishing too widely.	Sharing is easy but discouraged for research, work or personally sensitive data. Limited access control options. Risk of forgetting passwords. If you have to save data on portable media in the short term, ensure data is encrypted.

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Anti-Virus	Yes	Yes	Anti-virus scanning in progress.	Anti-virus scanning in progress.	N/A	No	Yes	Yes	N/A	Yes	Can be configured.	No
Charging and Eligibility	Free Available to all UCL	Free Available to all UCL	100GB quota free.	200GB quota free. Additional storage available PoA.	Funded by ISD.	Free up to 5TB; £50 per TB per year beyond the free allocation	Free	Free	Additional storage available PoA.	Variable – contact JDI for fees.	Limited free storage capacity. Subscription service offers more.	Variable
Technical												
Storage capacity	Up to 25TB per site. UCL allocation is 16PB	Initial allocation of 100GB per person. Can be increased to 5TB on request	Standard storage allocation = 100GB per person.	Standard storage allocation = 200GB each. Increases beyond 200GB are available at cost.	No limit New storage purchased as needed	Standard storage allocation = 5TB Allocations beyond 5TB are available at cost.	Unlimited (within reason). Initial personal and group quotas may be expanded on request	Currently 120TB. Can be expanded as demand dictates.	Varies with HPC/HTC service, and adjustable through CRAG exemption process.	Individual user machines have 40GB as standard, though this can be expanded if necessary. Group storage also available.	Storage allocation dependent on service allocation and method of upload. A separate application should be used to upload individual files > 5GB (available from UCL software service)	Storage capacity dependent on format and capacity of storage media.
Maximum file size Note Internet browsers have difficulty uploading files > 5GB)	15GB	15GB	No limit to file size on the storage. File formats and applications may impose their own limits.	No limit to file size on the storage. File formats and applications may impose their own limits.	Maximum file size depending on underlying filesystem	Only limited by the size of the file system.	Uploading files larger than 5GB via the website may be difficult due to browser limits. A separate application is provided for uploading larger files (available from UCL Software Centre or online)	No limit to file size on the storage. File formats and applications may impose their own limits.	Depends on user quota.	See website details	N/A	N/A

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Access outside UCL firewall	Accessible from anywhere with internet – sync client for local copy	Accessible from anywhere with internet – sync client for local copy	Desktop@UCL anywhere requires UCL VPN. Users will have a local copy of their N drive cached to the laptop, which will allow work on personal files with no internet connection. Best practice is to connect via VPN if away from the office for long periods and synchronize the N drive to the filestore to protect against hardware faults with the laptop.	Desktop@UCL anywhere requires UCL VPN.	Requires Internet connection & UCL VPN	Requires Internet connection & UCL VPN	Accessible from anywhere with internet	Requires Internet connection	Requires either a VPN or connection from other UCL machine e.g. Socrates	No	Depends on Network availability and trustworthiness	Good option for back up of data while in the field
Backup and Recovery	14 days of snapshots, individual file recoverability (90 day). 50,000 individual file versions	Individual File versioning (50k). Individual file recovery by user (90 days),	Fully Backed up. Hourly snapshots for a working day. 90-day retention. Able to self-restore files.	Fully Backed up. Hourly snapshots for a working day. 90-day retention. Able to self-restore files.	Full backed up both Filesystem and DB. DBA's and HIS to provide further info	Two mirrored copies for service resilience and a nightly back-up to tape.	Published data is stored in two EU AWS regions by the service provider plus a UCL copy.	Fully backed up with nightly deltas backed up to TSM.	Home: Backed up nightly via TSM Scratch: Not backed up.	Backup to disk onsite and then backed-up to tape in bombproof, fire proof safe.	Dependent on T's & C's of service.	No.
Archiving ability (long-term storage of data that is findable and retrievable)	No Archive Service available.	No Archive Service available.	No further archiving is offered yet.	No further archiving is offered yet.	No further archiving is offered yet. Currently permanently stored unless retention removes it	Not for archiving.	Intended as an archive service.	No Archive Service available. Any data which is required to remain secure for a long time has to stay in the environment.	No Archive Service available.	No Archive Service available.	No Archive Service available.	No Archive Service available.

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Metadata	Yes, user configurable	No	Raise request to discuss requirements further	Raise request to discuss requirements further	Yes	Yes, for describing projects as a whole.	All items require a metadata records and are assigned a DOI on request or publication. The available metadata fields are a combination of custom fields and a subset of the Datacite metadata schema.	Can be arranged – ref website	No	No	Unknown	No
Sync to client	Not yet supported	Not supported yet	N drive is cached to local devices under Desktop@UCL. When saving to the N drive and connected to the network the files will be saved to the filestore.	No	No	No automatic synchronization, but could be scripted. Group shares may become too large for synchronisation to local devices	No, although synchronization with GitHub is supported.	No	No automatic synchronisation but could be scripted on client side e.g. with rsync.	No	Possible but not recommended	No
Data Security												
Suitable for UCL Work data?	Yes	Yes	Yes	Yes	Yes, for official UCL records	Research data only	Research data only	Yes	Yes	Yes	Only in certain circumstances – see ISG website, GDPR website	Only in certain circumstances – see ISG website, GDPR website
Encryption in Transit	Yes	Yes	Not currently	Not currently	Yes	Depends on transfer method	Yes	Yes	SSH Encryption	N/A	Depends on setup	N/A
Encryption at rest	Automatic, Bit locker on server. Files protected with ACLs.	Automatic, Bit locker on server. Files protected with ACLs.	Not by default. The data is protected through access control.	Not by default. The data is protected through access control.	No. The data is protected through access control.	Not by default. The data is protected through access control.	No. The data is protected through access control before publication.	No. The data is protected through access control.	No. The data is protected through access control.	No. The data is protected through access control.	N/A	All portable storage devices must be encrypted.
Platform/ Service accreditations	The Platform has multiple industry accreditations. www.microsoft.com/en-us/trustcenter/cloudservices/office365	The Platform has multiple industry accreditations. www.microsoft.com/en-us/trustcenter/cloudservices/office365	None	None	None	None	None	ISO 27001 certified, NHS DSP compliant	N/a	Accredited by Metropolitan Police Service, London as a Police Assured Secure Facility – Confidential. Able to hold data up to Official-Sensitive as standard or Secret at dataprovider discretion.	None	None

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Retention Period	Indefinite	Data is held for the lifecycle of the account holder only	Data is held for the lifecycle of the account holder only	Data is held for the lifecycle of the account holder only	Dependent on document type	1+ years beyond end of research project. Data is not deleted without written confirmation	10+ years beyond deposit, potentially permanent	10+ years beyond deposit, potentially permanent	As long as account + service exists.	Dependent on DSA for each dataset	N/A	N/A
Demands of research funder	Not designed to meet needs of a specific funder	Not designed to meet needs of a specific funder	Not designed to meet needs of a specific funder	Not designed to meet needs of a specific funder	Not designed to meet needs of a specific funder	Designed to meet requirements for good data management Does not satisfy NHS data sharing requirements (Info Governance Toolkit)	Designed to meet requirements to preserve and publish data. Does not satisfy NHS data sharing requirements (Info Governance Toolkit)	Designed to meet the information security demands of funders. Meets NHS Data Security & Protection Toolkit. Certified to ISO27001	Not designed to meet needs of a specific funder	Physical and digital security approved by Metropolitan Police.	Unknown	No