



System Requirements

The Virtual Mission programs run through a web browser and require users to have a compatible device with internet access to participate. This guide is intended to define the minimum and recommended system requirements for running Virtual Missions.

General Hardware Requirements

- An internet connection
- Speakers and a microphone
- Webcam

Laptop/Desktop Operating Systems

- macOS X with 10.9 or later
- Windows 10

Minimum Recommended Processor and RAM

- Processor - Dual-Core 2Ghz or higher (Intel i3/i5/i7 or AMD equivalent)
- RAM - 4GB

Tablet and mobile devices

- Surface PRO 2 or higher and running Windows 10
- Android devices

***Note:** Integrated video collaboration is not compatible with Apple iOS products, such as an iPad. In order to run a Virtual Mission with students that have iPads. Please contact the Flight Director at the Challenger Learning Center for more information.

Web Browsers

***Note:** For optimal experience, please ensure your browser is up to date.

- Windows: Edge 12+, Firefox 27+, Chrome 30+
- macOS: Firefox 27+, Chrome 30+, Edge 12+

	Chrome (Optimal Experience)	Firefox	Safari	Edge	Internet Explorer
Windows (Laptop/Desktop)	✓	✓	✗	✓	✗
Mac (Laptop/Desktop)	✓	✓	✗	✓	✗
Windows Tablet	✓	✓	✗	✓	✗
Android Tablet	✓	✓	✗	✓	✗
iOS (iPad/iPhone)	✗	✗	✗	✗	✗

Bandwidth Requirements

Virtual Missions utilize streaming audio and video content in addition to streaming virtual synchronous collaboration between students and flight directors. A broadband internet connection is highly recommended for a successful Virtual Mission.

- Minimum download speed - 3.0Mbps
- Recommended download speed for optimal experience - 25Mbps
- Minimum/recommended upload speed - 3.0Mbps

Performance troubleshooting with Google Chromebooks

- Verify that the Chromebook is up to date.
- Verify that the Chromebook is not attempting to run/apply an update in the background.
- Verify that the Chromebook has been restarted recently.
- Verify that there are no other programs open or running during a Mission.
- Verify that there are no other tabs open in Chrome with the exception of the Virtual Mission.
- Entering full screen sometimes helps as well, as long as there is nothing running in the background.
- Disable the camera and microphone when not in use.