



Not all clouds are created equal

A comparison of Google Hangouts and Skype for Business

Face-to-face meetings facilitate a human connection not easily found in email or phone meetings. This connection allows teams to discuss strategy and share ideas in a way that's more natural than over the phone or by email. Unfortunately, it's not always possible to get everyone in the same room, so video conferencing is often the next best thing to being there.

Here at Principled Technologies, we tried video chatting with both Google Hangouts™ and Skype™ for Business to see which provided a better experience.

Video sessions with Google Hangouts, a part of G Suite, were quick to join, and screen sharing took significantly less time than in Skype for Business. Meetings with the Microsoft® Office 365® offerings, Skype for Business and the Skype for Business Web App, involved longer wait times.

Read on to see which solution provided a better experience when the team couldn't meet in one place.

JOIN & LEAVE VIDEO CALLS

in up to

71%

LESS TIME

with Google Hangouts



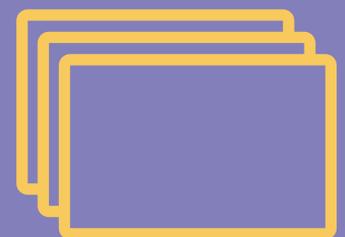
SHARED SCREENS

appear in as little as

1/5

THE TIME

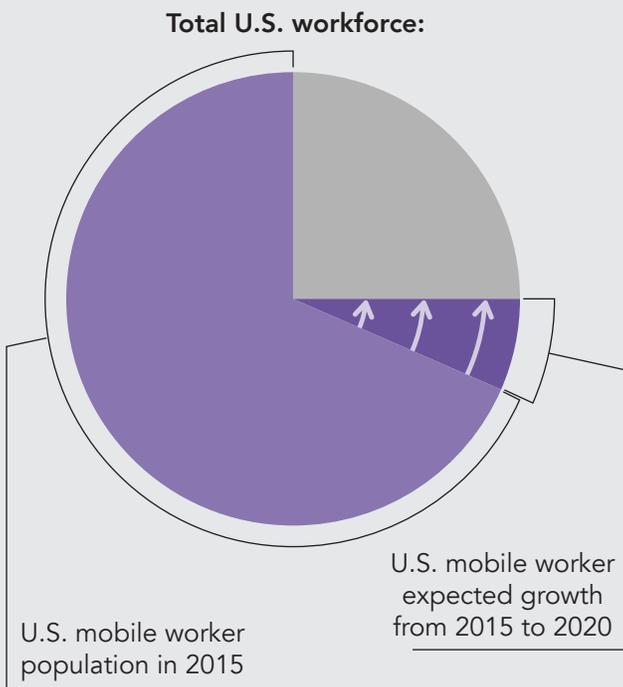
with Google Hangouts



Today's workforce is on the move

Keeping in touch no matter where you are is a business necessity. Virtual meetings let your team members weigh in on important issues without a lot of back-and-forth email or the expense of travel.

The U.S. mobile worker population is expected to grow from 96.2 million in 2015 to 105.4 million by 2020—representing nearly three-quarters of the total U.S. workforce.¹



How do you determine which video conferencing solution will support collaboration and which will hinder it?

We timed how long it took to join and leave video chats on laptops and smartphones running multiple operating systems, browsers, and apps. We used Google Hangouts and the Skype for Business Web App on laptops, and the Google Hangouts and Skype for Business mobile apps on smartphones. We also measured how quickly Google Hangouts started screen-sharing sessions compared to the Skype for Business Web App.

Google Hangouts was faster in 26 out of 28 tests. Less waiting gives your team more time to bounce ideas back and forth and move projects forward. It can also cut down on the frustration people feel when technology doesn't move quickly enough.

The clock is ticking...

Wondering how video conferencing can make a difference for your business? Read below to explore real-world situations in which video meetings make connecting with others a seamless—or frustrating—experience.



Work from home and stay connected

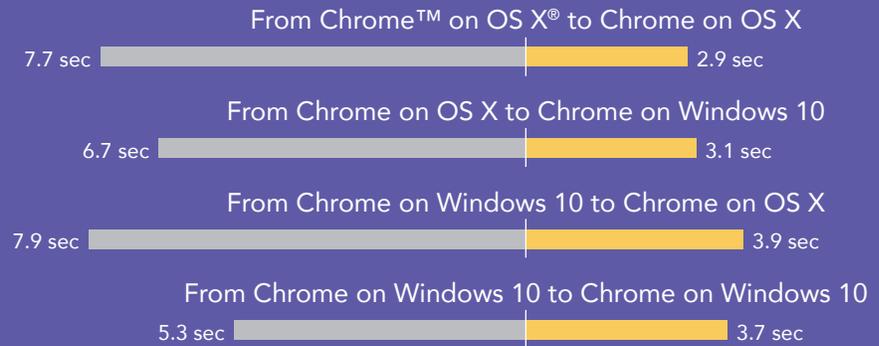
Sam is the business manager for a chain of stores that sells home goods. He's working on the financial slides for the next shareholder meeting and schedules a dry run with his team before the big day. Unfortunately, his son gets sick that day and he has to work from home.

As our tests show, joining the meeting remotely on his Mac® using Google Hangouts takes under 3 seconds. That saves almost 5 seconds compared to using Skype for Business Web App on the same machine.

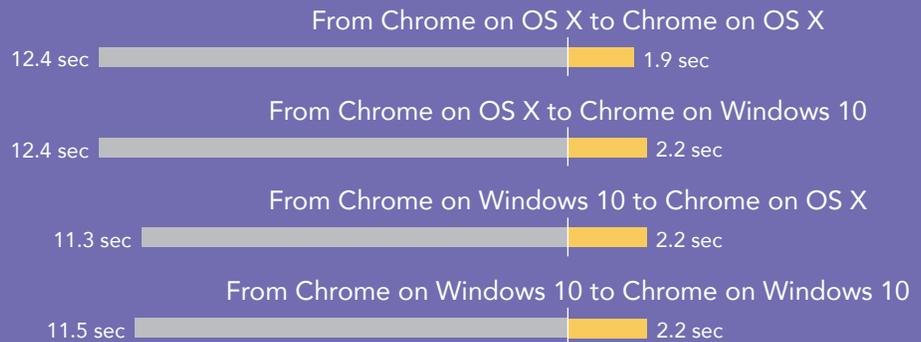
He clicks to share his screen within Google Hangouts, and everyone sees it within 2 seconds. Screen sharing with the Skype for Business Web App takes up to 12.4 seconds. Those extra 10 seconds can make a big difference when you're trying to keep the attention of a room full of people who have other things to do.

Disconnecting with Google Hangouts also took less than half the time—which could prevent embarrassment when you think a call is over but (oops!) you're still broadcasting to the group.

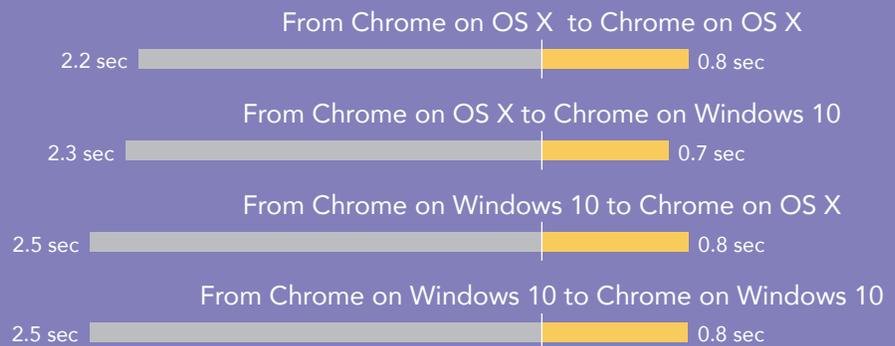
Join a video call
in up to
62%
less time
with Google Hangouts



Start a screen-sharing
session in up to
84%
less time
with Google Hangouts



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



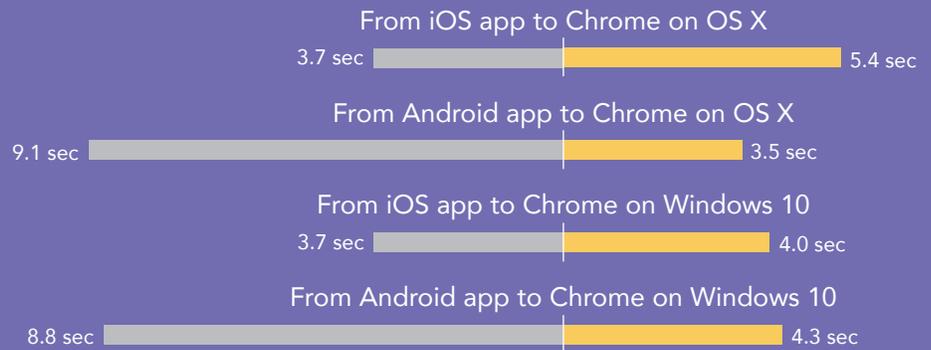
Stay connected when you're on the fast track

Nakoma is the design director for an emerging electric car manufacturer. Her team of designers and engineers uses Google Hangouts to connect with Nakoma on shape, color scheme, and 3D prototype design. Staying connected with G Suite means she can avert costly design errors before they happen.

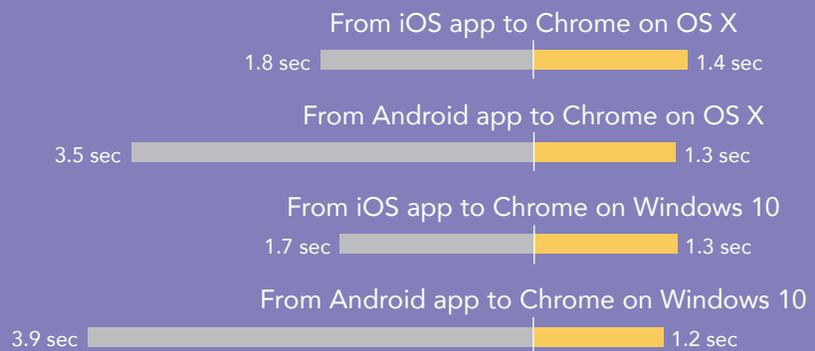
As the data below shows, an engineer on an Android™ phone can start asking Nakoma questions in half the time it would take with Skype for Business. Designers using an iPhone® would wait a fraction of a second longer with Hangouts than they would with Skype for Business.

Regardless of which smartphone her team uses, ending a call with Google Hangouts takes less time, which lets everyone move to the next item on their to-do list up to 3 seconds sooner.

Join a video call
in up to
61%
less time
with Google Hangouts



Hang up a video call
in up to
69%
less time
with Google Hangouts



■ Skype for Business ■ Google Hangouts

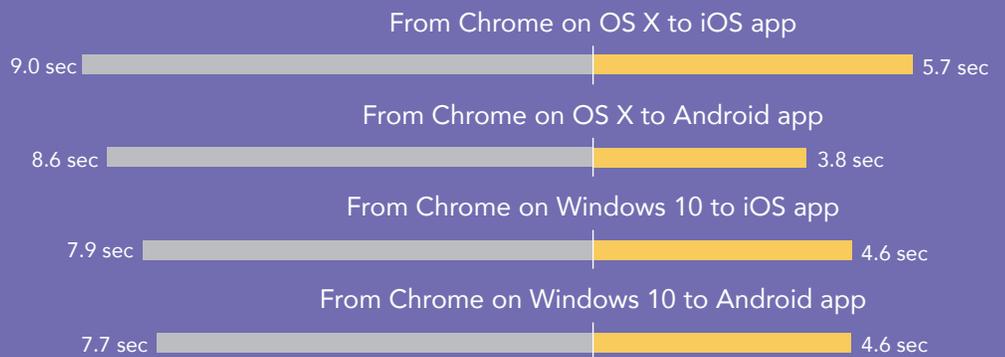
Land the sale, make your commission

Astrid is a real estate agent in a competitive market. In this bustling metropolitan hub, houses can sell within minutes of being listed. As soon as she spots a property a client might want to pursue, she uses Google Hangouts to get in touch.

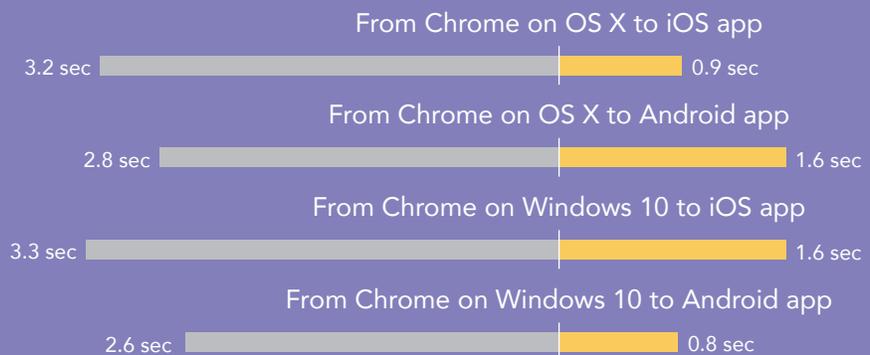
Our results show that she can let potential buyers know about exciting opportunities an average of 3 seconds sooner with Google Hangouts. Connecting with the Skype for Business mobile apps can take up to 9 seconds, which can feel like a lifetime when you're in a hurry.

Breaking off a conversation with Google Hangouts also takes half the time. That can avert negotiation disasters that could occur when someone sees or hears something that was supposed to be confidential.

Join a video call
in up to
55%
less time
with Google Hangouts



Hang up a video call
in up to
71%
less time
with Google Hangouts



■ Skype for Business ■ Google Hangouts

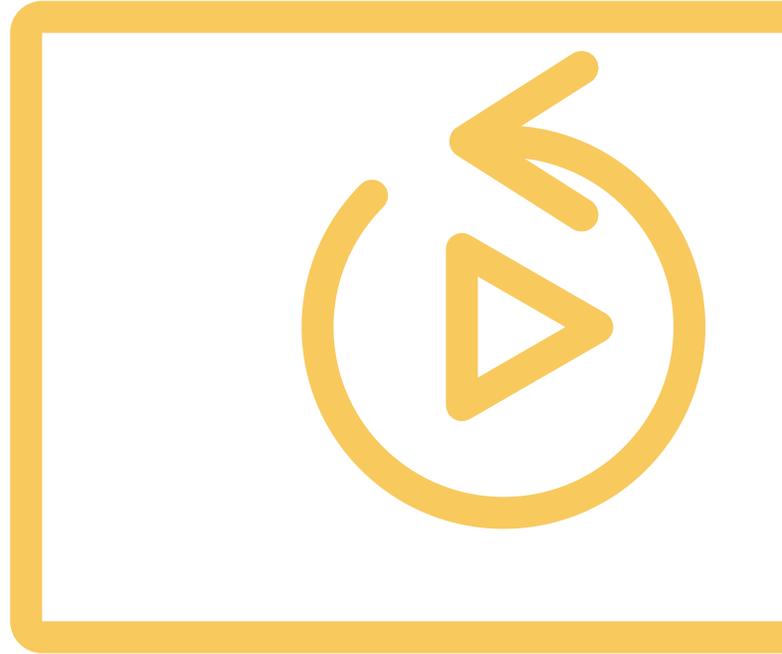
Conclusion: Increase the impact of discussions

Effective video conferencing can encourage collaboration, engage people, and build relationships, both within your company and with clients. The longer your solution takes to connect, the less helpful it is. Consistent delays can be so frustrating that people become reluctant to use the tool at all.

Connecting ideas and people using Google Hangouts took as little as one-fifth the time it would with Skype for Business. The speedy interaction possible with Hangouts goes a long way toward making far-flung team members feel that their voices are being heard and they're an important part of the discussion.

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

This is the third report in our five-part series that examines the performance of collaboration and productivity tools from G Suite and Microsoft Office 365. Read the entire series for a complete picture of how the cloud you choose can affect your business.



Read the whole “All clouds aren’t created equal” series to get the full story:

[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](#)

1 International Data Corporation (IDC) Press Release June 23, 2015. <https://www.idc.com/getdoc.jsp?containerId=prUS25705415>

On July 12, 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 July 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 2.7 Turbo Boost)	2.6 (up to 3.4 Turbo Boost)
Number of cores	2	2
Cache	3MB L3	4MB L3
Memory		
Amount	8 GB (built-in onboard)	8 GB (built-in onboard)
Type	LPDDR3	LPDDR3
Speed	1,600 MHz	1,866 MHz
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 Spyke 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 Meetings App tests, we assumed that users had already downloaded and installed the plugin.
- For all Skype Meetings 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 100Mbps down and 20Mbps up connection.

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 Meetings 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 Meetings 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 Meetings 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 Meetings 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 Meetings 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 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 Meetings 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 Meetings 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 Meetings 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.

This project was commissioned by Google.



Facts matter.®

Principled Technologies is a registered trademark of Principled Technologies, Inc.
All other product names are the trademarks of their respective owners.

DISCLAIMER OF WARRANTIES; LIMITATION OF LIABILITY:

Principled Technologies, Inc. has made reasonable efforts to ensure the accuracy and validity of its testing, however, Principled Technologies, Inc. specifically disclaims any warranty, expressed or implied, relating to the test results and analysis, their accuracy, completeness or quality, including any implied warranty of fitness for any particular purpose. All persons or entities relying on the results of any testing do so at their own risk, and agree that Principled Technologies, Inc., its employees and its subcontractors shall have no liability whatsoever from any claim of loss or damage on account of any alleged error or defect in any testing procedure or result.

In no event shall Principled Technologies, Inc. be liable for indirect, special, incidental, or consequential damages in connection with its testing, even if advised of the possibility of such damages. In no event shall Principled Technologies, Inc.'s liability, including for direct damages, exceed the amounts paid in connection with Principled Technologies, Inc.'s testing. Customer's sole and exclusive remedies are as set forth herein.