



Best Practices Guide

STREAMING AND RECORDING

with Logitech Video Collaboration Solutions



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BEST PRACTICES FOR STREAMING AND RECORDING

With the growth of powerful cloud applications and standards-based hardware, the ability to live stream and record town hall meetings, classroom lessons, worship services and more is easier and more affordable than ever.

This guide shows how to leverage Logitech Video Collaboration products in tandem with commonly available software tools and platforms to create and broadcast high-quality video content.

Whether at your desktop, in a conference room, a lecture hall, or large meeting space, successfully streaming events online involves four fundamental elements. Each of them is interrelated, so it's important to map requirements early in the process.

1. A/V Hardware
2. Encoder
3. Streaming Platform/Content Delivery Network
4. Bandwidth

Beyond these four elements, other considerations for a successful broadcast include pre-production staging, content sharing, layouts and scenes, and promoting your content, all of which we cover in the Pro Tips section.

For now, let's explore the basics of streaming.

Before You Press Play

THE BASICS

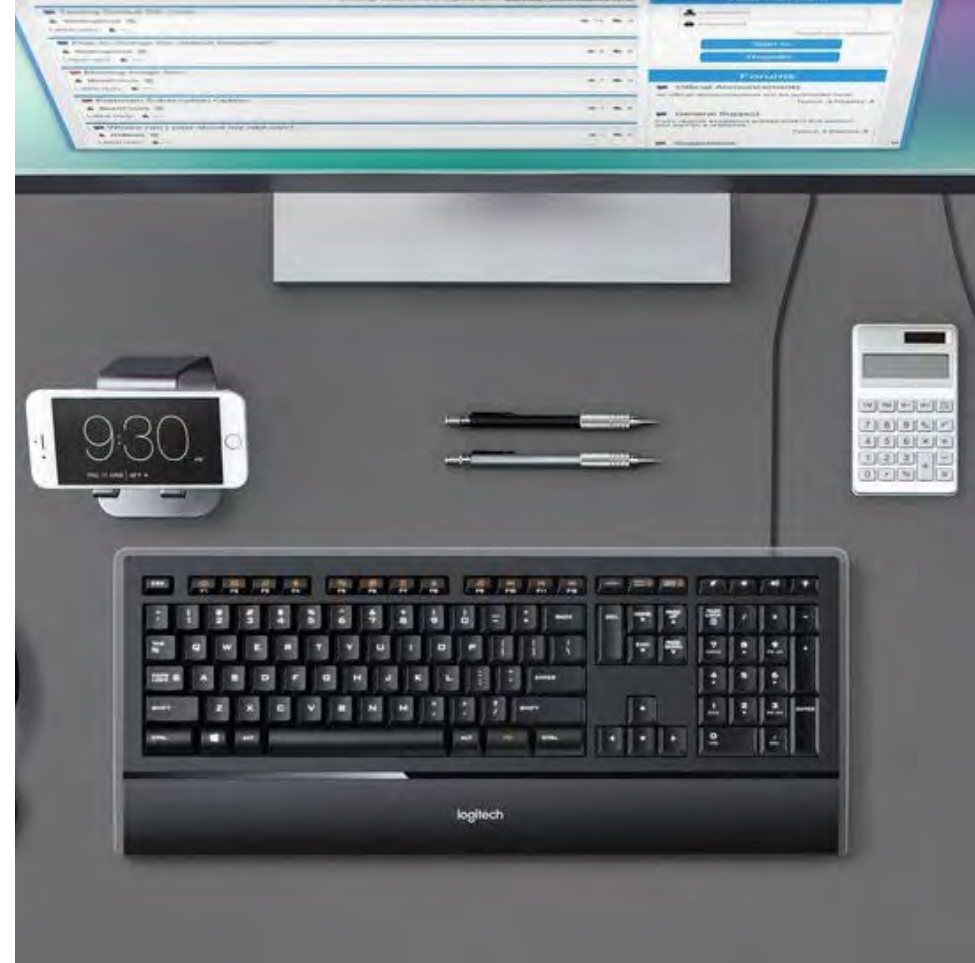
Answering a few simple questions up front will make the production process much easier downstream, and help define the aforementioned streaming and recording requirements.

1. Who is your audience, and why are they watching?
2. How important is production quality to your audience?
3. What type of program do you want to stream? Is it live and interactive, with audience participation and multiple content sources, or fairly static, with an individual on camera speaking to the audience about a specific topic?

For example, in the case of community-based streaming, the goal isn't to achieve internet glory but to communicate and engage with a specific audience. The stream could highlight employee updates, internal "How To" training, or line of business topics, and require respectable if not Hollywood-level production quality.

Alternatively, if you're targeting a broad audience with the goal of creating a deeply impactful communication, such as a global announcement, new product launch, fundraising with key constituents and the like, the ability to compose a sophisticated program with high-end production values may be a base requirement.

In short, your use case dictates the type of setup—or setups—you want to deploy.



QUESTIONS TO CONSIDER

WHO is your audience?

WHY are they watching?

HOW important is production quality to your audience?

WHAT type of program do you want to stream?

1 A/V HARDWARE

Depending on your audience, objectives, and budget, live streaming camera options include webcams, PTZ cameras, action cameras, DSLRs, and camcorders. You may already have one of these type cameras you'd like to repurpose for streaming—just know that to stream from an action camera, DSLR, or camcorder, you typically need a hardware capture card to process the video signal. The benefit of USB-connected devices like webcams and PTZ cameras is that they're stream-ready through their direct connection to the computer.

WEBCAMS - Most useful for individual productions, webcams are USB-connected devices that greatly simplify recording and streaming setup. In contrast to the laptop bezel cam, today's webcams can include features like auto-focus, high dynamic range imaging, facial recognition, and image balancing, making them ideal for presenting in high quality from a controlled environment. Webcams are often used in tandem—typically with one focused on the presenter, and another on their profile or content—and are ideal for presentations, reviews, training sessions, and gaming.

PTZ CAMERAS - Also connected via USB to the compute source, PTZ cameras leverage high quality optics, powerful and digital zoom, multiple mounting options, camera presets, and remote control to enable streaming in meeting rooms and large-sized venues. PTZ cameras are often fixed near a display, table, or on a tripod. Features like auto-framing, high dynamic range imaging, and extended presets make these cameras increasingly viable for streaming in use cases like community meetings, town halls, education lectures, houses of worship, and group training sessions.





WHEN DO NON-USB CAMERAS MAKE SENSE FOR STREAMING?

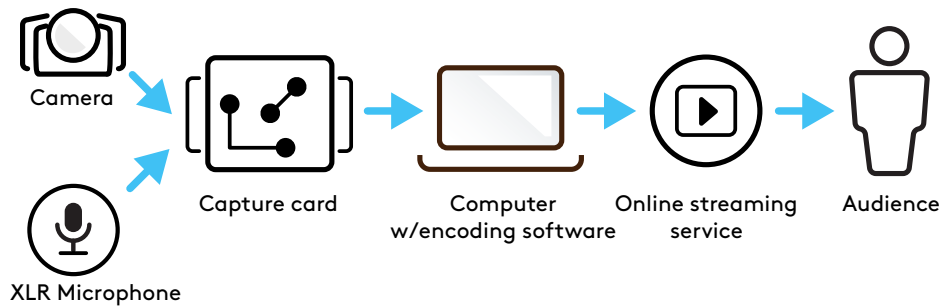
Action cameras are ideal for shooting high-motion scenes like athletic endeavors or training sequences in a wide-screen format, a type of content that requires a higher bitrate to produce an average quality video stream, so ensure enough bandwidth.

Digital SLRs are designed for still photography but also deliver high quality video, provided you accept the trade-offs of battery management and fairly complex connectivity for recording and streaming.

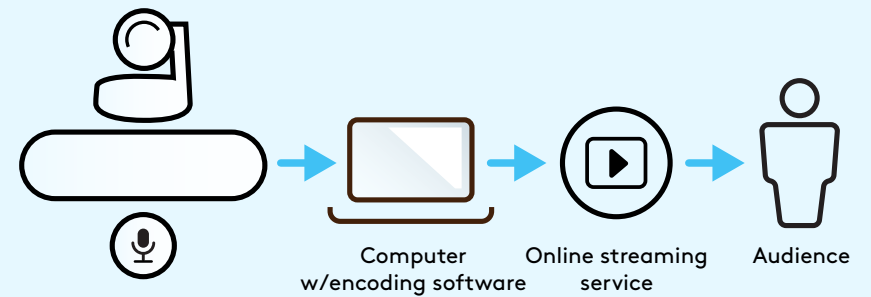
Digital camcorders are great for live productions, but require a relatively high degree of expertise for configuring with encoders and audio sources.

STREAMING AND RECORDING ELEMENTS

Legacy



USB



USB Solutions Simplify Recording and Streaming

With fewer steps between you and your audience, USB Solutions allow you to stream and record faster and easier.

2 ENCODERS

An encoder processes and optimizes your video signal for streaming to the internet. An encoder is required because most video cameras are designed to create recordings of large local video files, not real-time streaming.

A software encoder is an application that uses your computer's CPU to prepare the video for streaming. As previously mentioned, with Logitech USB devices, a capture card is unnecessary to capture the video signal from your source to your computer.

Be mindful that streaming software uses a large percentage of your computer's CPU. If your computer is underpowered, your audience may experience issues with buffering and dropped frames, and your computer may be slow to respond. We recommend at least an Intel Core i5 processor with 16GB of memory for streaming.

Streaming and recording software options include Logitech Capture, Streamlabs, and Streamlabs OBS.

RECOMMENDATION:

We recommend at least an **Intel Core i5 processor** with **16GB of memory** for streaming.



A GOOD ENCODER HELPS YOU AVOID



Buffering and lagging



Dropped frames



Slow response time

LOGITECH CAPTURE

Designed specifically for video content creators, Logitech Capture allows you to easily create recorded content and stream it to apps like YouTube and Facebook.

When combined with Logitech webcams, Logitech Capture simplifies video production by incorporating professional controls in an easy-to-use package.

You can customize webcam settings by your field of view, aspect ratio, and recording resolution, and recording from multiple sources, such as a webcam video and desktop screen, or two webcams simultaneously.

Logitech Capture also allows you create video content optimized for mobile phones and social media by in 9:16 portrait format.



[CLICK HERE](#) to download Logitech Capture for free

STREAMLABS

Streamlabs is a robust all-in-one live streaming software service that integrates with tools such as Open Broadcaster Software (OBS) to manage chat, on-screen visuals for stream viewer interactions, and a method for the streamer to collect tip donations.

An added benefit of Streamlabs service is that it keeps CPU usage to a minimum. Streamlabs automatically scans your internet speed and hardware settings to provide recommended settings for your particular setup.

With features like native multistream and cloud backup, Streamlabs makes it easy to get started streaming, and distribute your content over platforms such as Twitch, YouTube Live, Microsoft Mixer, and Facebook Live.



[CLICK HERE](#) to download Streamlabs for free

OPEN BROADCASTING SOFTWARE (OBS)

A great application for exploring the nuances of streaming, OBS is a free open source software for video recording and live streaming that works across Windows, Mac, and Linux environments. It also can be used as an encoder for video conferencing services like Zoom and Microsoft Teams.

OBS enables real time video/audio capturing and mixing, and allows you to create scenes from multiple sources including window captures, images, text, browser windows, webcams, capture cards and more.

You can rearrange layouts exactly as you like, easily add new video and audio sources, adjust their properties, and set up an unlimited number of scenes to switch between.

OBS supports all major streaming platforms, and lets you preview scenes and sources before pushing them live.



[CLICK HERE](#) to download OBS for free

USING CLOUD VIDEO CONFERENCING FOR STREAMING

Traditionally limited to internal meetings, with the growth of cloud applications and consumer use cases, video conferencing is now mainstream.

For streaming interactive meetings, most conferencing platforms accommodate hundreds of live participants. For one-to-many, view-only applications, they can scale into the tens of thousands. If your audience is narrowly defined (such as employees, parishioners, community groups, etc.) and numerically limited, today's video conferencing platforms provide an increasingly viable option for communication, either in lieu of or complementary to streaming and recording.

Among the advantages to cloud video is that the software and hardware is often already in place in a meeting room or desktop, and most systems include the ability to share content and engage a live audience via video, Q&A, or chat. The disadvantages to cloud video include a lack of streaming-centric features such as picture-in-picture layouts, live switching, scenes and layouts, and add-on enhancements that make streaming so compelling for content creation.

If you need a fast and simple way to reach people within an organization with sizzle, video conferencing may be an option worth exploring. See the specifications and capabilities of today's major cloud video platforms to the right.



Google Meet - Supports live streaming with content sharing for up to 100,000 view-only viewers within an organization. Supports up to 250 people on a video conference call simultaneously.



Microsoft Teams - Supports live streaming with content sharing for up to 10,000 people within an organization. Attendees can watch the event live or recorded in Yammer, Teams, and/or Stream, and can interact with the presenters using moderated Q & A or a Yammer conversation. Supports up to 250 people on a video conference call simultaneously.



Zoom - Supports video conferences for up to 1,000 participants, webinars for up to 10,000 participants, and with an encoder like OBS allows simultaneous broadcasting on streaming platforms like YouTube Live, Facebook Live, and LinkedIn.

STREAMING AND RECORDING RECOMMENDED SPECIFICATIONS

Software encoders require a high degree of processing—for Logitech Capture and other recommended applications, we recommend at a minimum the computer specifications listed below:

System Requirements	Windows® 10 or above macOS® 10.14 or above 7th Gen Intel® Core™ i5 or later USB 3.1 Gen 1 Type-C direct connection
RECOMMENDATIONS FOR: 1080p 60fps Direct Connection to USB 3.1 Gen 1 Type-C	
Apple Computers	<ul style="list-style-type: none">• MacBook Pro® (2018, 8th Gen Intel® Core™ i5 Processors or later)• MacBook Air® (2018, 8th Gen Intel® Core™ i5 Processors or later)• Mac Mini® (2018, 8th Gen Intel® Core™ i5 Processors or later)• iMac Retina® (2019, 8th Gen Intel® Core™ i5 Processors or later)• iMac Pro® (2017, or later)
PC Configurations	<ul style="list-style-type: none">• CPU: 7th Gen Intel® Core™ i5 Processors or later• GPU: Intel® discrete Graphic card HD Graphics 620• RAM: 8GB
RECOMMENDATIONS FOR: 720p 30fps Minimum specifications USB 3.1 or USB 2 thru USB Type C to USB A adaptor	
Apple Computers	<ul style="list-style-type: none">• MacBook Pro® (2017, 7th Gen Intel® Core™ i5 Processors or later)• MacBook Air® (2017, 7th Gen Intel® Core™ i5 Processors or later)• Mac Mini® (2018, 8th Gen Intel® Core™ i5 Processors or later)• iMac Retina® (2018, 8th Gen Intel® Core™ i5 Processors or later)• iMac Pro® (2017, or later)
PC Configurations	<ul style="list-style-type: none">• CPU: 6th Gen Intel® Core™ i5 Processors or later• GPU: Intel® discrete Graphic card HD Graphics 510 or later• RAM: 8GB







3 STREAMING DESTINATIONS/ CONTENT DELIVERY NETWORKS

A streaming destination is the site or platform that makes your stream or recording available for viewing. Commonly known as content delivery networks (CDNs), typical platforms include Youtube, Facebook Live, Instagram Live, Twitch, and more.

Paid streaming platforms let you dictate more precisely where and how your stream is presented, and whether or not your stream is monetized. Paid platforms include sites like StreamShark, Brightcove, Livestream Vimeo, and DaCast, with others offering different monthly plans.

Streaming services let you decide between active live streaming or scheduling your program to go live at a specific future time and date. To align your chosen service with your encoder software and program, you'll need to establish an account and include elements like a title, description, category, and hashtags, so plan to complete your enrollment well in advance of your actual streaming event.

Though the borders are blurring, CDNs typically target specific types of audiences:

-  **YouTube** - Multi-purpose platform for business, personal, and lifestyle content.
-  **Facebook Live** - Consumer-centric, provides an easy way to stream to connected and defined communities
-  **Twitch** - Traditionally focused on gamers, becoming a venue for lifestyle and general purpose content.
-  **Instagram Live** - Allows users to stream live video on their accounts and alert followers that they can view the live stream.

4 BANDWIDTH

Common sense dictates that your streaming rate should be less than your bandwidth upload capacity, but baseline bandwidth is only part of the equation.

Depending on the environment, networks can often be erratic, so it helps to have bandwidth in reserve on a separate subnet to buffer against irregularities. People nearby viewing videos, gaming, making video or VoIP calls, and uploading files may all simultaneously be competing with you for space in the network pipe.

Within your environment, wherever possible use a wired ethernet connection to your router and not WiFi, which more easily drops and delivers uneven quality. You can test your upload and download bandwidth speed using the Google Fiber Speed Test. Next, use this formula to estimate the bandwidth required for streaming:

REMEMBER:

Total Video Bitrate + Total Audio Bitrate x 1.5 =
Required Upload Bandwidth

So if your live stream has a cumulative bit rate of 10 Mb/s, make sure at least 15 Mb/s total upload bandwidth is available to ensure a reliable live stream.

Service providers typically promote bandwidth in terms of maximum speed, but actual speeds can vary. If you're on a local cable network, you may compete with your neighbors for bandwidth at certain times of day, or if you're in an office park, the facility may suffer delays during peak office hours. Certain service providers also cap their bandwidth and charge extra for overages, so make sure you don't encounter caps that either cost additional fees or result in interruptions.

Simultaneously pushing your stream to multiple streaming platforms, or streaming at different bitrates to a single streaming platform, means you need to add each additional program to your total outgoing bit rate, and may necessitate adding bandwidth capacity.

The process for ensuring a high quality and reliable live stream often requires testing, evaluation, and recalibration, but getting the fundamentals of bandwidth determined will greatly contribute to the success of your program.

LOGITECH PRODUCTS FOR STREAMING

Video and Audio for Large Venues

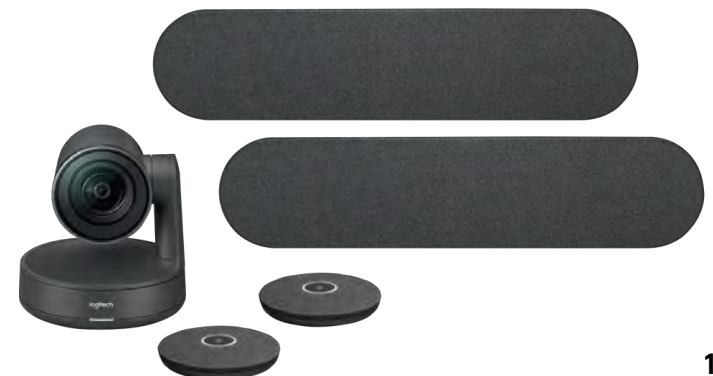
LOGITECH RALLY SYSTEM

A great fit for large conference rooms, training environments, and classrooms, Rally System includes modular video and audio components that can be leveraged for streaming and reconfigured as space requirements evolve.

Rally System is typically used in tandem with Logitech Tap for video conferencing with Microsoft Teams, Google Meet, or Zoom Rooms. A powerful 4K camera with 15x zoom can be mounted conventionally or inverted, while two powerful speakers and an array of pod options support multiple participants.

By directly connecting Rally System via USB to a compute source, you can also leverage the installed audio and video components to produce recorded and streamed content in a group setting.

With RightSight auto-framing plus multiple camera presets, Rally System can also be used in tandem with whiteboards, document cameras, webcams, and more.



Video and Audio for Large Venues

LOGITECH RALLY CAMERA

Ideal for producing high quality video content in medium-to large-sized venues, Rally Camera provides up to 4K Ultra-HD video quality at 30 frames per second and leverages 15X lossless HD zoom to zero in on people, objects, whiteboard content, and other details— even at the far end of the room.

An RF remote control allows you to operate Rally Camera from anywhere in the room, while three camera presets define locations for the camera view. An enhanced, whisper-quiet PTZ motor ensures uninterrupted audio fidelity for your stream. Additionally, Rally Camera easily connects via USB-C to PC, Mac® and Chrome devices with no additional software required.

Rally Camera can be mounted on a table or wall with included hardware, and includes a standard tripod thread for added flexibility. If your use case dictates installing Rally Camera upside-down, auto-inversion detection automatically corrects the image orientation and camera controls. A Kensington® security slot accommodates anti-theft lock to help secure the camera.





Desktop Video

For recording and streaming applications, we recommend against using your laptop bezel cam as primary video feed. In addition to delivering much higher quality imaging, a webcam provides versatility and flexibility best-suited to engaging a live audience.

Additionally, webcams enable you to use a multi-camera setup to enhance production quality. Once the domain of gamers and sophisticated content creators, multi-camera broadcasts are increasingly used for more common cases such as live events, tutorials, demonstrations, and more.

By using custom picture-in-picture layouts, content sharing, live switching, and more, multi-camera setups leverage powerful encoding software and high-quality hardware to create lively and compelling content.





LOGITECH BRIO

Ideal for both video collaboration and streaming and recording at the desktop, BRIO is a premium 4K Ultra HD webcam that delivers 1080p/30 fps or ultra-smooth 720/60 fps for outstanding clarity, smoothness, and detail when recording and streaming. It features a 5x zoom, display and tripod-ready thread mounts, USB-C connectivity, selective field of view (65, 78, or 90), dual omnidirectional microphones, infrared sensor, security lens cover, and RightLight™ 3 technology with high dynamic range (HDR). BRIO is also Windows Hello-certified (enabling facial recognition login on your Windows PC), and works with software such as Logitech Capture, StreamLabs, OBS to record in resolutions up to 4K.



LOGITECH C930e

Primarily designed for business-grade video conferencing, the C930e provides clear video and sound for recording and streaming, even in low-light conditions. With 1080p resolution, H.264 video compression and a wide 90-degree field of view, C930e includes an adjustable clip for flexible mounting and a removable shade that flips down to ensure privacy. USB 2.0 connection and a 90 degree field of view, the C930e is certified for all major UC platforms.





LOGITECH STREAMCAM

Designed specifically for streaming and recording, StreamCam provides up to 1080p/60 fps video and high quality audio with dual omni-directional microphones. When used with Logitech Capture software, StreamCam leverages Smart Auto-Focus and AI-enabled facial tracking to deliver accurate focus and exposure, and enables users to create smart-phone ready content simply turning it 90° into portrait mode. StreamCam uses USB-C for faster video transfer speeds, and includes a monitor mount and a tripod mount. Compatible with Windows and Mac OS, Streamcam works with Windows 10 and Mac OS 10.14 or above and is optimized for Open Broadcaster software (OBS) and XSplit.





BLUE YETI X USB MICROPHONE

The Yeti X is a state-of-the-art flagship USB microphone for professional-level streaming, podcasting and gaming. A four-capsule condenser array delivers broadcast quality sound with focus and clarity, in four versatile pickup patterns. Blue VO!CE* allows you to customize Yeti X with presets for crisp and modern, warm and vintage, classic radio voice, or you make your own unique signature sound.

Yeti X also features high-res voice metering, so you can visualize your voice level at a glance and fine-tune your on-stream sound. With Logitech G HUB, you can also customize the color of Yeti X's LED lights to match your on-stream aesthetic.

* Requires Blue Sherpa (bluemic.com) or Logitech G HUB (Logitech.com) desktop apps.



BLUE YETI USB MICROPHONE

Synonymous with streaming, podcasting and YouTube productions, Yeti is the best-selling* premium USB microphone in the US and Canada for good reason. With a proprietary three-capsule technology that enables four pickup pattern, Yeti allows you to record and stream in ways that typically require multiple microphones.

Yeti also features studio controls for headphone volume, pattern selection, instant mute, and microphone gain that put you in charge of the recording process. Yeti can be set up in seconds with the included desktop stand, or you connect directly to an optional shockmount and desktop boom arm to keep your setting clutter-free.

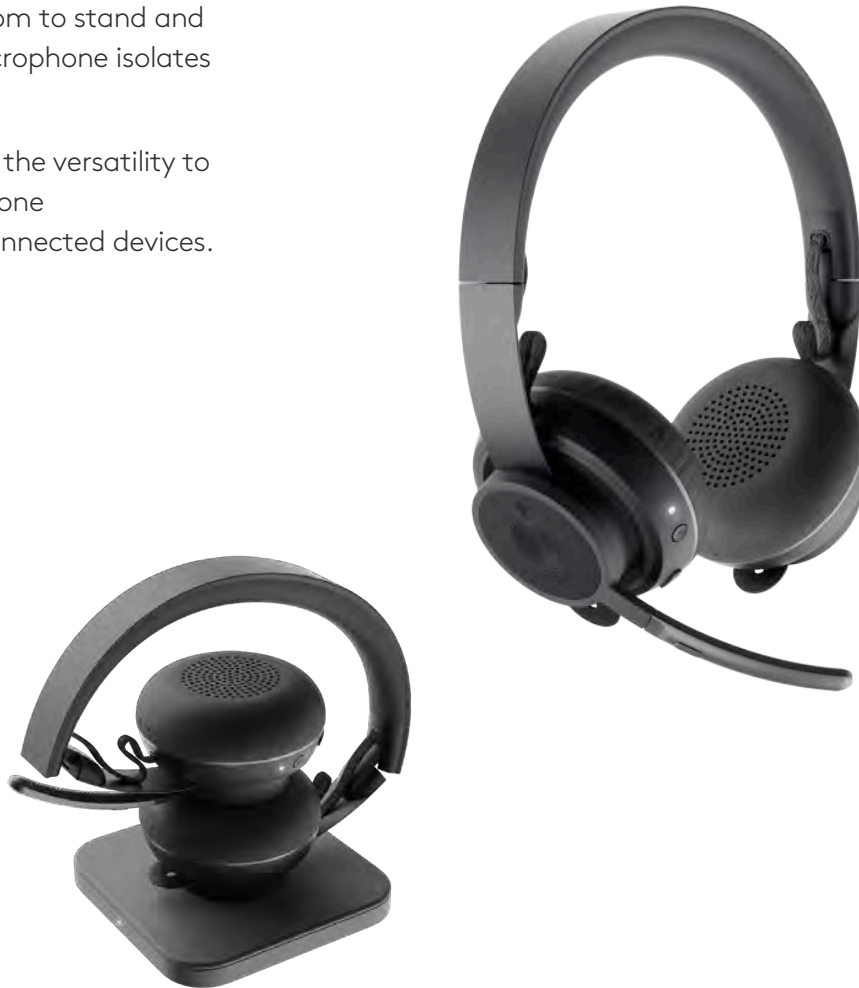


* Based on independent data (April 2019 - March 2020)

ZONE WIRELESS HEADSET

Designed for open workspaces, Zone Wireless is equally adept at providing high-quality, hands-free audio at the desktop for streaming and recording. Extended 30m (100 ft) wireless range gives you the freedom to stand and move while staying connected, and a noise-canceling microphone isolates your voice from external noise for clean audio.

Zone Wireless supports wireless Qi charging, and provides the versatility to wirelessly connect to your computer, tablet, and smartphone simultaneously, and let you seamlessly switch between connected devices.





ZONE WIRED HEADSET

For desktop applications where it's important to block out ambient noise, Zone Wired provides a high-quality USB option. Zone Wired includes a noise-canceling dual mic that accurately suppresses distracting sounds like keyboard clicks, nearby talkers, and HVAC noise as close as 60cm away.

By isolating your voice from any acoustic clutter around you, Zone Wired delivers clean source audio for your stream. When used in tandem with the Logi Tune for Desktop app, Logitech Zone Wired provides full EQ and sidetone control, testing of mic/speaker audio levels, and mic gain setting at whatever volume works best.

PRO TIPS

Proper preparation is crucial for successful streaming and recording.



Test your network connections at different times of day. Based on data rates, this can help identify optimal windows for production.



First test your stream across a private channel if possible. This will help you fine-tune your staging, bitrates, imaging, audio, and let you refine settings before going live.



Test your video and audio components to ensure they're set at the right levels for the environment, and if possible, have backup products in place in case any component goes awry.



If you're committed to streaming, invest in quality lighting.

- Ideally you're setting allows three point lighting, with a key (main light) at 45 degrees illuminating the subject, a fill light (opposite the keylight, also at 45 degrees to the subject) cancelling the shadows of the key light, and a backlight, placed slightly higher than the subject, separating the subject from the background.
- If three point lighting isn't an option, a key light cast on the subject from a distance and slightly below level is recommended.



Accessories—A camera tripod or mount is important for ensuring a stable image, especially if you're in a desktop setting. Mounting your camera also helps set the position of a shot, so you know exactly what a given scene encompasses.





To learn more about
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