



A cloud abroad in Paris

A comparison of Google Drive, Microsoft OneDrive for Business, and SharePoint Online

Cloud storage is a necessity for organizations with offices, clients, and networks around the world. Long lag times when you're accessing and transferring information not only slows down the production process, but the resulting delays can turn off current and prospective clients. The right productivity tools can make it quicker and easier for multinational companies and their clientele to access project files quickly from wherever they may be.

G Suite and Microsoft® Office 365® both offer cloud storage with file syncing. But how do those shared cloud resources work when a team in one country sets up the account and a team in another uses it?

We set up G Suite and Microsoft Office 365 accounts in the United States to find out. Then, our team in Paris determined how well Google Drive™, Microsoft® OneDrive® for Business, and Microsoft SharePoint® Online actually worked when teams used the company's shared cloud resources in France.

Google Drive completed every task in less time than it took either Microsoft option, with some very impressive wins when it came to uploading and downloading large files. Finding the quickest way to transfer files means less time wasted and more time for productive pursuits. Read on to learn more.



**UPLOAD &
DOWNLOAD
FILES**

to Google Drive in up to

96%

LESS TIME



More time for business, less time waiting

We used laptops and smartphones running multiple operating systems (OS), browsers, and apps to determine how long it would take users to upload and download a variety of common file types using both productivity suites. For G Suite, we used Google Drive, and for Microsoft Office 365, we used OneDrive for Business and SharePoint Online. All three tools let you and your co-workers access files from multiple devices, but how quickly and reliably do they do it for the employees working in your offices around the world?



Before we started testing in France, we set up accounts in G Suite and Microsoft Office 365 at our hands-on testing facility in Durham, North Carolina. We used those accounts for testing in the United States. Then, our team in Paris used those same accounts for testing in France.

Read PT's five-part series "[Not all clouds are created equal](#)" to see how G Suite and Microsoft Office 365 handled collaboration and productivity tasks in the U.S.

The following scenarios describe the results of our testing in Paris, with a hypothetical headquarters in the United States. These scenarios give us a glimpse into how G Suite and Office 365 perform for employees that travel or who work outside of their U.S. headquarters.



More time for last minute changes

Kathryn is the lead applications developer for her U.S.-based company's Paris headquarters. The day before a new product is due to launch, Kathryn learns her mother was in an accident and she needs to fly to America immediately. Once Kathryn's at Charles de Gaulle airport, she uses the airport Wi-Fi to download a disk image to her laptop before the plane takes off.

Our tests show that using Google Drive means Kathryn can download a disk image to her Windows® 10 laptop in up to 94 percent less time than it would take with OneDrive for Business or SharePoint Online. That almost 3-hour difference allows Kathryn to make any necessary changes during the flight and upload the revised image as soon as she lands.

Uploading the revised image with Google Drive is more than twice as fast as the Microsoft options, so Kathryn can focus on her mom half an hour sooner.

Download a 4GB ISO
in up to

94%

less time

with Google Drive

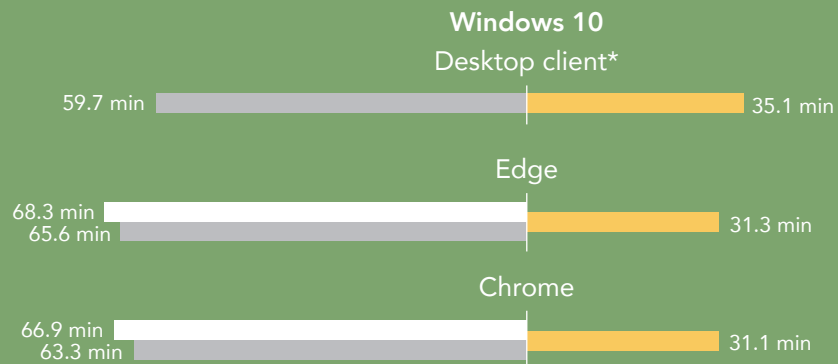


Upload a 4GB ISO
in up to

54%

less time

with Google Docs



SharePoint Online
 OneDrive for Business
 Google Drive

*Note: A SharePoint desktop sync client was not available at the time of testing.

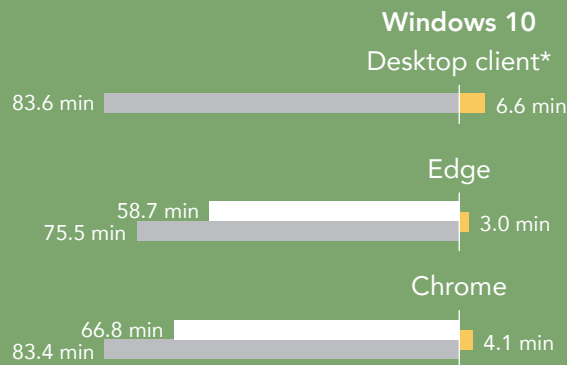
More time to find the next big hit

Thad is a European talent coordinator who does freelance work for an international music festival based in the U.S. His team has offices in France, and they're always looking for new bands to showcase each year. They film live shows and upload the videos to a shared Google Drive folder. This is a convenient way for people on the road to check out potential talent.

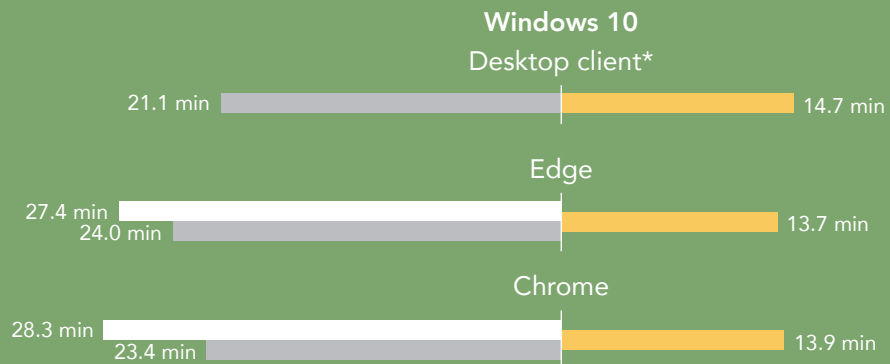
As the data below shows, when Thad uses Google Drive on his laptop in Paris, he can start watching videos from his team in France almost an hour and a half sooner than he could if he used OneDrive for Business or SharePoint Online.

Uploading his favorite bands to another folder using Google Drive is also faster than with either Microsoft option. He saves up to 14 minutes on every upload.

Download a 2GB MP4 in up to **96%** less time with Google Docs



Upload a 2GB MP4 in up to **50%** less time with Google Docs



□ SharePoint Online ■ OneDrive for Business ■ Google Drive

*Note: A SharePoint desktop sync client was not available at the time of testing.

More time for catalog updates

Alejandro is an IT admin working at one of his U.S.-based company's datacenters in France. He needs to make sure there are no corrupted files on his team's installation media.

The results below show that downloading the ISO file on his MacBook Air® with Google Drive would save him over an hour and a half compared to OneDrive for Business.

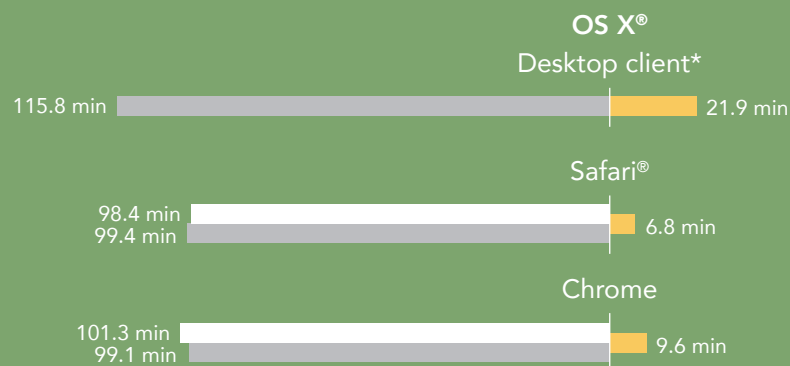
Google Drive is a boon for the rest of his team as well. When Alejandro uploads the new installer with Google Drive, his team can access the file up to 48 minutes sooner than they could if he were using either Microsoft OneDrive for Business or SharePoint Online.

Download a 4GB ISO
in up to

93%

less time

with Google Docs

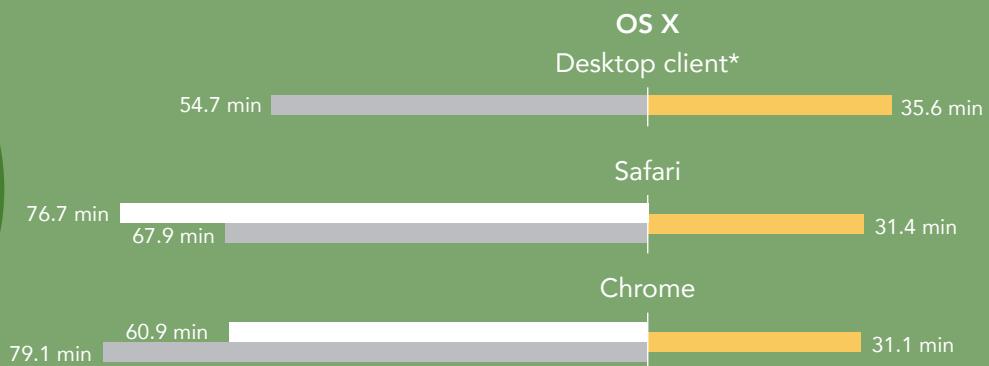


Upload a 4GB ISO
in up to

60%

less time

with Google Docs



□ SharePoint Online ■ OneDrive for Business ■ Google Drive

*Note: A SharePoint desktop sync client was not available at the time of testing.

More time for selling

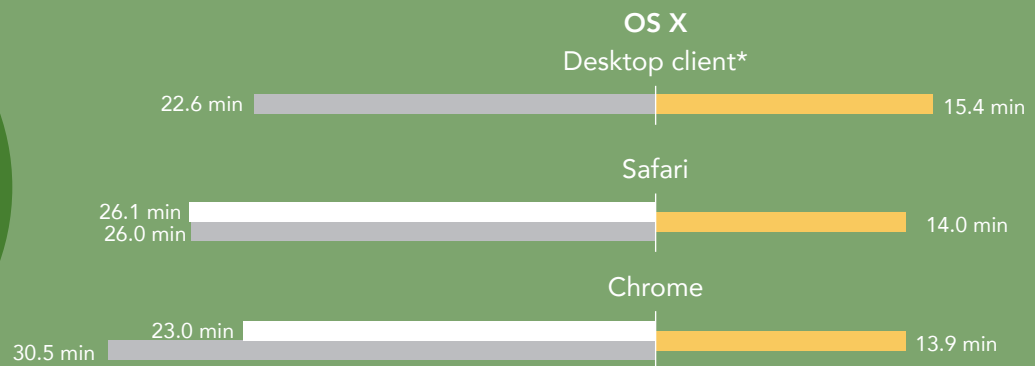
Camille is a marketing manager at a global medical device and manufacturing company. She lives in Paris and creates video tutorials showing how the various products work. She shows these videos to prospective clients at trade shows around Europe.

As the data shows, downloading videos onto her MacBook Air using Google Drive take an hour less than either Microsoft option. Also, if Camille gets any video footage at the trade shows, uploading those videos takes half the time of Microsoft OneDrive for Business or SharePoint Online. Google Drive gives Camille the selling tools she needs quicker, which means she has more time to focus on selling her products at the shows.

Download a 2GB MP4 in up to **94%** less time with Google Docs



Upload a 2GB MP4 in up to **54%** less time with Google Docs



SharePoint Online
 OneDrive for Business
 Google Drive

*Note: A SharePoint desktop sync client was not available at the time of testing.

And what if you're on your smartphone?

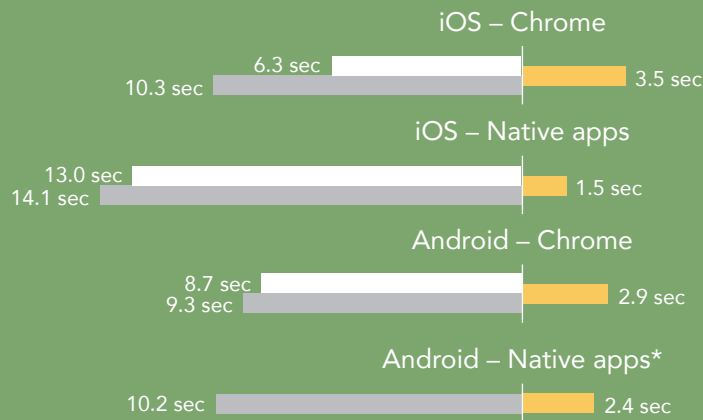
Timely access to important information can be the deciding factor in the outcome of a business venture. Consider the following scenario.

More time for on-the-go updates

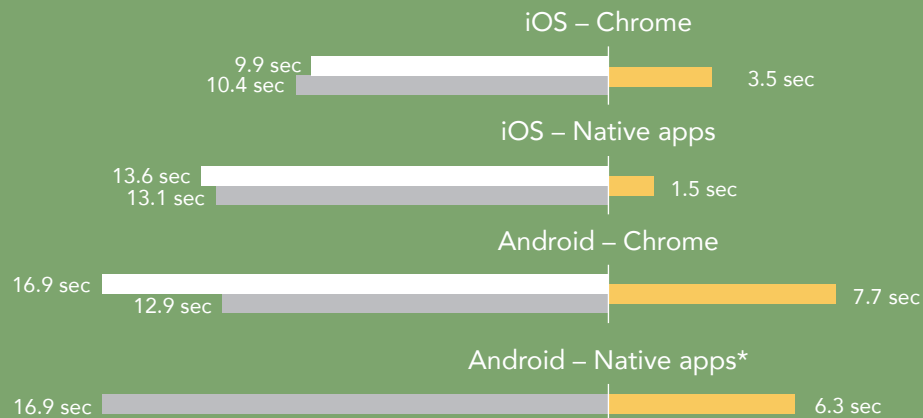
Dev is a clothing sales rep who has just arrived in Paris for Fashion Week. He's trying to meet with as many big names as possible, but he can't remember the name of one of his contacts (he blames jet lag). It's in one of several documents his team in Paris keeps on their company's Google Drive, so he can use his phone to look for it. He also can't remember which file it's in, or what to search for, so he opens one file after another, scanning each for the contact name.

As the data below shows, opening a document or PowerPoint® file on iOS or Android™ smartphones using Google Drive takes between 40 percent and 89 percent less time than with the Microsoft tools. That saved time means Dev is better off using Google Drive. He can also breathe a sigh of relief before he rushes off to the next runway show.

Open a 1.3MB
DOCX in up to
89%
less time
with Google Docs



Open a 4.4MB
PPTX in up to
89%
less time
with Google Docs



SharePoint Online
 OneDrive for Business
 Google Drive

*Note: A native Android app for SharePoint was not available at the time of testing.

A tale of two clouds

Read PT's five-part series "Not all clouds are created equal" to see how G Suite and Microsoft Office 365 handled collaboration and productivity tasks in the U.S. (Spoiler: Google Drive was quicker there too.) Large file uploads and downloads took up to 71 percent less time with Google Drive compared to Microsoft OneDrive for Business, and SharePoint Online.¹ When we moved to Paris, the download win improved from 50 to 91 percent.

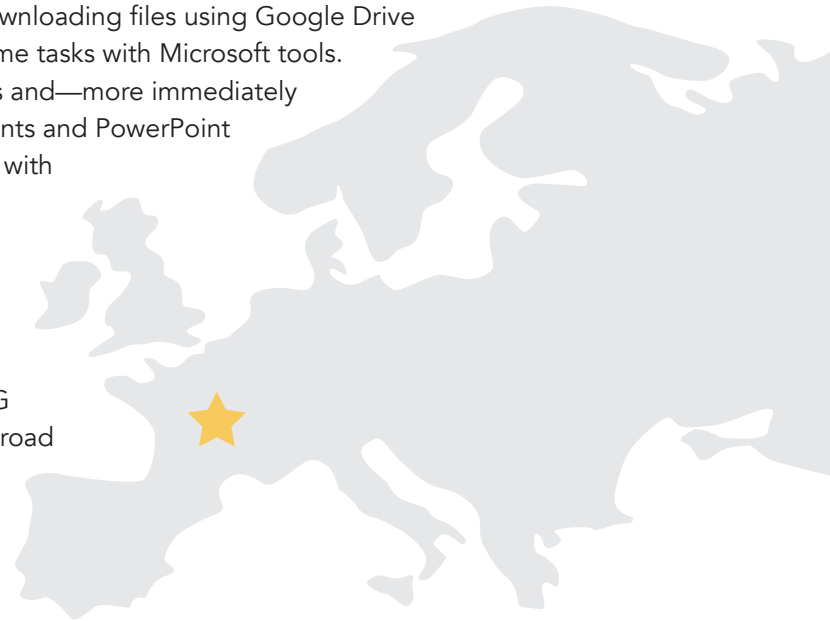
Conclusion: Google Drive makes more time for what's important

File sync and sharing solutions are a great way to facilitate the sharing of documents, but when a potential customer is waiting for an important piece of information, lags of even a few seconds can be problematic. When delays are minutes or hours long, entire projects can grind to a halt as workers wait for information to load.

In our hands-on testing with laptops, uploading and downloading files using Google Drive took up to 96 percent less time than performing the same tasks with Microsoft tools. These kinds of delays can translate to lost opportunities and—more immediately tangible—annoyance and frustration. Opening documents and PowerPoint decks on smartphones was also more than twice as fast with Google Drive.

Want to try out the tests yourself? Follow the methodologies at the end of this report.

This is the second report in our five-part series that explores the performance of Microsoft Office 365 and G Suite when set up in the United States and accessed abroad from Paris. These scenarios show how the two suites perform for employees that travel or who work outside of their U.S. headquarters. Read the full series for a more complete picture of each cloud's performance for multinational companies.



Additional reports in our "A cloud abroad in Paris" series:

[A comparison of Google Docs™ and Microsoft Word Online](#)

[A comparison of Google Hangouts™ and Skype™ for Business](#)

[A comparison of Gmail™ and Outlook®](#)

[A comparison of Google Sites™ and Microsoft SharePoint Online](#)

1 [Not all clouds are created equal: a comparison of Google Drive, Microsoft OneDrive for Business, and SharePoint Online](#)

On August 26, 2016, we finalized the hardware and software configurations we tested. Updates for current and recently released hardware and software appear often, so unavoidably these configurations may not represent the latest versions available when this report appears. For older systems, we chose configurations representative of typical purchases of those systems. We concluded hands-on testing on September 14, 2016.

On September 29, 2016, Google rebranded Google Apps for Work as “G Suite.” We completed our testing prior to that rebranding.

Appendix A – What we tested

The table below shows the system information for the mobile devices we tested.

System	Apple® iPhone® 6s Plus	Google Nexus™ 6P
Processor		
Vendor	Apple	Qualcomm®
Model number	A9 + M9 coprocessor	Snapdragon™ 810
Core frequency (GHz)	1.85	1.95 + 1.55
Number of cores	2	8 (4 + 4)
Memory		
Amount (GB)	2 (built-in onboard)	3 (built-in onboard)
Type	LPDDR4	LPDDR4
Graphics		
Vendor	Imagination Technologies®	Qualcomm
Model number	PowerVR® GT7600	Adreno™ 430
Storage		
Amount (GB)	64	64
Type	NAND Flash	NAND Flash
Connectivity		
Wireless internet	802.11ac (802.11a/b/g/n compatible)	802.11ac (802.11a/b/g/n compatible)
Cellular	LTE Advanced	LTE Advanced
Bluetooth	4.2	4.2
Battery		
Type	Lithium-polymer	Lithium-polymer
Size	Integrated	Integrated
Rated capacity (Wh)	10.45	13.11
Display		
Size	5.5”	5.7”
Type	LED-backlit widescreen Multi-Touch	AMOLED widescreen Multi-Touch
Resolution	1,080 x 1,920	1,440 x 2,560

System	Apple® iPhone® 6s Plus	Google Nexus™ 6P
Camera		
Front-facing (MP)	5 (720p FaceTime® HD)	8
Rear-facing (MP)	12 (iSight®)	12.3
Operating system		
Vendor	Apple	Google
Name	iOS	Android
Build number or version	9.3.2	6.0.1
Dimensions		
Height	6.23"	6.27"
Width	3.07"	3.06"
Depth	0.29"	0.28"
Weight (oz.)	6.77	6.27

The table below shows the system information for the laptops we tested.

System	Apple 13" MacBook Air (Early 2015)	Lenovo™ ThinkPad® X1 Carbon
Processor		
Vendor	Intel®	Intel
Model number	Core™ i5-5250U	Core i7-6600U
Core frequency (GHz)	1.6 (up to 2.7GHz Turbo Boost)	2.6 (up to 3.4GHz Turbo Boost)
Number of cores	2	2
Cache	3MB L3	4MB L3
Memory		
Amount (GB)	8 (built-in onboard)	8 (built-in onboard)
Type	LPDDR3	LPDDR3
Speed (MHz)	1,600	1,866
Integrated graphics		
Vendor	Intel	Intel
Model number	HD Graphics 6000	HD Graphics 520
Storage		
Amount (GB)	256	256
Type	PCIe-based flash	PCIe NVMe™ SSD

System	Apple 13" MacBook Air (Early 2015)	Lenovo™ ThinkPad® X1 Carbon
Connectivity/expansion		
Wireless internet	802.11ac (802.11a/b/g/n compatible)	802.11ac (802.11a/b/g/n compatible)
Bluetooth	4.0	4.1
USB	2 x 3.0	3 x 3.0
Thunderbolt	2 x 2	N/A
Video	N/A	1 x HDMI®, 1x Mini DisplayPort
Battery		
Type	Lithium-polymer	Lithium-polymer
Size	Integrated	4-cell
Rated capacity (Wh)	54	52
Display		
Size	13.3"	14"
Type	LED-backlit glossy widescreen display	LED IPS
Resolution	1,440 x 900	1,920 x 1,080
Touchscreen	No	No
Operating system		
Vendor	Apple	Microsoft
Name	OS X El Capitan	Windows 10 Pro
Build number or version	10.11.4	1511, OS Build 10586.318
Camera		
Front-facing	720p FaceTime HD	720p
Dimensions		
Height	0.11" to 0.6"	0.6"
Width	12.8"	13.1"
Depth	8.94"	9.00"
Weight (lb.)	2.96	2.58

Appendix B – How we tested

About our testing

To determine precisely when a file upload or download began and ended when using the native desktop sync client, we used the following indicators:

- The Google Drive icon on both Windows and OS X animates while any kind of file processing is in progress. When you click the icon in the system tray (Windows) or menu bar (OS X), a balloon appears to show which files are uploading/downloading. We started timing as soon as the status text said “Syncing” and a progress bar first appeared. We stopped timing when the status changed to say “Sync complete.”
- The OneDrive for Business icon on both Windows and OS X changes when it is actively syncing files. Similar to Google Drive, when you click on the icon in the system tray (Windows) or menu bar (OS X), a balloon appears to show upload/download status. On OS X, we started timing as soon as the status indicated “Downloading” and stopped timing when the status text said “OneDrive is up to date.” On Windows, we started timing when the status bar’s animated progress bar first appeared and stopped timing when it said “OneDrive for Business is up to date.”

Network infrastructure

For our testing, we used two of each device under test. We connected the two devices in each pair to separate wireless networks. We connected the devices to the 5GHz band of identical, 802.11ac-based TP-Link AC1750 wireless routers. We configured each router identically, but set them to use different channels, to ensure minimum traffic from nearby networks. To minimize the impact of bandwidth performance, we tested Google Drive, Microsoft OneDrive for Business, and SharePoint Online at approximately the same time for each task.

Devices

- Lenovo ThinkPad X1 Carbon (Windows 10)
- Apple 13” MacBook Air (OS X El Capitan)
- Google Nexus 6P (Android 6.0.1)
- Apple iPhone 6s Plus (iOS 9.3.5)

OS and browser versions

- Windows 10
 - Chrome 52.0.2743.116
 - Edge 38.14393.0.0
- OS X El Capitan
 - Chrome 52.0.2743.116
 - Safari 9.1.2
- Android 6.0.1
 - Chrome 52.0.2743.116
- iOS 9.3.2
 - Chrome 52.0.2743.116
 - Safari for iOS 9.3.5

File corpus (sizes are approximate)

- CentOS ISO: 4.33 GB
- Video (MP4): 1.93 GB
- Folder with 160 images (up to 2.2 MB each): 67.6 MB total
- Folder with 12 PDFs (~25 MB each): 309.7 MB total
- SampleDOCX.DOCX: 1.3 MB
- SamplePPTX.PPTX: 4.4 MB
- SampleXLSX.XLSX: 1 MB

Hardware/software matrix

- Laptop
 - Windows 10
 - Google Drive
 - Google Chrome
 - Microsoft Edge
 - Desktop sync client
 - OneDrive for Business
 - Google Chrome
 - Microsoft Edge
 - Desktop sync client
 - SharePoint Online
 - Google Chrome
 - Microsoft Edge
 - OS X
 - Google Drive
 - Google Chrome
 - Safari
 - Desktop sync client
 - OneDrive for Business
 - Google Chrome
 - Safari
 - Desktop sync client
 - SharePoint Online
 - Google Chrome
 - Safari
- Mobile
 - Android
 - Google Drive
 - Google Chrome
 - Android app
 - OneDrive for Business
 - Google Chrome
 - Android app
 - SharePoint Online
 - Google Chrome
 - iOS
 - Google Drive
 - Safari
 - iOS app
 - OneDrive for Business
 - Safari
 - iOS app
 - SharePoint Online
 - Safari
 - iOS app

Test practices

- We ran each test between two laptops or phones of the same model and using the same browser (when applicable) with different users on isolated networks. On Windows 10, we ran the tests in both Google Chrome and Microsoft Edge. On OS X, we ran the tests in both Google Chrome and Safari.
- On mobile devices, we closed relevant apps and removed them from memory before each test run to ensure consistent behavior.
- For final production testing, we tested each data point until we had three consecutive test runs with satisfactorily low variability between runs to ensure consistency.
- For mobile tests that involved opening or editing a file, our methodology assumed that the source file had already been converted to its respective native format by being opened in Google Docs/Sheets/Slides. We made this assumption to ensure that the measurement time included only the time required to open a file for editing, rather than the time required to convert and open.
- All tests assumed that all necessary users were logged into the respective services prior to testing.
- We ran all tests on a 100Mbps down and 20Mbps up connection.

Running the laptop tests

Uploading a file—desktop sync client

1. Navigate to the Documents folder, and prepare the stopwatch.
2. Right-click the test file, and click Copy.
3. Navigate to the desktop sync folder for the cloud storage solution under test on the local machine.
4. Drag the file or folder to upload over the desktop sync folder and simultaneously start the stopwatch and drop it in the desktop sync folder.
5. When the file has completely uploaded, stop the stopwatch.
6. Record the result.
7. Delete the file from the cloud storage solution under test, and wait for the files to completely sync.

Downloading a file—desktop sync client

1. Quit the desktop sync client for the cloud storage solution under test.
2. Open a browser, and navigate to the browser-based interface of the cloud storage solution under test.
3. Prepare the stopwatch.
4. Click the test file, drag it over the browser-based interface's cloud storage folder, and drop the file.
5. When the file has completely uploaded via the browser-based interface, launch the desktop sync client for the cloud storage solution under test. Click the tray icon to see the progress, wait for the balloon to indicate that the client is downloading, and start the stopwatch when it does.
6. Stop the stopwatch when the file has finished synchronizing to the laptop under test and the application's icon in the system tray or menu bar returns to its default state.
7. Record the result.

Uploading a file—browser-based interface

1. Navigate to the browser-based interface for the cloud storage solution under test.
2. Prepare the stopwatch, and in a local file browser window, select the file(s) to be uploaded.
 - When uploading a folder in Google Drive in the browser, click New, and select Folder upload.
 - When uploading a folder in OneDrive for Business in the browser, click Upload, and select Folder.
 - When uploading a folder in SharePoint Online in the browser, click Upload, and click Browse...
3. Simultaneously start the stopwatch and initiate the folder upload as follows:
 - When uploading a folder in Google Drive or OneDrive in the browser, select the folder in the file browser, and simultaneously start the stopwatch and click Select Folder.
 - When uploading a folder in SharePoint Online in the browser, select the folder, click Open, and simultaneously start the stopwatch and click OK.
4. Watch the progress bar, and when the upload has completed for all files, stop the stopwatch.
5. Record the result.

Downloading a file—browser-based interface

1. Navigate to the browser-based interface for the cloud storage solution under test.
2. Prepare the stopwatch, and select the files to be downloaded.
3. Simultaneously start the stopwatch, and click Download.
4. When the download completes, stop the stopwatch.
5. Record the result.

Running the mobile tests

Opening a file in the mobile app

1. Open the mobile app for the cloud storage solution under test.
2. Prepare the stopwatch, and navigate to the folder containing the file under test.
3. Simultaneously start the stopwatch, and tap on the file under test in order to open it in the native mobile productivity app.
4. When the file fully loads, stop the stopwatch.
5. Record the result.
6. Delete the file to remove it from the cache, close the cloud storage solution app and productivity app, and remove them from memory. Then, re-upload the file via the desktop sync client. This ensures that the file is not cached for subsequent runs.

Opening a file in the mobile site

1. Open the mobile browser, and navigate to the mobile site for the cloud storage solution under test.
2. Prepare the stopwatch, and navigate to the folder containing the file under test.
3. Simultaneously start the stopwatch, and tap the appropriate button in order to open it in the native mobile productivity app.
 - In Google Drive, tap the document first to see a preview, then click the edit icon. Then, simultaneously start the stopwatch and tap the Use the app button.
 - In OneDrive and SharePoint Online, tap the document first to see a preview, then tap the small arrow icon to bring up an icon for the associated productivity app. When you tap the icon, a prompt appears; simultaneously start the stopwatch and press Open.
4. When the file's contents are first visible, stop the stopwatch.
5. Record the result.
6. Delete the file to remove it from the cache, close the browser app and productivity app, and remove them from memory. Then, re-upload the file via the desktop sync client. This ensures that the file is not cached for subsequent runs.

This project was commissioned by Google.



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