TAKE CONTROL OF

ZOOM

by GLENN FLEISHMAN

$14.99

Click here to buy the full 280-page “Take Control of Zoom” for only $14.99!
# Table of Contents

**Read Me First** ............................................................................................................. 4  
  Updates and More ........................................................................................................... 4  
  What’s New in the Third Edition ..................................................................................... 5

**Introduction** ................................................................................................................. 10

**Zoom Quick Start** ....................................................................................................... 11

**What Zoom Can Do** .................................................................................................... 13  
  Zoom Videoconferencing ................................................................................................. 13  
  Other Zoom Products ........................................................................................................ 16

**Get Set Up with Zoom** ............................................................................................... 18  
  Download or Use a Zoom App .......................................................................................... 18  
  Figure Out Hardware Needs ............................................................................................. 23  
  Set Up Your Zoom One Service ......................................................................................... 35

**Prep for Meetings** ....................................................................................................... 42  
  Prepare for Hybrid Meetings ............................................................................................. 42  
  Set Up for Video ................................................................................................................ 45  
  Consider How You Appear ................................................................................................. 61  
  Pick Default Settings for Joining ........................................................................................ 66

**Participate in a Meeting** ............................................................................................. 79  
  What Makes a Meeting ...................................................................................................... 79  
  Join and Enter the Meeting ............................................................................................... 81  
  Adjust the View .................................................................................................................. 89  
  Be Part of a Breakout Room .............................................................................................. 103  
  View a Shared Screen ........................................................................................................ 105  
  Interact in a Meeting ......................................................................................................... 109  
  Stay Safe in a Meeting ....................................................................................................... 116

**Share Your Screen** ..................................................................................................... 118  
  Pick What You Share ........................................................................................................ 119  
  Protect Your Privacy While Sharing ................................................................................... 131

**Present in Zoom** ......................................................................................................... 133  
  Work with Full-Screen Apps ............................................................................................. 135  
  Use Presentation Apps in Zoom ......................................................................................... 136  
  Present with Different Display and Device Combinations .............................................. 146

Click here to buy the full 280-page “Take Control of Zoom” for only $14.99!
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborate with a Whiteboard</td>
<td>154</td>
</tr>
<tr>
<td>Start with a Whiteboard</td>
<td>154</td>
</tr>
<tr>
<td>Edit a Whiteboard</td>
<td>156</td>
</tr>
<tr>
<td>Collaborate on a Whiteboard</td>
<td>158</td>
</tr>
<tr>
<td>Chat in Zoom</td>
<td>166</td>
</tr>
<tr>
<td>Chat in a Meeting</td>
<td>166</td>
</tr>
<tr>
<td>Chat Outside a Meeting</td>
<td>169</td>
</tr>
<tr>
<td>Set Up a Meeting</td>
<td>172</td>
</tr>
<tr>
<td>Configure Meeting Options</td>
<td>172</td>
</tr>
<tr>
<td>Plan for Safety as a Host</td>
<td>177</td>
</tr>
<tr>
<td>Create a Meeting</td>
<td>185</td>
</tr>
<tr>
<td>Manage a Meeting</td>
<td>201</td>
</tr>
<tr>
<td>Divvy Up Host Roles</td>
<td>202</td>
</tr>
<tr>
<td>Start the Meeting</td>
<td>205</td>
</tr>
<tr>
<td>Validate End-to-End Encryption</td>
<td>211</td>
</tr>
<tr>
<td>Manage Participants</td>
<td>213</td>
</tr>
<tr>
<td>Manage Screen Sharing</td>
<td>235</td>
</tr>
<tr>
<td>Manage Chat</td>
<td>237</td>
</tr>
<tr>
<td>Protect a Zoom Meeting</td>
<td>239</td>
</tr>
<tr>
<td>Record a Meeting</td>
<td>251</td>
</tr>
<tr>
<td>Consider Privacy During Recordings</td>
<td>252</td>
</tr>
<tr>
<td>Set Options for Recording</td>
<td>253</td>
</tr>
<tr>
<td>Make a Recording</td>
<td>256</td>
</tr>
<tr>
<td>Use Resulting Audio and Video</td>
<td>258</td>
</tr>
<tr>
<td>Stream a Meeting</td>
<td>261</td>
</tr>
<tr>
<td>Prepare for Livestreaming</td>
<td>261</td>
</tr>
<tr>
<td>Add Livestreaming to a Meeting</td>
<td>263</td>
</tr>
<tr>
<td>Start Your Livestream</td>
<td>266</td>
</tr>
<tr>
<td>Let an AI Caption Meetings</td>
<td>269</td>
</tr>
<tr>
<td>Appendix A: End-to-End Encryption</td>
<td>273</td>
</tr>
<tr>
<td>About This Book</td>
<td>277</td>
</tr>
<tr>
<td>Ebook Extras</td>
<td>277</td>
</tr>
<tr>
<td>About the Author</td>
<td>278</td>
</tr>
<tr>
<td>About the Publisher</td>
<td>279</td>
</tr>
<tr>
<td>Copyright and Fine Print</td>
<td>280</td>
</tr>
</tbody>
</table>

This book provides detailed instructions, warnings, and tips for using the Zoom videoconferencing service, from installation and configuration of software and account settings to best practices as a meeting member and meeting host, including how to be safe when creating meetings and participating in them.

If you want to share this ebook with a friend, we ask that you do so as you would with a physical book: “lend” it for a quick look, but ask your friend to buy a copy for careful reading or reference. Discounted classroom and user group copies are available.

Copyright © 2022, Glenn Fleishman. All rights reserved.

**Updates and More**

You can access extras related to this ebook on the web (use the link in *Ebook Extras*, near the end; it’s available only to purchasers). On the ebook’s Take Control Extras page, you can:

- Download any available new version of the ebook for free, or buy any subsequent edition at a discount.

- Download various formats, including PDF, EPUB, and Mobipocket. (Learn about reading on mobile devices on our Device Advice page.)

- Read the ebook’s blog. You may find new tips or information, as well as a link to an author interview.

If you bought this ebook from the Take Control website, it has been added to your account, where you can download it in other formats and access any future updates.
What’s New in the Third Edition

Zoom continues to make substantial changes to its apps and infrastructure, add new overarching features, and improve, extend, and revise existing options. This third edition of the book incorporates extensions and updates over the last year.

Hybrid Work and Return to Work

Since the previous edition appeared, many as hundreds of millions of people around the world have returned part-time or full-time to a company office that they hadn’t seen—or had run into and run out of a few times—since March 2020.

As a result, hybrid work is on the rise: people working a mix from home and in a company space. This means many Zoom sessions can involve a mix of people sitting together, sitting within earshot, and individually remote.

I’ve updated the book to add strategies and better reflect the new work environment. In particular, see Prepare for Hybrid Meetings, a new section that outlines a few scenarios.

Zoom Whiteboard

A whiteboard appears in most conference rooms and became a heavily relied upon virtual feature during the pandemic. Zoom had built one simplified kind of digital whiteboard into meetings that can be invoked through Share Screen > Whiteboard. (See Share from a Desktop App.)

In April 2022, the company released a second kind of collaborative drawing space it calls Zoom Whiteboard. It supplements, rather than replaces, the shared whiteboard. It may be invoked and used inside or outside a meeting. The tools are similar but not identical to the drawing and annotation options available in a Zoom meeting, making for confusion. (See Mark Up a Screen for markup and annotation tools.)

I cover this feature in a new chapter, Collaborate with a Whiteboard.

Click here to buy the full 280-page “Take Control of Zoom” for only $14.99!
Livestreaming

The rise during the pandemic of *livestreaming*—literally meaning streaming video live via a number of online services—pairs neatly with Zoom, which has excellent and ever-improving built-in support. The company recently added direct support for Twitch.

I’ve added a chapter in this version, *Stream a Meeting*, to help you through the creaky setup required.

Apple Updates

With the expected release in third quarter 2022 of iOS 16/iPadOS 16 and macOS 13 Ventura, Apple will bring multiple webcam-related improvements that allow iPhone and Mac users more options and more sophisticated video input choices. See *Apple Virtual Camera Arrives in Third Quarter 2022*.

This edition also expands on the Center Stage feature available on select iPads and with Macs connected to a Studio Display, adds coverage of the background-blur Portrait mode in iOS, iPadOS, and macOS, and explains how those features will be affected with this fall’s updates. See *Apple Keeps You in the Picture* and *Apple Offers Its Own Blur with Portrait Mode*.

Hide Self View

It’s an odd omission, but I never mentioned the Hide Self View in previous editions of this book, a choice that disables your view of your own video stream. I now cover it in *Hide Yourself*.

Watermark Your Audio and Video

Hosts can have watermarks appear on all video panels or in local audio recordings in a meeting for all participants. A visible watermark is the viewer’s email address; an audio one is hidden and can be decoded only by Zoom. See *Add a Watermark*. (This privacy and security feature was added years ago, but I only recently encountered it.)
General Zoom Updates

Zoom is always expanding, tweaking, and improving its apps. I’ve updated the book to reflect the following changes:

- **Zoom One rebranding:** Zoom is slowly renaming its core video-conferencing service that bundles in a few other features—chat, Whiteboard, and Zoom Phone, which is optional—from Zoom to Zoom One. Given the company, app name, and main product were all called Zoom, distinguishing those makes a lot of sense!

- **40-minute limit on all free sessions:** Any user without a paid license attached to their user account can only host sessions up to 40 minutes, whether with one other person or 99 other people. See Zoom Ends Unlimited 1:1 Sessions for Free Users.

- **Polls library:** You now have the option to create polls before a meeting—instead of only during one—using an account library available in the Meetings webpage for your account. When scheduling a meeting, you can select to include these polls among the polling options available as a host. See Run a Poll.

- **Record individual audio tracks in the cloud:** Zoom is often used to record podcasts and other events. Having separate audio tracks from each participant allows later editing and removal of crosstalk. Zoom has an option for local recording that allows recording individual tracks by the host, but only recently started testing it for cloud recording. See Set Options for Recording.

- **Recognition of suspicious logins:** To avoid hijacking of Zoom accounts, the company may require an additional password for corporate accounts using a business email login and without two-factor authentication enabled. If Zoom detects something unusual, like “a login from a different country or device than usual, among other factors,” according to release notes, the company will send a login password and link to the person’s email address.

- **Meeting reactions displayed for yourself:** When you raised your hand, used an emoji, or opted for what Zoom calls “nonverbal feedback” (like a slow down or speed up request), it was hard for
you to tell what you’d just done—no feedback on your feedback. Zoom now displays your actions and reactions for you in a meeting more clearly, particularly when you’ve hidden your “self-view” video stream. See Get Attention.

- **New administrative interface**: Zoom splits admin features for individual, group, and company accounts across many locations in its web-based account interface. The company has tried to simplify this by overhauling the interface so it’s easier to figure out where to find features. I address this throughout the book, wherever website settings are mentioned, but you can find a number of specifics in Configure Meeting Options.

- **Avatars**: Zoom has jumped on the animated face-tracking avatar background, letting you have a red panda or dog or other animal swap out your face and body. I don’t see a use for it except for kids in remote learning uncomfortable for having their faces appear on camera. See Mess with Video Filters, Studio Effects, and Avatars.

- **Mobile picture-in-picture mode**: You can have a Zoom window appear as a picture-in-picture inset. See How to Switch Among Views.

- **Participants list can show invited parties**: Account admins can opt to have the Participants list in a live meeting show all those invited instead of just those currently attending. See Engage with Tools To Manage a Meeting.

- **Waiting Room**: Improvements for hosts for managing the pre-entrance Meeting Room include:
  
  - *Rename participants*: A host can rename participants before they join a meeting.
  
  - *Participants’ order*: A host can sort people in the Waiting Room by when they entered or alphabetically by name. See Check Other Participants in from the Waiting Room.
• **Breakout rooms:** Zoom has added a couple of useful tools to improve breakout room management by hosts and admins (see *Break Meetings into Smaller Groups*):

  ‣ *Save Breakout Room assignments:* When creating breakout rooms, a host using the desktop app can store the participant assignments to room to recall for future meetings.

  ‣ *Host access to breakout rooms without joining:* A host can now view the action within breakout rooms from the main level of Zoom without joining a breakout room.

• **Chat Etiquette Tool:** Zoom has enhanced how account owners and admins can create word lists and patterns and set policies for when those match. For instance, a numeric pattern for account numbers could prevent a message from going through and suspend an account. See *Manage Chat.*

One additional change to the book worth noting is in the *Schedule a Meeting* section. Zoom increasingly offers scheduling options available only via the website. To reflect that split and make it clearer where you can make configuration choices, I’ve reorganized the section, splitting it into *Schedule via an App* and *Schedule via the Website.*
Introduction

Zoom is a videoconferencing service that connects you with anywhere from one to hundreds of other people for real-time meetings, conversations, gabfests, lectures, and other purposes. Zoom allows screen sharing, audio-only participation, and audio/video session recording.

Zoom was founded in 2011 and steadily grew in adoption—until the pandemic hit. Usage then went up by a couple of orders of magnitude. By all reports, Zoom continues steady growth due to three intersecting trends; you may see yourself in one of them:

• **Permanent work-from-home:** Some companies have opted to give up their offices forever, and their employees will never sit in offices together again. This book will help you work from home.

• **Hybrid models:** Some firms now let employees work a few days a week away from the office. This introduces new challenges for the days you’re in an office with other people making Zoom calls and engaged in conversation and other behavior. I’ve revised this edition of the book to encompass the challenges of hybrid work.

• **Less travel, more Zoom:** Those formerly used to being on the road all the time were forced to meet clients and colleagues remotely. Only some in-person visits will resume; this book will help.

Zoom became the remote meeting option of choice for many companies, nonprofits, schools, and government bodies partly due to pricing and partly to simplicity. With a generous free tier and native app availability across all major platforms plus web apps, Zoom required very little effort to start using.

While you can get started with Zoom easily, and may have already used it for months or years, tapping its more advanced, useful, and subtle features still takes a surprising amount of effort. For as much as Zoom has improved its apps and interfaces, it’s not an intuitive system. This book shaves your learning curve to let you become a more productive and—more importantly—happier Zoom user.

Click here to buy the full 280-page “Take Control of Zoom” for only $14.99!
Zoom Quick Start

Zoom packs a lot of power and utility into a sometimes hard-to-understand set of interfaces that differ slightly across each operating system and browser they support. Use this Quick Start to find the parts of the book most useful to you the fastest.

If you want to leap into a meeting, jump to “Be part of a meeting.” If your paramount concern is safety, read the sections under “Consider safety.” If you will never host—initiate or manage—a meeting, you can skip later chapters in the book focused on hosting and co-hosting, listed in “Learn to host Zoom meetings.”

Consider safety:
• Maintain your safety as a participant; see Stay Safe in a Meeting.

• As a host, create safe conditions for a meeting; see Plan for Safety as a Host.

• Deal with safety issues while a meeting is underway when you’re hosting it; see Protect a Zoom Meeting.

Get set up in Zoom:
• Install Zoom software and configure it; see Get Set Up with Zoom.

• Prepare your surroundings and yourself for video chats; see Prep for Meetings.

• Make sure you’re using the best audio and video inputs you can for your purposes; see Upgrade Your Audio and Upgrade Your Video.

Be part of a meeting:
• Conference with people in a Zoom meeting; see Participate in a Meeting.

• Understand the many kinds of things Zoom lets you share to other people in a meeting; see Share Your Screen.
• Learn how to make effective presentations within Zoom; see Present in Zoom.

• Talk via text with people inside and outside a Zoom meeting; see Chat in Zoom.

Learn to host Zoom meetings:
• Use host controls to create meetings; see Set Up a Meeting.

• Handle a meeting while it’s underway; see Manage a Meeting.

• Manage breakout rooms; see Break Meetings into Smaller Groups.

• Create polls during a meeting; see Run a Poll.

• Control participants’ screen sharing; see Manage Screen Sharing.

Record and distribute Zoom meetings:
• Make an audio and video record of a Zoom session; see Record a Meeting.

• Livestream a Zoom meeting to YouTube, Twitch, and other services; see Stream a Meeting.
What Zoom Can Do

Before we get into how to set up Zoom and use it, let me sketch an overview of what Zoom offers across their software and some optional hardware so you can understand the scope of your options.

Tip: If you already use Zoom and have it installed, jump ahead to Prep for Meetings to dive into setting up your devices and the area around your workspace, and using Zoom in meetings.

Zoom Videoconferencing

Zoom’s best-known and most commonly used feature is videoconferencing. Videoconferencing includes two or more people using audio and video to communicate with each other in a live session (Figure 1).

Figure 1: In a typical Zoom meeting, you might have a number of people who you can choose to see on screen at once.

One person has to be the host: they create a meeting and have super-powers. Everyone else is a participant, someone who has varying
abilities in a meeting depending on what the host permits them to do and what’s available in their app or supported by the browser they’re using. Participants might also be called attendees or members.

**Tip:** Hosts can transfer their host role to another member if they need to leave or give someone full control. At paid tiers, a host can delegate authority to other participants, making them co-hosts. See Divvy Up Host Roles.

Each participant may be able to see the live streaming video camera of everyone else, or sometimes just one person at a time—or just a presenter or meeting host.

**Pick Speaker View if Gallery View Overwhelms**
Zoom’s Gallery view can be overwhelming in big meetings. Depending on your device’s hardware and the meeting’s size, you can have from about a dozen (as in Figure 1, above) to 49 people on screen; Zoom breaks large meetings into pageable screens.

The Speaker view can be a preferable alternative. It shows just the current and most recent people who have spoken.

Zoom videoconferencing, called Zoom Meetings & Chat, also includes:

- **Audio-only participation:** People in a Zoom meeting don’t have to have a camera or can opt to not stream video from theirs. Those who dial in from a telephone can use only the audio features.

- **Viewer/listener only:** A Zoom participant can be a completely passive observer and not send their audio or video into the meeting.

- **Screen sharing:** A Zoom host or participant can share their live screen. If the host allows it, multiple people can share screens simultaneously from desktop apps at once.

- **Screen annotation:** Participants can mark up a screen that everyone can see.
Get Set Up with Zoom

Zoom starts with an app, like any networked service that involves connecting people. To use Zoom, you install a native app from the company and launch it, or click a link in your browser to open a Zoom web app. From there, you can participate in meetings and webinars.

In this chapter, I walk through the options for apps and then explore the kind of hardware you need and options you might prefer. Then I examine Zoom’s pricing tiers, useful for anyone who ever plans to host a meeting of more than one other person.

Download or Use a Zoom App

Zoom works best with a native app, one written for the operating system on which it runs. Some features are only available in native apps, such as annotating a digital whiteboard. Native apps tend to be faster, less choppy, and more reliable than Zoom’s web apps.

If a native app isn’t feasible, however, turn to Google Chrome, the web browser for which Zoom offers the best feature support.

Note: You may be helping someone else get set up, and for naïve users, a web app may be vastly easier to use—a single click or two is all that’s needed to participate in a videoconference.

Use a Native Zoom App

Zoom offers native apps for every major platform, including current and many previous releases of Android, iOS, iPadOS, macOS, and Windows. To get a native app, you can do any of the following:

- Visit the Download Center, which automatically figures out what app is right for the device from which you’re browsing. Click or tap the Download button.
• Wait until you join your first meeting on a given device. The meeting webpage will prompt you to download the software. (Give yourself a few minutes to install it and get it configured.)

• Download directly via these links to Google Play (for Android) and the iOS App Store (for iPhone and iPad).

On desktop operating systems, run the installer and follow prompts to install the software.

On mobile devices, install the software through the familiar app store process. Smartphone apps have relatively little territory to work with to manage showing people and the Zoom interface (Figure 2).

![Figure 2: Even in landscape view on an iPhone (top) or Android phone (bottom), you can only see four people at once.](image-url)
Prep for Meetings

Appearing on video and setting yourself up to be heard (and to hear) can be daunting if you don’t do it all time—even among trusted colleagues. It’s especially the case when you’re connecting with students, instructors, your boss or higher-ups, family, and friends. Consider the following as a way to put your best visual and audio feet forward.

Let’s start with the new reality that broadly emerged in 2022: having Zoom meetings when people other than family are in the vicinity.

Prepare for Hybrid Meetings

While some offices in mid-2022 remain fully virtual—and some companies will never have physical offices again—challenges emerged for anyone back in an office, preparing to return, or coping with an ever-growing number of people returning.

If you work at least a day a week in an office alongside other people, you have probably already encountered issues with working in the same shared space while using Zoom.

Note: One key advantage to the workplace over home when having Zoom calls is that it’s unlikely toddlers will burst in screaming, or a naked family member will walk by in view of the camera.

For starters, I hope you’ve had discussions among co-workers or as a department, company, school, etc., about noise and audio separation. (Reducing ambient noise is a business/social interaction issue beyond the scope of this book.)

The big things to consider around noise in your environment created by you or other people are:

- **Noise cancellation (hearing):** Can you (or they) wear noise-canceling earbuds or headphones to reduce ambient sound?
• **Noise cancellation (speaking):** Can you use a better mic, settings on your computer or mobile device, or settings in Zoom to reduce ambient noise or conversation? For instance, you can use a headset mic or an external dynamic mic, both less sensitive to far than near sounds; change the Mic mode on certain iOS/iPadOS devices (see Use iOS/iPadOS Audio Control Options); or modify the Zoom noise-reduction settings (see Manage Your Audio Input).

With that in mind, the following three scenarios will help you in a communal space in how you set up for a Zoom call.

**Only Participant in a Shared Office**

One of the most likely scenarios is when you’re trying to start a Zoom call, and you have other people around you. There might be one person quite nearby, or you’re in a large open office with people scattered all over—some of them may be talking, others concentrating furiously.

Consider these preparatory moves:

• **Position for video:** If you need to have your camera on, can you position yourself with no one in the background? Or can you get a collapsible stand or other prop you can place attractively in the background—or use as a green screen?

• **Schedule for silence:** If you can coordinate with others about meetings, you may be able to use a shared or company calendar to avoid overlapping some or most meetings.

• **Use headphones:** Whether noise canceling or not, using headphones will keep you focused on the meeting and have the meeting product less of an impact on those around you. (If they’re all wearing noise-canceling headphones and listening to music or on other meetings, they may not care.) Earbuds may work, too, but they might need to be noise canceling to have a similar effect.

• **Pick the best mic:** As noted above, noise cancellation on mics can be as important as on headphones. Some computers and mobile devices have superb built-in noise removal by “listening” across multiple mics.
Participate in a Meeting

Zoom meetings may have all participants joining via just video, just audio, or some combination of the two. Some people in a session may be using a dial-up line as audio-only members. Meetings might have a single person streaming their video on camera, like a lecturer, fitness instructor, or manager, and everyone else locked out from showing theirs. Or a screen might show every participant!

**Tip:** Zoom offers multiple views, discussed later, that let you customize how many people you see on screen when multiple people are streaming video or sharing screens.

A host might mute everyone and ask that only text messaging be used as a backchannel, or might call on individuals and hand a sort of virtual mic to them, highlighting them as they ask a question or take a turn in a presentation or course.

Let’s dig into how we find a meeting and join it, and then how to work within a video session.

**Note:** Learn how to work as a host in setting up and running a meeting in two later chapters: Set Up a Meeting and Manage a Meeting.

What Makes a Meeting

A Zoom meeting is a sort of virtual room to which you’re invited. Every meeting has a unique meeting ID (a 9–11 digit number), and nearly all have a passcode. You may be sent an invitation that contains the meeting ID, the passcode, and a URL that will redirect (with permission) through Zoom’s website to connect you to the meeting.
**Note:** Only paid Zoom tiers let a host create a meeting without a passcode, but all meetings must have *either* a passcode *or* a Waiting Room enabled (or both). See Join and Enter the Meeting, just below.

**What’s a Personal Meeting ID?**
Zoom creates a Meeting ID for every new meeting, but each account also has a fixed Personal Meeting ID associated with it. (You can change the ID if you subscribe at a paid tier.) It can be used exactly like a regular Meeting ID for both scheduled and “instant” meetings. (See Meet Instantly for more details on the latter.)

As long as you keep the passcode the same, anyone can drop in while you have an active meeting by using the ID and passcode because the Personal Meeting ID doesn’t change. That might be useful for some personal, academic, or work situations in which you want a persistent accessible space. Or you may not worry about people re-using the connection details and dropping in on private meetings. (For business and education accounts, administrators can disable the use of Personal Meeting IDs.)

The host may have opted to include the passcode in the URL; if so, it appears as <code>&pwd=</code> followed by letters and numbers. This adds the risk that an unwanted party might use the URL to join a publicly announced or posted meeting. Other hosts may share just the portion of the URL that contains the meeting ID (with the passcode provided through other means), and you will then be prompted to enter the passcode to join the meeting.

Each meeting is set up with particular parameters, some of which can be modified during the session. Here’s a list of what you may be able to do in a meeting, keeping in mind some hosts may disable certain options or they may not be available at the host’s service tier or without the host’s permission:

- Share a video stream from your camera.
- Share audio from a mic you select.
- Share your screen.
Share Your Screen

You may find yourself routinely sharing your screen in Zoom for many reasons: to walk through or narrate a presentation, demonstrate software, or help provide technical or other support to people in the meeting for a given feature. You might even use this method to record a video solo or with other people that you can post as a how-to.

Zoom makes it easy to share your screen to from a few to as many as hundreds, or even thousands, of people. Knowing a few key settings will help you from the get-go.

I start with how to share your screen, then look at what you don’t want to share. Next, I move into how manage presenting in Zoom using a variety of techniques, including with a single screen, multiple screens, and multiple devices. I also detail how to work around limitations in full-screen modes in macOS.

Screen Sharing in Zoom Is a Form of Streaming Video
Zoom shares a screen or part of a screen as streaming video, but it isn’t subject to the same limitations as regular streaming video as noted in Determine Whether You Can Use HD Video. As Zoom notes about its higher-resolution Group HD setting, “Screen sharing is not affected by Group HD. Screen sharing will display content at the native resolution of the desktop, application, or portion of the screen being shared.”

However, you do need enough upstream bandwidth and enough computational power to stream at that native resolution. That will vary tremendously by resolution and the amount of change that occurs: a PowerPoint presentation may change little beyond advancing one slide to the next minute, while an app demonstration could constantly show menus dropping down and onscreen actions.

Zoom will downsample and compress video on your end if necessary. Those on the receiving end with low bandwidth or slow processors are more likely to see static screen sharing slowly lock into place rather than see a blurry stream.
Tip: For advice as a host on managing screen sharing, see Manage Screen Sharing.

**Pick What You Share**

What you can share varies by platform, but it includes photos, apps, a full monitor or device screen, and files that an operating system can show natively without another app, like video and PDFs. While desktop apps have a lot of options, Zoom provides a robust set of choices for mobile devices, too.

**Multiple Shared Screens**

Just to make it even more complicated, Zoom allows multiple people to share their screens in the same session. This includes whiteboards. A host must enable this feature.

As many desktop users as desired can share at once, but mobile users can share only if they’re the only member sharing.

With dual-monitor mode enabled, a desktop user can see two different whiteboards at once. Otherwise, they see the most recent one, but can use view controls to select others. Mobile users see *only* the most recent whiteboard.

**Note:** What actions can viewers take? See View a Shared Screen. This includes options you can engage in with a whiteboard or annotating your own screen. Other people in the meeting can be allowed to mark up what you’re sharing, too, and everyone can see it.

**Share from a Desktop App**

Desktop apps offer a very long list of what you can share to other participants. Start by selecting an item and then proceed to share.
Present in Zoom

One of the most common uses of Zoom is to show stuff to other people: presentations, images, movies, app demonstrations, and much more. While Zoom has robust features for sharing screens, as the previous chapter lays out, it’s surprisingly difficult in some cases to manage the interactions among a presentation app, an operating system’s full-screen mode, and Zoom’s screen-sharing options.

Tip: I can really only recommend presenting from a desktop or laptop computer. On a mobile device, controls and features are so minimal that presenting is an exercise in frustration and limitations, and therefore acceptable only in a pinch.

I count Apple Keynote, Google Slides, and Microsoft PowerPoint as the major presentation options, but some image-display apps may fit the bill—notably, Apple’s Preview app, which can show all major image file formats and PDFs in full-screen mode.

Note: You might use an app other than those intended for presentation or image display when you’re demonstrating an app itself or showing a process that occurs within an app.

I’ve developed strategies for common scenarios that should help you prepare presentations and manage them.

Start by laying out what precisely you want to present and what you want available:

- **Slides alone, or slides plus notes:** If you’re using a slide deck within presentation software, as a PDF, or in another app, do you want to be able to see just the presentation or the presentation plus notes or other supplementary material? (I know I nearly always need notes for my presentations.) Or see the next slide (or others)?

- **Observe participants or monitor chat:** While presenting, it can be extremely useful to see people’s reactions, sometimes subtle
and sometimes overt. This can let you answer questions people say with their faces, or call on people. You may also want a show of hands or other visual feedback. You may even want to see questions or responses people are typing in Zoom’s in-meeting chat.

- **Switch among apps:** Do you need to bring in material from more than one app as you present?

- **Add additional video sources:** In some cases, you may want to switch among video sources other than your presenter webcam and shared slides when you are showing “real-world” objects. That could include a document camera attached to the computer from which you’re presenting, or additional devices logged in to Zoom.

Here’s the good news. You have the greatest flexibility if you need just your slides, are good with the way Zoom shows an overlay of participants in a floating window, and don’t need other apps or video sources. You can use Zoom and a presentation or other app without engaging workarounds or special modes, and with either one or two screens. It’s still worth reading on for suggestions for flow and simplicity when presenting or demonstrating, particularly in PowerPoint or Keynote.

However, if you need to consult notes, look at other slides, switch between apps, or pull in other video sources, read on! Each of the scenarios I present, particularly the deep dive into full-screen mode, will help reduce frustration and achieve your desired results.

**Get a Helper**

For anything complicated, if at all possible, get at least one person who can help manage inputs and give you chat, text, or even audio feedback as you go, and keep an eye on participants. A co-host could call out, “Andrea has a question,” or cue you to confusion they see on several faces through some backchannel, including private chat.

If you’re hosting the session, you can hand off your host role to someone else while you present; see Hand Off the Host Role. In paid plans, you can remain host and grant other people co-host privileges, which lets them have nearly all the same capabilities as a host; see Promote a Co-Host.
Collaborate with a Whiteboard

It sometimes feels like Zoom throws everything and the kitchen sink into its apps in the interest of figuring out which features work. Unfortunately, the company doesn’t always go back and prune, consolidate, or integrate earlier features. You see that prominently in Zoom Whiteboard, a feature introduced in April 2022 that’s part of the Zoom One subscription bundle.

Zoom Whiteboard has many similarities to the whiteboard feature available within screen sharing during a Zoom session (see Mark Up a Screen). But, like Zoom’s chat feature described in the next chapter, a whiteboard can be used independently of a Zoom videoconference.

What do you use a whiteboard for? It’s a visual collaboration tool, a kind that became popular during the pandemic. You can draw, add text, attach sticky notes and comments, and revise in real time with multiple participants. It can be a great way to brainstorm ideas or plan and sketch out actual implementation.

Note: Zoom’s intent is to compete against a growing variety of visual collaboration tools that have added videoconferencing! Zoom is coming at the challenge from the other direction.

Start with a Whiteboard

You can access the whiteboard feature from desktop and mobile apps and via your Zoom account (not the Zoom web app):

- **Desktop:** In the main Zoom app window, click the Whiteboards icon in the upper-right corner.

- **Zoom account:** Click My Account and then click Whiteboard or go directly to the Whiteboard section.
• **Mobile:** Tap the More icon and tap Whiteboard.

**Warning!** Although Zoom doesn’t make it clear in the interface, you cannot create or edit or comment on a whiteboard with a mobile app, though you can view ones created via the website or a desktop app.

The desktop and web interface are effectively identical, making me think that the desktop version is a web view—a kind of embedded website within an app—rather than a fully native app.

To create a new whiteboard, click the New button. Zoom presents a Templates dialog you can select from to avoid starting from scratch (Figure 62). Examples include XY Plot, Kanban Table, and Product Feature Roadmap.

![Figure 62: Templates can help you make a quick start.](image)

You can click the Close icon to skip, or select a template and click Use This Template.
Chat in Zoom

While Zoom may seem all about video, the service has a chat system that works both within meetings and separately, depending on how you have it configured.

Zoom’s chat is fairly primitive compared to modern instant messaging systems, like WhatsApp, Skype, and Apple’s Messages, and channel-based group communication tools, such as Slack and Teams. It gets the job done during a meeting, but it’s unlikely to be a tool of choice outside it unless you, your company, or your school has or offers no better alternative.

**Tip:** For details on what chat features you can control as a host and how to manage during meetings, see Manage Chat.

**Warning!** The administrator of an account can set what Zoom calls Chat Etiquette policies, a list of keywords or patterns that, when triggered, can either block a message or show a warning. However, Zoom says all matching and behavior occurs only in clients. The company says no information, whether the messages or the invocation of a warning, is sent off-device to the host, Zoom, or anyone else.

Chat in a Meeting

Zoom features chat alongside audio and video as one of the ways to communicate with the host and among members during a meeting.

To get started with Chat in a meeting, click the Chat icon at the bottom of a desktop or web app, or tap the More icon and tap Chat.

From a menu, you can select to whom your messages are sent, whether that’s everyone in a meeting or individuals (Figure 74). Zoom doesn’t
let you set up groups to talk to, however. Enter a message and press
Return (desktop) or tap Send (mobile).

![Chat](image)

**Figure 74:** In a chat in a meeting, we talk about chatting in a meeting. (View shown without profile icon option.)

Zoom shows by default the profile pictures or “avatars” of meeting participants. People without photos or images appear as a set of initials. You can disable showing your image. Go to Settings > General in desktop apps or Meeting Settings in mobile clients: turn off “Show user profile icon next to in-meeting chat messages.” Admins can also disable profile icons, so you may not see them at all.

As part of Zoom’s continued efforts on privacy and security, note the thin box at the bottom of **Figure 74**. The badge overlaying the figure indicates the chat is encrypted. Clicking “Who can see your messages?
Set Up a Meeting

Because the meeting is the central unit of Zoom, as discussed in What Makes a Meeting, creating that meeting is the central job of the host. In this chapter, I review the many options you have for setting up a meeting, including planning for safety, and then discuss how to create a meeting.

A Roadmap on How To Host
This chapter marks the start of the part of the book that helps you to learn to host a meeting. In this chapter and the following, Manage a Meeting, you learn how to function as a host on Zoom, including wrangling participants and controlling screen sharing and chat.

In the chapter after that, Record a Meeting, I explain options for hosts to allow or configure recordings and how to record or access recordings as a host or participant, while in the succeeding chapter, Stream a Meeting, I dig into live-streaming options.

Finally, in Let an AI Caption Meetings, you learn the best options for integrating live captions and generating transcriptions using machine learning inside and outside of Zoom.

Configure Meeting Options

Let it never be said that Zoom offers too few options—or that it puts them all in one place! In this section, I explain where to find settings and walk through basic meeting preferences and security options you can choose in advance.

Where To Find Zoom Meeting Settings

The company’s website and apps organize meeting options in a few different places.

• **Personal settings:** Preferences you set via the Personal > Settings part of the website affect both the defaults for future meetings you
create as well as the accessibility of certain features in all meetings, no matter whether you have scheduled the meeting before that point or not. I discuss these in this section.

- **Administrative settings:** Every paid account, even with a single host in the account, has additional settings for people in the administrator role. If you’re a single-host Pro account, you may need to use the website section Admin > Account Management > Account Settings to enable features that can then be accessed via the host account’s Personal > Settings options. If your host account is managed by another person, you may need to consult them to turn on (or off) features in your host account.

- **Group settings:** Administrators can create groups that have their own set of meeting-related settings reachable via Admin > User Management > Group Management. If there are features you need in a particular way that nobody else does, an administrator could conceivably create a group of one for you.

- **Meeting settings:** When scheduling a meeting, you can make changes to defaults that are decided in your account settings. See Create a Meeting for details.

- **In-meeting settings:** Some options chosen in advance can be modified by a host while the meeting is underway. See Manage a Meeting for a variety of options available during a meeting.

- **Personal Meeting Room settings:** Zoom also has separate options for the Personal Meeting Room, a sort of fixed address in Zoom assigned to your account. I discuss these options particularly in Meet Instantly and Invite Participants to a Meeting.

To access personal settings that affect just your host account, start by visiting zoom.us, clicking Sign In, and then clicking My Account. In the left-hand navigation bar, click Settings under the Personal menu. Or click this link to Settings.

I’ve grouped below the settings you should understand and consider configuring. There are many others that are self-explanatory or which you will rarely have reason to change.
Manage a Meeting

Zoom makes hosting a meeting just as easy as being a participant. You use the same apps and have all the same options plus superpowers in meetings that let you control participants.

Zoom doesn’t force you into a particular way of interacting with participants. A series of pre-meeting choices you make and in-meeting actions you take shape how you run the meeting.

As a host, you can be entirely laid back, a moderator, a mediator, or a dictator—sometimes acting that last role is needed! Like running a classroom, a Zoom meeting often requires attention and discipline to prevent it from devolving into chaos. A tighter hand will be needed for public meetings, in which anyone can participate, and student-based videoconferences.

But even for social use, knowing how to manage meeting Zoom’s controls will make the experience more meaningful, fun, or functional.

Host Meetings with a Desktop App or an iPad Pro

Zoom lets you host a meeting from mobile, desktop, or web app. But I argue it’s best to use a desktop app or an iPad Pro. All desktop computers capable of running the Zoom native app and all iPad Pro models offer you the option to switch between Speaker and Gallery views, add multiple spotlights, and even arrange the order of speakers’ video in Gallery view. For screen sharing and presentations, however, I would still recommend a desktop over an iPad Pro.

While you can use a smartphone or lower-featured iPad or other tablet to run a meeting, most actions take multiple taps and some aren’t available at all. In the desktop and iPad apps, everything is easily available, often with a single click. It lets you fully participate and fully manage a session.

If you must host via a browser, use Chrome: Zoom has progressively added features over the last couple of years that make it nearly as good as hosting with an iPad Pro.
Divvy Up Host Roles

While I’ve spoken mostly about a singular “host” throughout this book so far, there are actually three kinds of host roles in a meeting, although two of them are really variations on a theme:

- **The main host (all tiers):** This role is mandatory, while the other two are not required for any meeting. A host can hand off their role within a meeting or when leaving an active meeting.

- **Co-host (paid tiers):** During a meeting, a host can appoint one or more co-hosts, who have a subset of hostly powers. (While the prefix “co-” can mean jointly or equal, it’s used here—as it often is—to mean “less than equal.”)

- **Alternative host (paid tiers):** An alternative host is like a co-host plus. When scheduling a meeting or modifying a scheduled meeting, one or more people can be anointed as alternative host giving them the ability to start the meeting and act as host until the meeting organizer arrives. After the meeting starts, they remain the temporary host *until* the host joins, at which point they’re effectively demoted: either to a co-host if co-hosting is enabled for the account, or a regular participant if not.

**Note:** The co-host feature can be turned on or off at the group, account, or individual user level via Zoom’s web settings.

Hand Off the Host Role

Because the host has some extra capabilities, it can be handy to hand off the role with a paid account, and this is the only way to give other participants host-like control with free accounts.

At any time during a meeting, a host with a free or paid account can do one of the following:

- In a desktop or web app, open the Participants list, hover over the member, click the More button, and select Make Host.
Record a Meeting

You can capture audio and video recordings of a meeting using features built into Zoom apps. Record during a multiple-person conference, a lecture or presentation, or an event, and you can later work with the material captured. You might post the complete session video the moment a meeting ends, or edit individually recorded speakers into a multi-track podcast.

Zoom allows two kinds of recordings: local and cloud. All tiers of service can record locally, and a host can record a session or permit any participant to make a recording (see Allow a Participant To Record Locally). Recording locally requires a desktop app.

Only a host can record to Zoom’s cloud-hosted storage, but any Zoom app can control cloud recording. Cloud recording requires a paid tier of service. Each tier includes different amounts of storage space for the recordings, which can be download or shared from the cloud.

**Note:** In addition to recording for later playback, you can stream meetings via YouTube Live, Twitch, Facebook Live, and other services. See the next chapter, Stream a Meeting.

Use Other Tools for Recording

If Zoom’s built-in tools don’t suit on a desktop operating system or you want to record from a mobile device, you can use built-in operating system or third-party tools to record. Android and iOS in particular have straightforward ways to record the screen as a video or even stream to other apps.

These videos will include Zoom interface details and might need additional editing. You can disable the Zoom account setting “Always show meeting controls” to minimize its appearance on screen.

Before I get into the details of recording, let’s address privacy. Zoom has matured over the last two years to providing a lot of disclosure and requiring lots of consent.

Click here to buy the full 280-page “Take Control of Zoom” for only $14.99!
Consider Privacy During Recordings

We often say unguarded things when we think we are among people we trust. In this new era of everything happening remotely on video, we may drop our guard and be impolite, impolitic, or imprudent during a meeting that is being recorded.

There are also many kinds of meetings that are strictly private, proprietary, or confidential, and in the event they need to be recorded, much more care should be taken about the process.

**Tip:** While these options are available only to the host, you can also suggest that a meeting host engage them when you’re a participant. In an organization, you can help draft guidelines, a wiki entry, or some other method of spreading best practices for recording internal and external meetings.

Zoom provides disclosures and requires affirmative consent for recording in variety of ways:

- **Confirm via dialog:** Zoom shows a dialog box that requires a response whenever a host or other party records a meeting. See [Enter a Meeting](https://zoom.us) for more particulars about what participants see.

- **Spoken alert:** An automatic spoken alert about the recording plays as well, though you can control that alert in the [account settings for recordings](https://zoom.us): you can opt to limit the spoken alert to just people outside the Zoom account hosting the meeting or disable it altogether.

- **Message at top of meeting:** Zoom shows a message within their apps while a recording is in progress.

**Note:** While Zoom always alerts participants by default about a recording, hosts on Business (100-plus license), Enterprise and Education licenses can customize the alert or disable it.

I suggest, in addition to the automatic disclosures, that you announce at the start of a meeting that it’s being recorded.
Stream a Meeting

Zoom lets you stream video from an active session to services designed for real-time video, like Facebook Live, Twitch, Vimeo, and YouTube Live. Zoom relies on industry standards, so you can livestream to any service provider that supports widely adopted technologies.

Livestreaming exploded in popularity during the pandemic, as would seem natural when people couldn’t go to in-person events. Zoom is ideally suited for it: it lets you create a solo meeting or one with many other participants; allows a host many controls for managing what’s seen on screen; and lets you share material within a session, whether images, videos, a presentation, or webpages.

Despite these advantages, Zoom hasn’t made it easy to figure out all the moving pieces required to livestream. I’ve sorted it all out for you in this chapter.

Because YouTube Live is free to use and a popular livestreaming service, my general examples in this chapter draw from it. However, I’ll also show you how to set up to use Twitch, a service initially designed around gamers, and other streaming services compatible with Zoom.

**Note:** I’ve used livestreaming in Zoom for events like unveiling Peanuts print production molds, providing commentary for an old movie with friends, and answering questions about cables.

Prepare for Livestreaming

Livestreaming requires a similar but distinct set of skills from hosting a regular meeting. You have more elements to prepare and stay on top of during the broadcast.

**Tip:** You can livestream solo, using Zoom as a simple broadcasting app that manages all the complexities for you.
First, make sure all participants understand that an upcoming meeting will be broadcast live. Talk to them about setting up their video and audio correctly, and explain how to use features to blur or substitute their video background. (See Upgrade Your Video, Upgrade Your Audio, and Let Zoom Drop In a Background.)

Next, gather all the materials you might want to present or have on hand during the livestream. This might include background images, presentations, video clips, and more.

Third, I highly suggest a “pre-game” meeting test a day or more in advance in which you look at and listen to everyone’s setup and offer suggestions if it’s not working as expected. You can run through any material you or other people mean to show via screen sharing or using virtual-camera presentation apps.

Tip: Create some static art you can use as a backdrop in a 16:9 ratio. Many services display this until a meeting starts. You can also use it as a still image you show via screen sharing if you start livestreaming before you’re ready to enable video.

If at all possible, grab a second person you set up as a co-host to help out with the meeting. There can be so much to manage that another set of hands acting as a producer will improve the session.

During that meeting or in another test, experiment with switching among video views as you would on the livestream. livestreaming supports four kinds of views with a couple of twists:

- **Gallery:** Choose the Gallery view and the livestream sees the view as you see it on your computer (Figure 118).

- **Speaker:** When you select Speaker view, the livestream sees only the active speakers; the strip of other participants is absent.

- **Screen Share:** The shared screen occupies the livestream.

- **Spotlight:** Use Spotlight for All and that video panel appears as the entire livestream, just as with Speaker view. (See Use Spotlight to Highlight Speakers.) You can add up to nine panels.
Let an AI Caption Meetings

So-called artificial intelligence (AI) has arrived, but in the usual unexpected form. Instead of an electronic brain capable of all tasks, the most-advanced AI comes in the form of deep learning, a way to train an algorithm to pick things that are very like other things. This lets machine-learning systems identify cats in photos, predict upcoming weather conditions based on radar imagery, and turn spoken words into text—all with shockingly good accuracy.

There are three general types of AI-based conversion of speech into text available:

- **Live transcription:** While people talk, the service creates a transcript which can be viewed as it’s created. It’s often just concatenating snippets of live captioning, but it typically attempts to uniquely number and identify speakers.

- **Live captioning or closed captioning:** While people speak, a text version of what they say is posted live in the videoconference feed, just as if it were a captioned video or TV program. The quality can be quite high, but because it’s real time, it’s often worse than offline processing. This is often provided free (as in Skype and Google Meet), as part of a business plan (as in Microsoft Teams), or as a third-party subscription add-on (as with Otter.ai, one of the first, and other services).

- **Post-meeting transcription:** Offline processing of audio can produce better results, because it’s not trying to keep up with the demands of nearly instantaneous conversion. This audio tends to be more accurate and better identify multiple speakers.

Live captioning can be an advantage for any attendee, but especially for participants who have a hearing impairment. It may also help attendees in noisy situations where they can’t play audio or wear
headphones that let them hear clearly what’s being said. Live transcripts during a session can be useful to follow along for the same reason or to reinforce what’s being said.

A post-meeting transcription with extra processing can provide a close-enough record of a meeting for later searching. But these post-meeting documents can also almost always have speakers’ names assigned (which then propagate for that identified speaker throughout the transcript) and allow clean-up of text and annotation. That allows production of a more polished or even verbatim text record.

**Note:** Zoom also allows people to type captions and a host can assign that role to someone in a meeting. This allows a volunteer, in-house staff, a contractor, or a third-party service to provide high-quality human-powered captioning and transcripts.

Zoom’s service offers live captioning and live transcripts during meetings for both free and paid tiers. The service offers no post-processing phase or editing interface. You can turn to third-party services that integrate with Zoom or that let you upload audio after an event to provide more advanced, flexible, or different features than Zoom’s included ones.

**Consider Otter.ai**

I subscribe to Otter.ai, Zoom’s initial captioning partner and now a [Zoom app](https://www.otter.ai), which offers live transcripts via a browser that participants can highlight and comment on while the meeting is underway. It can also grab audio from your cloud-based recording sessions.

Otter.ai also performs post-meeting processing for improved text quality, and has a web app for editing transcripts that lets you listen to the audio associated with each transcribed word. You can upload audio files for processing as well.

To manage captions, a host or co-host clicks the Live Transcript icon in a desktop app and clicks the Enable button in the panel that appears.
Appendix A: End-to-End Encryption

Zoom encrypts communications among participants in a meeting in a sort of tiered way. In its basic cloud-based encryption, available and used for all meetings since early 2021, the service generates a shared session key on a server and transmits it over a secure link to each participant.

Zoom says they don’t store or have direct access to that key. But because they employ the key to make cloud-based recordings and to patch in dial-up callers to meetings, that means that the innards of their system handles and moves it around.

This design makes it possible for Zoom to intercept and decrypt meetings in the right circumstances, and for hackers or government agents to do the same if they broke into Zoom’s servers. A national security agency might also compel Zoom to open up its servers or have the assets to intercept a Zoom video session and obtain the encryption key, allowing them to break the encryption later.

That has led Zoom to add end-to-end encryption (E2EE). Security standards and experts almost always use E2EE to mean that every endpoint in a conversation or data exchange—whether that’s a device or an app—generates its own encryption key and keeps that key stored locally. It’s never shared.

Identify the Kind of Session

A green shield with a checkmark in its center in the upper-left corner of desktop and web apps and the top center of mobile apps emphasizes that cloud encryption is in use. An even more secure version is described in this appendix and sports a lock icon.

Within an E2EE system, a session starts via a clever process of exchanging encryption details unavailable to the company or organiza-
tion operating the system. This is how Apple iMessage, Signal, and some other systems work.

**Note:** Google Hangouts, Skype video sessions, Cisco Webex, and some other commonly used chat and conferencing software also lack end-to-end encryption. While these services use stronger encryption algorithms and designs that provide less opportunity to access a session key, the potential for interception remains. (Webex users can request a switch to E2EE, but lose several cloud-based features.)

Zoom’s system relies on each software client generating its own public/private key pair, a system in which the private key is never disclosed or sent anywhere, and the public key can be used to encrypt messages that only the possessor of the private key can decrypt. This is called public-key cryptography and versions of it underpin all security on the internet. This very secure method is almost always used to exchange a session key, which is a strong shared secret used for a period of time—like during a Zoom meeting—to encrypt everything among parties. It can be shared safely through this public-key method.

This approach is designed to let parties who don’t all know each other exchange data securely without prearrangement. It also lets legitimate participants in the group determine whether a so-called man-in-the-middle (MitM) attack is underway. An MitM interposes themselves in a connection so that they invisibly relay data between authorized parties, while attempting to hide from them. (In the analog world, an old-fashioned phone tap—literally splicing into wire—is an MitM interception.)

When a Zoom session with E2EE fires up, the host’s system generates a session key and encrypts it with the public keys of all the attendees. Each attendee’s client decrypts the message with its private key.

In a classic MitM attack, a malicious party sits effectively on a line between the people communicating—imagine someone cutting a phone wire and attaching it to two receivers, one for each ear. They intercept the key exchange, and provide their own public key information to parties on each side. This lets them receive certain information, includ-
Thank you for purchasing this Take Control book. We hope you find it both useful and enjoyable to read. We welcome your comments.

You can access extras related to this ebook on the web. Once you’re on the ebook’s Take Control Extras page, you can:

• Download any available new version of the ebook for free, or buy a subsequent edition at a discount.

• Download various formats, including PDF, EPUB, and Mobipocket. (Learn about reading on mobile devices on our Device Advice page.)

• Read the ebook’s blog. You may find new tips or information, as well as a link to an author interview.

• Find out if we have any update plans for the ebook.

If you bought this ebook from the Take Control website, it has been automatically added to your account, where you can download it in other formats and access any future updates.

This is but one of many Take Control titles! We have books that cover a wide range of technology topics, with extra emphasis on Macs and other Apple products.

You can buy Take Control books from the Take Control online catalog as well as from venues such as Amazon and the Apple Books Store. But it’s a better user experience and our authors earn more when you buy directly from us. Just saying...

Our ebooks are available in three popular formats: PDF, EPUB, and the Kindle’s Mobipocket. All are DRM-free.

Click here to buy the full 280-page “Take Control of Zoom” for only $14.99!
About the Author

Glenn Fleishman never stops writing about technology and its implications. He’s in his third decade of writing for publications as varied as *American History, Fast Company, the Economist, Smithsonian* magazine, *Increment*, the *New York Times, Macworld*, TidBITS, and many others. In 2012, he was a two-game champion on *Jeopardy!*

Acknowledgments

Thank you to the many people who provided advice, input, and testing time for this book to ensure a varied point of view and lots of tips. A special thanks to folks who agreed to let me include their name and Zoom preview in session screen captures: Greg Anderson, Tiff Arment, Lewis Butler, Jeremy Burge, Kathy Campbell, Chris Carr, Josh Centers, Rebekah Denn, Gretchen Donart, Malcolm Dickinson, Scott Duggan, Adam Engst, Tonya Engst, Erika Ensign, Ryan Fegley, David Fuchs, Matt Haughey, Bill Hirt, Amy LaMere, Trish Mason, Adrian Mester, Ian Murren, Chuck La Tournous, Ted Nitz, John Payne, Rob Pegoraro, Brad Peniston, Todd Picard, David Schaub, Nicholas Scott, Mark Siple, Brett Terpstra, and Annette Wierstra.

Thank you, Joe Kissell, for your constant encouragement and endless work on behalf of us authors!
Shameless Plug

I don’t write just ebooks—I also produce ones of actual physical matter. My latest is *Six Centuries of Type & Printing*, a title that traces 600 years of technology and advancements in making type, composing it into words and pages, putting ink on it, and pressing it to paper from before Gutenberg’s perfection of metal printing types through the digital era in which type transcends the printed page.

The type for the 64-page hardcover book was composed on a hot-metal Monotype casting system, printed by letterpress in London and bound and foil stamped in Germany. You can order a copy directly from me.

About the Publisher

alt concepts, publisher of Take Control Books, is operated by Joe Kissell and Morgen Jahnke, who acquired the ebook series from TidBITS Publishing Inc.’s owners, Adam and Tonya Engst, in 2017. Joe brings his decades of experience as author of more than 60 books on tech topics (including many popular Take Control titles) to his role as Publisher. Morgen’s professional background is in development work for nonprofit organizations, and she employs those skills as Director of Marketing and Publicity. Joe and Morgen live in San Diego with their two children and their cat.

Credits

- Editor and Publisher: Joe Kissell
- Cover design: Sam Schick of Neversink
- Logo design: Geoff Allen of FUN is OK
Copyright and Fine Print

Take Control of Zoom, Third Edition
ISBN: 978-1-990783-11-1
Copyright © 2022, Glenn Fleishman. All rights reserved.

alt concepts, 419 8B-3110 8th St. East, Saskatoon, SK S7H 0W2 Canada

Why Take Control? We designed Take Control electronic books to help readers regain a measure of control in an oftentimes out-of-control universe. With Take Control, we also work to streamline the publication process so that information about quickly changing technical topics can be published while it’s still relevant and accurate.

Our books are DRM-free: This ebook doesn’t use digital rights management in any way because DRM makes life harder for everyone. So we ask a favor of our readers. If you want to share your copy of this ebook with a friend, please do so as you would a physical book, meaning that if your friend uses it regularly, they should buy a copy. Your support makes it possible for future Take Control ebooks to hit the internet long before you’d find the same information in a printed book. Plus, if you buy the ebook, you’re entitled to any free updates that become available.

Remember the trees! You have our permission to make a single print copy of this ebook for personal use, if you must. Please reference this page if a print service refuses to print the ebook for copyright reasons.

Caveat lector: Although the author and alt concepts have made a reasonable effort to ensure the accuracy of the information herein, they assume no responsibility for errors or omissions. The information in this book is distributed “As Is,” without warranty of any kind. Neither alt concepts nor the author shall be liable to any person or entity for any special, indirect, incidental, or consequential damages, including without limitation lost revenues or lost profits, that may result (or that are alleged to result) from the use of these materials. In other words, use this information at your own risk.

It’s just a name: Many of the designations in this ebook used to distinguish products and services are claimed as trademarks or service marks. Any trademarks, service marks, product names, or named features that appear in this title are assumed to be the property of their respective owners. All product names and services are used in an editorial fashion only, with no intention of infringement. No such use, or the use of any trade name, is meant to convey endorsement or other affiliation with this title.

We aren’t Apple: This title is an independent publication and has not been authorized, sponsored, or otherwise approved by Apple Inc. Because of the nature of this title, it uses terms that are registered trademarks or service marks of Apple Inc. If you’re into that sort of thing, you can view a complete list of Apple Inc.’s registered trademarks and service marks.

Click here to buy the full 280-page “Take Control of Zoom” for only $14.99!