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A cloud abroad in Paris

A comparison of Google Hangouts and Skype for Business

Video conferencing is a convenient way for your employees to conduct face-to-face meetings without the cost of travel or the necessity of being in the same place at the same time. It gives team members the freedom to meet and discuss topics in a way that's more interactive than phone or email conversations. For multinational companies like yours, having this kind of tool is the next best thing to being there.

G Suite and Microsoft® Office 365® both include video conferencing tools—Hangouts™ and Skype™ for Business respectively. This report provides users with real-world data about keeping in touch when the cloud tenant is established in the U.S. and offices across the pond use these shared resources.

We set up G Suite and Microsoft Office 365 accounts in the United States and our team in France conducted video chat sessions using Google Hangouts and Skype for Business to determine which provided the superior experience.

Google Hangouts connected people faster than Office 365 in all of our hands-on tests. Long wait times were especially noticeable with Skype for Business when it was time to share a screen. Read on to learn more.

JOIN & LEAVE VIDEO CALLS
in up to

68%

**LESS TIME**
with Google Hangouts

More time for collaboration, less waiting

We used laptops and smartphones to compare the video conferencing experience of Parisian teams using both productivity suites on multiple operating systems (OS), browsers, and apps. First, we timed how long it took Google Hangouts and the Skype for Business Web App to join and leave video chats on laptops. Then, we timed how long the smartphone app version of each tool took to join and leave video chats. We also measured how quickly Google Hangouts shared a screen compared to the Skype for Business Web App.

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 Principled Technologies' 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 hypothetical scenarios give us a glimpse into how G Suite and Office 365 perform for multinational companies with employees that travel or who work outside of their U.S. headquarters.
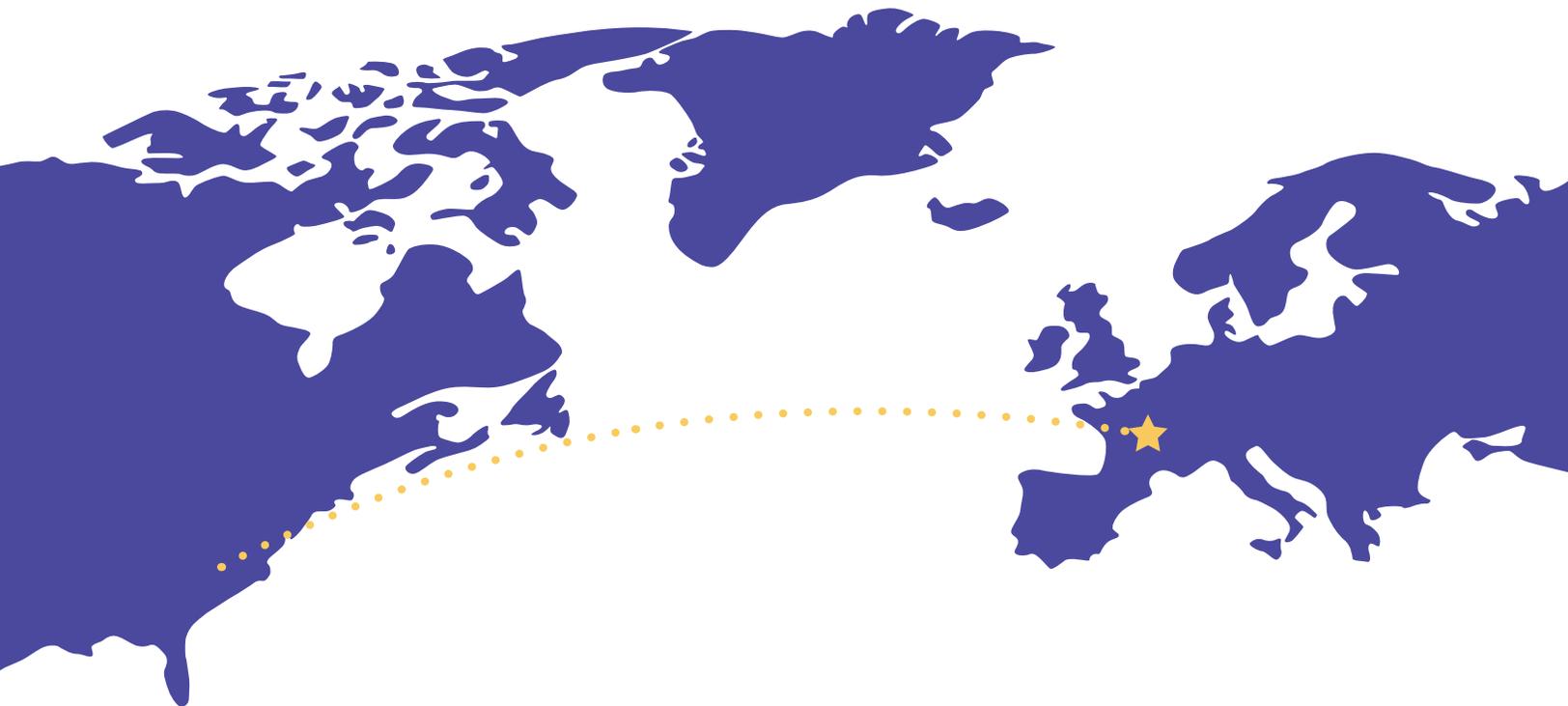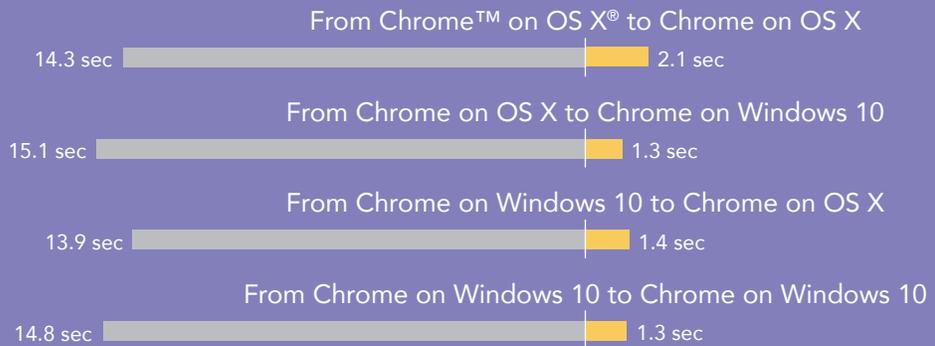
More time to oversee product development from home

Aurélie is a project manager for a multinational industrial design firm operating in Paris. She and other team leaders at the Paris office conduct technical peer reviews on new products during various stages of development. She sometimes participates in these meetings from home.

Our results show that joining the meeting remotely on her Windows® 10 laptop using Google Hangouts takes Aurélie under 6 seconds. If she and her team were using the Skype for Business Web App, that process could take almost twice as long.
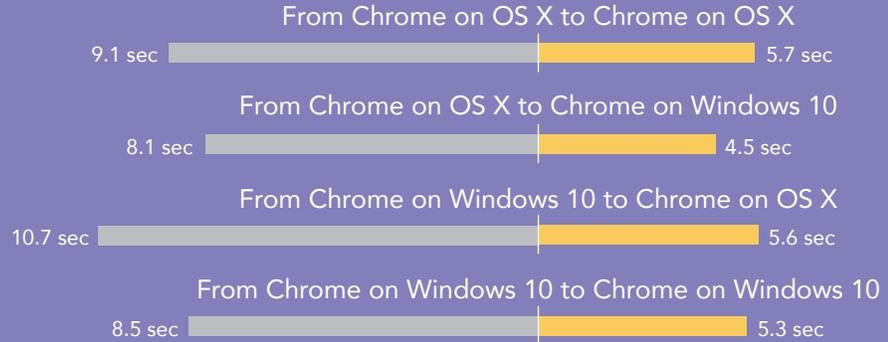
When she clicks to share a blueprint of her latest project within Google Hangouts, everyone sees it in just over a second. If she and her team were using the Skype for Business Web App, they'd wait almost 14 seconds to see her screen. Waiting that long for something to show up can be frustrating for everyone involved.

In our tests, ending the call with Google Hangouts would also take less than half the time it would with Skype. And hanging up more promptly means there's less risk of accidentally hearing something embarrassing when everyone thinks the connection has already closed.
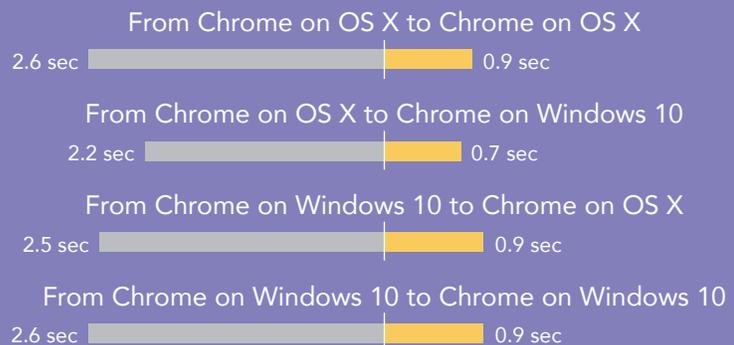
Start screen-sharing in up to
91%
less time
with Google Hangouts

From Chrome™ on OS X® to Chrome on OS X
14.3 sec   2.1 sec

From Chrome on OS X to Chrome on Windows 10
15.1 sec   1.3 sec

From Chrome on Windows 10 to Chrome on OS X
13.9 sec   1.4 sec

From Chrome on Windows 10 to Chrome on Windows 10
14.8 sec   1.3 sec

Join a video meeting in up to
47%
less time
with Google Hangouts

From Chrome on OS X to Chrome on OS X
9.1 sec   5.7 sec

From Chrome on OS X to Chrome on Windows 10
8.1 sec   4.5 sec

From Chrome on Windows 10 to Chrome on OS X
10.7 sec   5.6 sec

From Chrome on Windows 10 to Chrome on Windows 10
8.5 sec   5.3 sec

Hang up a video meeting in up to
68%
less time
with Google Hangouts

From Chrome on OS X to Chrome on OS X
2.6 sec   0.9 sec

From Chrome on OS X to Chrome on Windows 10
2.2 sec   0.7 sec

From Chrome on Windows 10 to Chrome on OS X
2.5 sec   0.9 sec

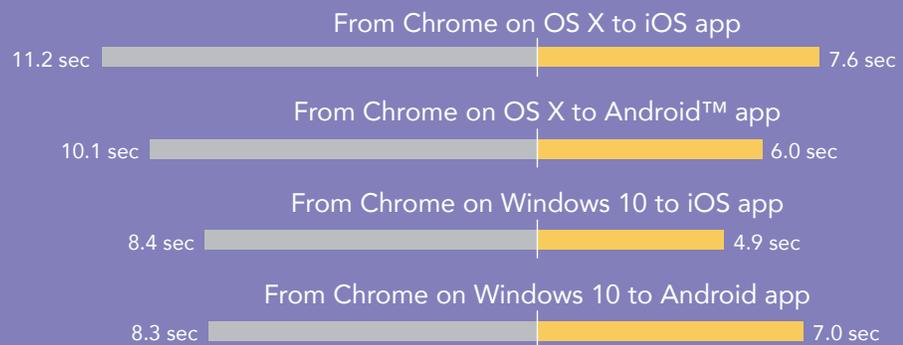From Chrome on Windows 10 to Chrome on Windows 10
2.6 sec   0.9 sec

Skype for Business   Hangouts
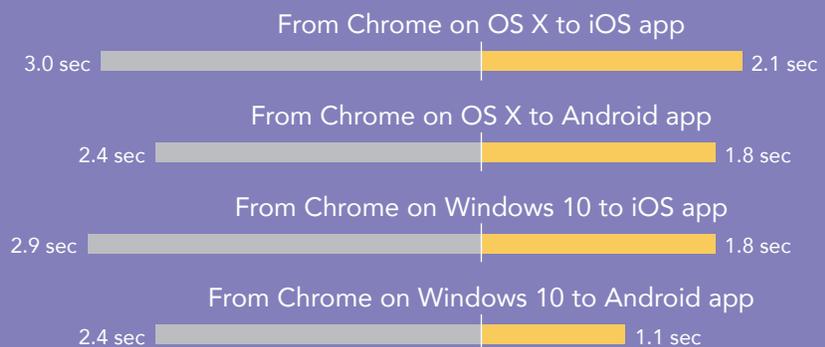
More time for expert consultations

François, a cardiologist in Paris, belongs to an international association of cardiologists that uses G Suite to review case files and exchange ideas. He's reviewing the test results from a new patient and needs to get a second opinion from Evelyne, a heart valve specialist at a different hospital across the Seine. It would be easier if Evelyne could actually see what he was talking about, so he uses Google Hangouts to get in touch.

As the data shows, using Google Hangouts means he can join a call with Evelyne, whi is using her iPhone, over 3 seconds sooner using his Windows 10 Laptop than if she used the Skype for Business mobile app. Hanging up at the end of the call once she's helped him solve his problem takes less time with Google Hangouts as well. In health care, every second counts.

Join a video call in up to 41% less time with Google Hangouts

From Chrome on OS X to iOS app
11.2 sec — 7.6 sec

From Chrome on OS X to Android™ app
10.1 sec — 6.0 sec

From Chrome on Windows 10 to iOS app
8.4 sec — 4.9 sec

From Chrome on Windows 10 to Android app
8.3 sec — 7.0 sec

Hang up a video call in up to 54% less time with Google Hangouts

From Chrome on OS X to iOS app
3.0 sec — 2.1 sec

From Chrome on OS X to Android app
2.4 sec — 1.8 sec

From Chrome on Windows 10 to iOS app
2.9 sec — 1.8 sec

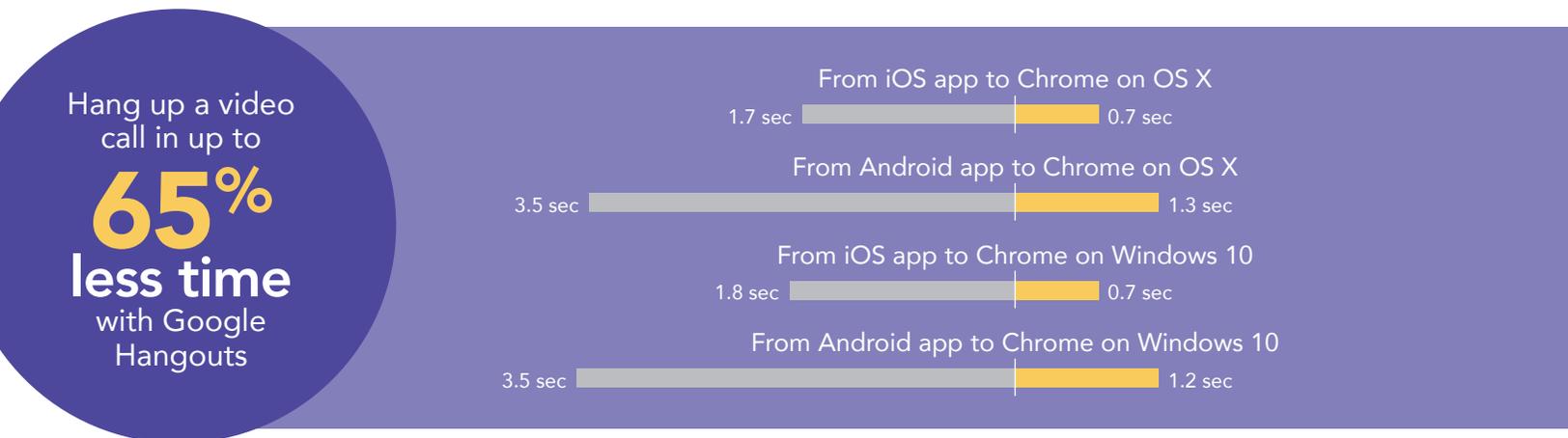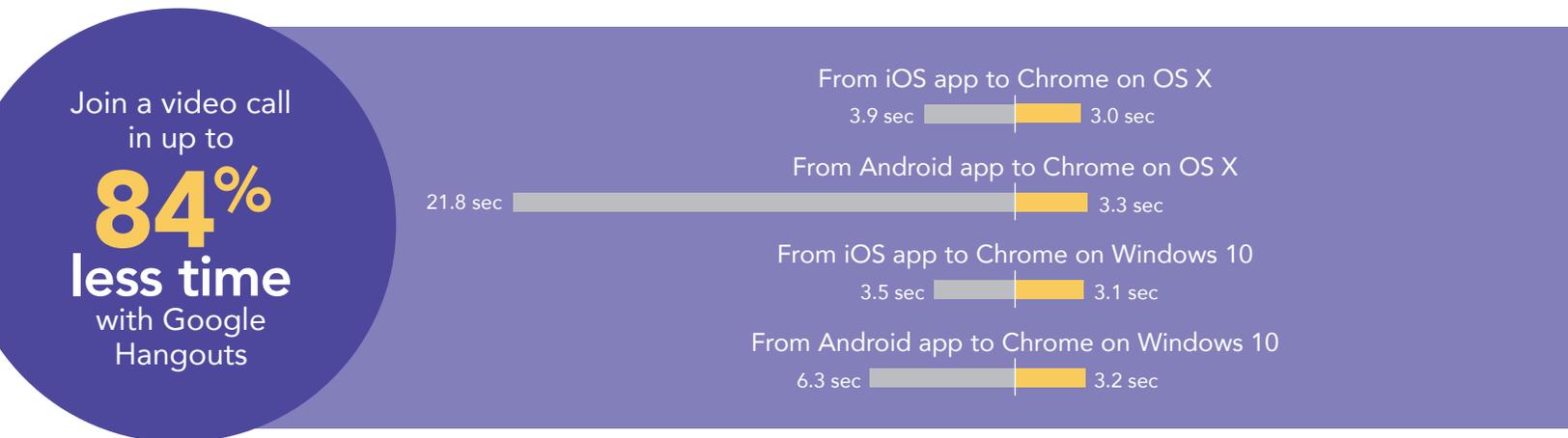From Chrome on Windows 10 to Android app
2.4 sec — 1.1 sec

■ Skype for Business   ■ Hangouts

More time to save the environment

Julian is a project engineer for a solar company that is expanding around the world. He's designing and overseeing his company's first large-scale municipal project in France. He's onsite in Paris during planning and installation, and, in his off hours, uses Google Hangouts on his Windows 10 laptop to assess problems technicians find while setting up the system. Staying connected means Julian can spot areas that need work before they cause problems.

In this scenario, a technician on an Android phone can join a call and start asking questions in nearly half the time it would take with Skype for Business. Technicians using Android phones waited a little longer than those with iPhones, but it still took less time than if any of them used the Skype for Business mobile apps.

Regardless of which smartphone techs used, hanging up with Google Hangouts was quicker—which lets everyone move to the next item on their list a bit sooner.

Join a video call in up to 84% less time with Google Hangouts

From iOS app to Chrome on OS X
3.9 sec | 3.0 sec

From Android app to Chrome on OS X
21.8 sec | 3.3 sec

From iOS app to Chrome on Windows 10
3.5 sec | 3.1 sec

From Android app to Chrome on Windows 10
6.3 sec | 3.2 sec

Hang up a video call in up to 65% less time with Google Hangouts

From iOS app to Chrome on OS X
1.7 sec | 0.7 sec

From Android app to Chrome on OS X
3.5 sec | 1.3 sec

From iOS app to Chrome on Windows 10
1.8 sec | 0.7 sec

From Android app to Chrome on Windows 10
3.5 sec | 1.2 sec

■ Skype for Business   ■ Hangouts

Conclusion: Google Hangouts delivers more face-to-face time, less wait time

Speedy connections via video conferencing, whether it's seeing the people you're talking to or sharing ideas on the screen, can give those involved a sense of being heard and part of the discussion. The longer your video conferencing solution takes to connect, the less helpful it is. Consistent delays can be so frustrating that people become reluctant to join virtual meetings at all.

Through extensive hands-on testing, our team in Paris found that Google Hangouts provided a faster and more responsive experience, regardless of the device they used.

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

This is the third 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 the "A cloud abroad in Paris" series:

A comparison of Google Docs™ and Microsoft Word Online

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

A comparison of Gmail™ and Outlook®

A comparison of Google Sites™ and Microsoft SharePoint Online

On August 22, 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 August 23, 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 2.7 Turbo Boost)	2.6 (up to 3.4 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

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 Hangouts and Skype for Business 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)

OS and browser versions

- OS X El Capitan
  - Chrome 51.0.2704.84
- Windows 10
  - Chrome 51.0.2704.84
- Android 6.0.1
- iOS 9.3.2

Running the laptop tests

Test practices

- We assumed that video conference users had logged into their respective accounts before each test run.
- For all Skype for Business Web App tests, we assumed that users had already downloaded and installed the plugin.
- For all Skype for Business Web App tests, we assumed that a user had already scheduled and sent invitations for a Skype Meeting.
- For all Google Hangouts tests, we assumed that a user had already scheduled and sent invitations for a Google Hangout event.
- The browser cache was warm. We did not clear the cache between runs. We made a video call prior to the first test run to ensure consistency.
- We ran all tests on a connection of 100Mbps down and 20Mbps up.

Recording the elapsed time between joining a video call on Laptop 2 and the video from Laptop 1 appearing on the screen of Laptop 2

1. Using the appropriate video meeting app on Laptop 1, join a video meeting and start the video.
2. On Laptop 2, prepare the stopwatch.
3. On Laptop 2, join the video meeting, and start the stopwatch:

   - In Google Hangouts, simultaneously start the stopwatch and click Click to join the video call.
   - In the Skype for Business Web App, simultaneously start the stopwatch and press Join the meeting.

4. Stop the stopwatch when the video from Laptop 1 appears in the call on Laptop 2.
5. Record the result.

Recording the elapsed time between hanging up a video call on Laptop 1 and the video from Laptop 1 disappearing on Laptop 2

1. Using the appropriate video meeting app on Laptop 1, join a video meeting, and start the video.
2. On Laptop 2, join the video meeting:
    • In Google Hangouts, click Click to join the video call.

    • In the Skype for Business Web App, press Join the meeting.
3. When the video from Laptop 1 appears in the call on Laptop 2, prepare the stopwatch.
4. On Laptop 1, simultaneously start the stopwatch and hang up.
5. Stop the stopwatch when the video from Laptop 1 disappears on Laptop 2.
6. Record the result.

Recording the time between starting a screen-sharing session on Laptop 1 and seeing it appear on the screen of Laptop 2

1. Using the appropriate video meeting app on Laptop 1, join a video meeting, and start the video. Do this on Laptop 2 as well.
2. Start the stopwatch, and initiate the screen sharing on Laptop 1:

    • In Google Hangouts, press Screenshare, select Entire screen, then simultaneously start the stopwatch and press Share.
    • In the Skype for Business Web App, press Share, select Share Screen, then simultaneously start the stopwatch and press Share.
3. Stop the stopwatch when the screen from Laptop 1 appears on Laptop 2.
4. Record the result.
5. After the run, end the call.

Recording the time to advance a presentation slide in a screen-sharing session on Laptop 1 and see the change appear on the screen of Laptop 2

1. Using the appropriate video meeting app on Laptop 1, join a video meeting, and start the video. Do this on Laptop 2 as well.
2. Initiate screen sharing on Laptop 1, and prepare the stopwatch:

    • In Google Hangouts, press Screenshare, select Entire screen, and press Share.
    • In the Skype for Business Web App, press Share, select Share Screen, then press Share.
3. On Laptop 1, open SamplePPTX.pptx in Microsoft PowerPoint.
4. Press F5 to start the presentation, and prepare the stopwatch.
5. On Laptop 1, simultaneously start the stopwatch and press the spacebar to advance the slide.
6. When the new slide appears on Laptop 2, stop the stopwatch.
7. Record the result.

Running the mobile-to-laptop tests

Test practices

• Before placing each call, we cleared the app from each phone's memory and then reopened it. Then, we made sure the relevant video conferencing apps were open and active.
• For all Skype for Business Web App tests, we assumed that a user had already scheduled and sent invitations for a Skype meeting.
• For all Google Hangouts tests, we assumed that a user had already scheduled and sent invitations for a Google Hangout event.
• We ran all tests on a connection of 100Mbps down and 20Mbps up.

Recording the elapsed time between joining a video meeting on Phone 1 and the video from Laptop 1 appearing on screen

1. Using the appropriate video meeting app on Laptop 1, join a video meeting, and start the video feed.
2. Prepare the stopwatch, open the appropriate video conferencing app on Phone 1, and prepare to join the meeting:

   • In Skype for Business, tap the Meetings icon, and tap the scheduled meeting.
   • In Google Hangouts, tap the Menu icon, and tap Invitations.
3. Simultaneously start the stopwatch and tap to join the meeting that Laptop 1 has already joined.
4. Stop the stopwatch when the video feed from Laptop 1 appears on the screen of Phone 1.

Recording the elapsed time between clicking to leave a video meeting on Phone 1 and Laptop 1 seeing that Phone 1 left the meeting

1. Using the appropriate video meeting app on Laptop 1, join a video meeting, and start the video feed.
2. Open the appropriate video conferencing app on Phone 1, and prepare to join the meeting:

   • In Skype for Business, tap the Meetings icon, and tap the scheduled meeting.
   • In Google Hangouts, tap the Menu icon, and tap Invitations.
3. Prepare the stopwatch, and tap to join the meeting that Laptop 1 has already joined.
4. Ensure that both Phone 1 and Laptop 1 are in the meeting with video enabled, and that the video feed from the other device is visible on each screen.
5. Simultaneously start the stopwatch and tap the icon to hang up on Phone 1.
6. Stop the stopwatch when you see a notification on Laptop 1 that Phone 1 has left the meeting, or when their participant icon has disappeared.
7. Record the result.

Running the laptop-to-mobile tests

Test practices

   • Before placing each call, we cleared the app from each phone's memory and then reopened it. Then, we made sure the relevant video conferencing apps were open and active.
   • For all Skype for Business Web App tests, we assumed that a user had already scheduled and sent invitations for a Skype Meeting.
   • For all Google Hangouts tests, we assumed that a user had already scheduled and sent invitations for a Google Hangout event.
   • We ran all tests on a 100Mbps down and 20Mbps up connection.

Recording the elapsed time between joining a video meeting on Laptop 1 and seeing the video from Phone 1 appear on the screen of Laptop 1

1. Using the appropriate video meeting app on Phone 1, join a video meeting, and start the video feed.
2. Prepare the stopwatch, open the appropriate video conferencing app on Laptop 1, and prepare to join the meeting:

   • In Google Hangouts, simultaneously start the stopwatch and click Click to join the video call.
   • In the Skype for Business Web App, simultaneously start the stopwatch and click Join the meeting.
3. When the video feed from Phone 1 appears on the screen of Laptop 1, stop the stopwatch.
4. Record the result.

Recording elapsed time between leaving a video meeting in Laptop 1 and seeing that Laptop 1 has left the meeting on Phone 1

1. Using the appropriate video meeting app on Phone 1, join a video meeting, and start the video feed.
2. Open the appropriate video conferencing app on Laptop 1, and prepare to join the meeting:

   - In Google Hangouts, click Click to join the video call.
   - In the Skype for Business Web App, press Join the meeting.

3. Prepare the stopwatch, and ensure that both Phone 1 and Laptop 1 are in the meeting with video enabled and that the video feed from the other device is visible on each screen.
4. On Laptop 1, simultaneously start the stopwatch and click the hang up button.
5. Stop the stopwatch when on Phone 1 you see a notification that Laptop 1 has left the meeting or when the participant icon of Laptop 1 has disappeared.
6. Record the result.

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