# Cloud Storage and Sharing Services

Objective
To provide participants with the skills to use Google Drive and Microsoft OneDrive features to create, upload and share documents and other files.

What is "the cloud"?
The cloud is simply a metaphor for "the Internet". Files stored in the cloud are accessed over the Internet rather than on local storage, e.g. a disk drive. Many years ago, the use of a cloud as a symbol to represent the Internet in flowcharts became commonplace, and this usage has been extended to embrace today's sophisticated "cloud-based" services.
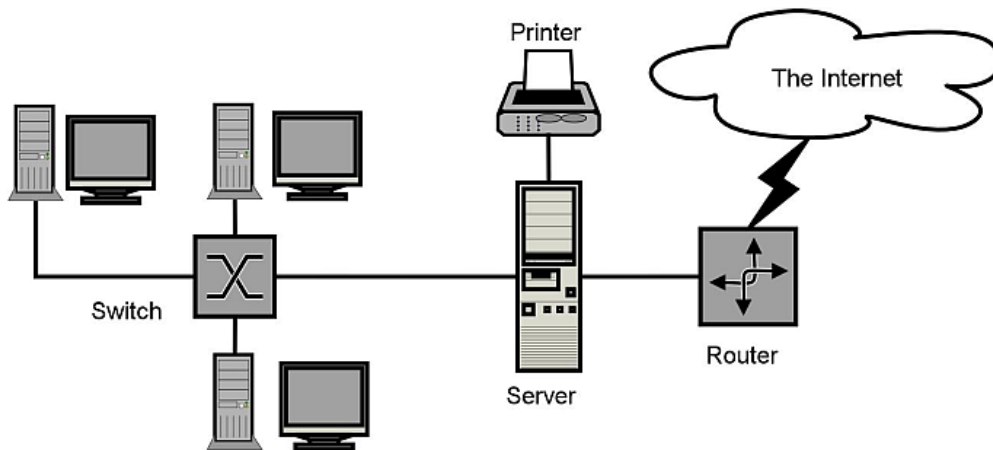
Where are my cloud files?
Generally stored in large data centres operated by the major cloud service providers, e.g. Apple, Amazon, Google, Microsoft.

Data centres are large highly-secure buildings housing hundreds or thousands of servers linked by high-speed networks. They provide on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. These services provide much higher availability, security and redundancy than can be obtained using local equipment.

A typical
Data Centre

Video: Inside a Google Data Centre:
https://www.youtube.com/watch?v=XZmGGAbHqa0

Cloud Services Examples
The business model of most cloud services is oriented towards paying business users. However, there are free tiers available with sufficient capacity for modest home usage.

Amazon Web Services (AWS) – highly sophisticated, but oriented towards business.
Dropbox – one of the original providers. Nowadays business-oriented. Free service has 2GB storage limit.
Box – business use only, i.e. costly.
iCloud (Apple) - Free tier 5GB limit. 50GB for $1.50/month.
pCloud – Intended for photos. 10GB free. 500GB $US4 per month.
Google Drive – 15GB free (includes gmail usage). 100GB $2.50 per month.
Microsoft OneDrive – 5GB free. 100GB $2 per month.
Associated as options with local Backup Software, e.g. Acronis Backup

Only Google Drive and Microsoft OneDrive offer full browser-driven real-time document creation and editing applications. These are powerful facilities, and can render the need to purchase an office application such as MS Office obsolete for most home users. We will focus on these two services in the rest of this presentation.

Why use Cloud Storage?
Files stored on local disk drives are vulnerable to loss owing to mechanical or electronic breakdown, and they should always be backed up to another device. They are also difficult to share with others. Cloud services tend to be highly reliable, not subject to loss from equipment failure, easily shared with others, and easy to synchronise between devices. With Google Drive and OneDrive there is the added benefit of being able to create files directly in the cloud.

Enabling Technology - Browser Developments
The key to providing online document creation lies in the development of inbuilt Javascript libraries incorporated in websites and accessed with modern browsers, e.g. Chrome, Firefox, Edge, Safari. Originally the web browser was only a means of displaying formatted text and images. Modern browsers can incorporate sophisticated software capabilities and this is what enables online document creation.

Google Drive
Google Drive ("GD") is a cloud-based file storage, file editing and synchronization service developed by Google. Google Drive allows users to store files on their servers, synchronize files across devices, and share files. Google Drive is essentially an office suite that permits collaborative editing of documents, spreadsheets, presentations, drawings, forms, and more. There is also an optional app that can be installed on a local PC to enable synchronisation of a local folder with the cloud.

GD is a more secure and safer method of storing files than on a local computer since local disk drives and USB sticks are all prone to failure eventually. The sharing capability is a particularly powerful means of enabling multiple users to have access to the same information.

How do I access Google Drive?
You need a Google Account. If you have a gmail account you use the same login credentials. Otherwise, you need to create a Google Account using your email address as identifier:
https://account.google.com/

Open a browser and go to www.google.com. Log in with your Google account using the Sign In button at the top right.

Click on the Google Apps icon (9 dots) at the top right of the screen. This will open a window as below. Click on the Drive icon to open Google Drive.
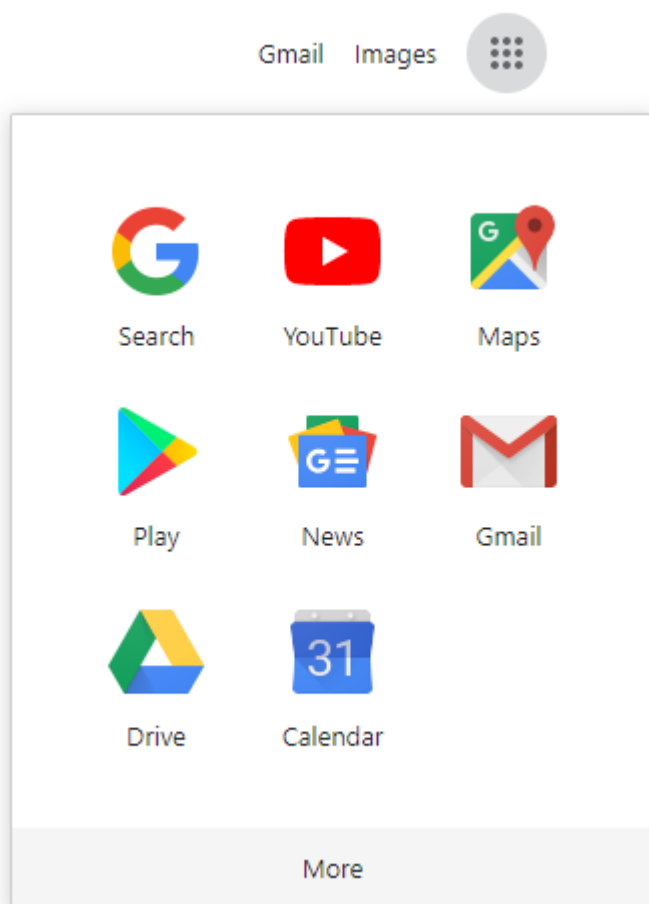
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Another way is to enter drive.google.com into the browser.

Concepts

When you open GD it will show that you are in "My Drive" and will display a grid or list of folders and files that you have stored or have had access shared by others. Some of these entities will be private to you, others will be shared with other people. Basically, GD can be considered as similar to a physical disk drive.

Private (unshared) folders are designated with the following symbol:

Shared drives are designated by the following symbol:

(Colour of the folder symbol can be changed for grouping purposes)

Sharing is Hereditary

This is a key concept. If a folder is shared, any file or folder created within that folder is initially assigned the same sharing rights and permissions as the parent folder.

Moving Files or Folders

A file or folder can be moved to a new location within the structure hierarchy. Right-click on the file or folder and select *Move to*. A window will open enabling you to select the new location.

You can also move files or folders using "drag and drop", either from your local PC or from another location within the current GD view.

Important: When a file or folder is moved, it's share settings will be that of the new location.

If you move a file or folder to the top level (My Drive), it will be private to you.

Copying files or folders
To make a copy of a file, right-click and select *Make a copy*. The copy will be named "Copy of …"

Files or folders can be renamed by right-click and *Rename*, or by editing the name at the top of the file when in edit mode.

Uploading files or folders
Upload files from your local PC by selecting "+ New" then the Upload File option. Word files will be converted to GD format, Excel files will be converted to GD spreadsheet format.

Any type of file can be uploaded and will be stored in its native format if not one of the standard office suite. Uploads will be stored in the currently selected folder (or in "MyDrive" if at the top level). If photos are uploaded, they will be displayed as thumbnails but can be shown if full size if double-clicked.

Downloading files
Download a file from GD to your local PC by right-clicking on the file and selecting *Download*. Google Docs files will be converted to Word files on download, and spreadsheets will be saved as Excel files.

If you are editing the document, use *File > Download as* and you will be presented with options for conversion to other file types, e.g. PDF.

Removing files
To remove a file from GD, right-click and select *Remove*. The file will not be deleted, but will be transferred to the Trash folder (see left-hand menu to access Trash). Files in the Trash file can be permanently removed by right-click and selecting Delete forever. Files in Trash can be moved back to their original location be selecting *Restore*.

Ownership
All files or folders must have an owner, typically the user who created them. The owner can transfer ownership to any user the user the file or folder is shared with, using an option under *Share > Advanced.*

The owner can set certain restrictions, e.g.

Owner settings   Learn more

☐ Prevent editors from changing access and adding new people

☐ Disable options to download, print, and copy for commenters and viewers

Sharing Options
New shared users can be added at any level using right-click > *Share.*

The default share permission is *Edit* for all users, unless a lower permission is set in the parent folder. Permissions can be changed at folder level to *Can view only*. At file level, permissions can be set to *Can Edit*, *Can View* or *Can Comment*.

Version History
Google Drive keeps track of significant updates to each file. To see previous versions, edit the file and choose *File > Version* History from the top menu.

To restore a file from history, select *Restore this version* button at top of page. You will need to confirm this action. The restored file will then become the latest version, but the previous latest version will be saved in version history, so can be restored back if needed. Tick the *Show Changes* box at bottom right to see changes made in that version.

Use the Back arrow at the top of the page to return to the edit screen for the current version.

Presentations
Online presentations can be easily prepared using "+ New" > *Google Slides.* If downloaded, the file will be saved in PowerPoint format.

Microsoft OneDrive
OneDrive offers very similar features to Google Drive. Files are stored in MS Office format. Note that OneDrive offers only 5GB storage in the free tier.

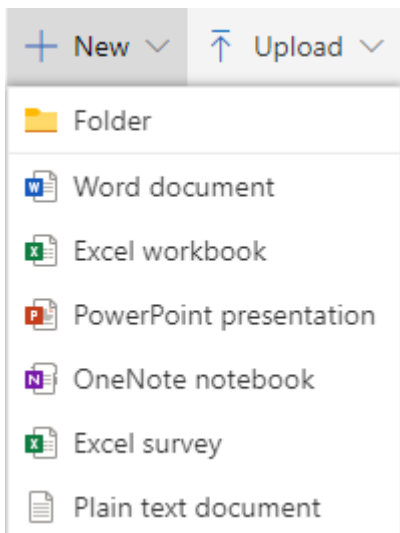Can be synchronised with Office 365 or MS Office desktop apps.

Access using a Microsoft account. If you don't have one, go here:
account.microsoft.com

OneDrive access:
onedrive.live.com

Creating documents

To create a document, click on the New button and a drop-down menu will allow you to select the document type.

The edit screen will then open in the relevant format.

Uploading files and folders
Click on the Upload button and then select the files or folders to be uploaded. You can upload files of any type, i.e. they don't need to be MS Office files. However, only Office files can be edited online.

File Sharing
As with Google Drive, sharing of folders is hereditary, i.e. share settings applied to a folder will be inherited by files and folders placed in that folder.

Folders that are shared will be displayed differently. The folder on the left below is unshared, while the folder on the right has been shared:
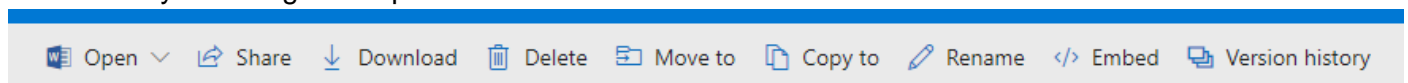

The number shown is the number of items in that folder.

To see who the folder has been shared with, click on the Share option in the top menu then click the 3 dots to open Manage Access:
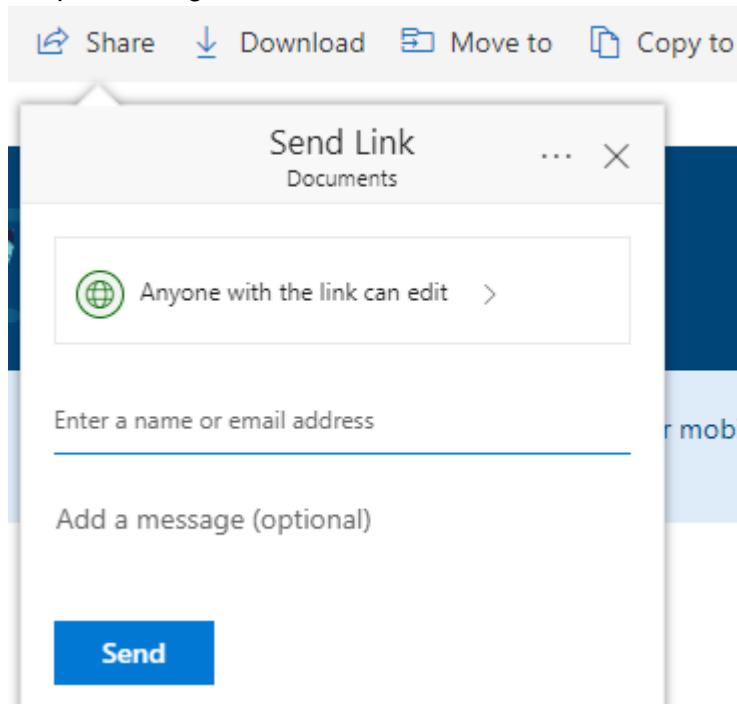
Other Options
Other operations such as Downloading, Deleting, Moving and Copying Files, and Renaming items are Accessed by selecting the required action:

You can also right-click on any item to access these options.

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