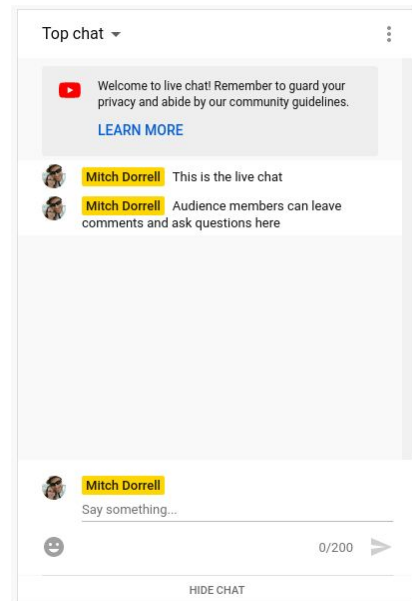# Zoom + YouTube

Zoom has a built-in feature which allows you to livestream a meeting to a streaming service of your choice. Because of the popularity of YouTube, Zoom has a special capability where it can create and start the YouTube stream for you, but this simplified YouTube integration did not work when I tested it. Instead, I suggest using Zoom's general-purpose streaming capabilities. It still directs the stream to YouTube, but it doesn't use Zoom's YouTube-specific button.

I used this procedure for my Ph.D. defense, as well as for several practice sessions while preparing for it. I highly encourage anyone using this for an important event to thoroughly test this procedure multiple times in advance of the event date, because subtle differences in technology might affect this procedure in unpredictable ways.

The End Result

Aside from the fact that Zoom will be sending a live video feed to YouTube, all functionality remains completely separate. The meeting video and audio is sent from Zoom to YouTube, but nothing is sent from YouTube to Zoom. By having audience members watch live on YouTube, the public is prevented from directly interfering in the Zoom meeting. The YouTube link can be shared freely, or even posted publicly on social media, since any malicious activity will be confined to YouTube, where it can be handled by moderators. Audience webcams and microphones are not used, which limits audience participation to a live text-based chat on YouTube (see right). No audience members need to know anything about Zoom.

The event participants (in the case of a Ph.D. defense, this is just the student and the committee) conduct the Zoom meeting like normal. Someone in the Zoom meeting (perhaps the student's mentor) can monitor the YouTube live chat to accept questions from the audience. Aside from the meeting host and the person taking audience questions, none of the Zoom participants have any involvement with the YouTube stream.

The YouTube Setup

You can follow these steps on any computer, or even on a phone or tablet (although the procedure might be slightly different), and your internet connection speed is not important during these steps.

First, to host a livestream on YouTube, the YouTube account must be created and verified-for-streaming 24 hours in advance. After logging into YouTube, use the video camera

with a plus-sign ( ) in the top right corner of your screen and select **Go live**. It will prompt you to verify your account and it will explain the 24-hour waiting period. Once your account is verified, it can start all future streams immediately. This step only needs to be completed once per YouTube account. This account is held responsible for the content in its livestreams.
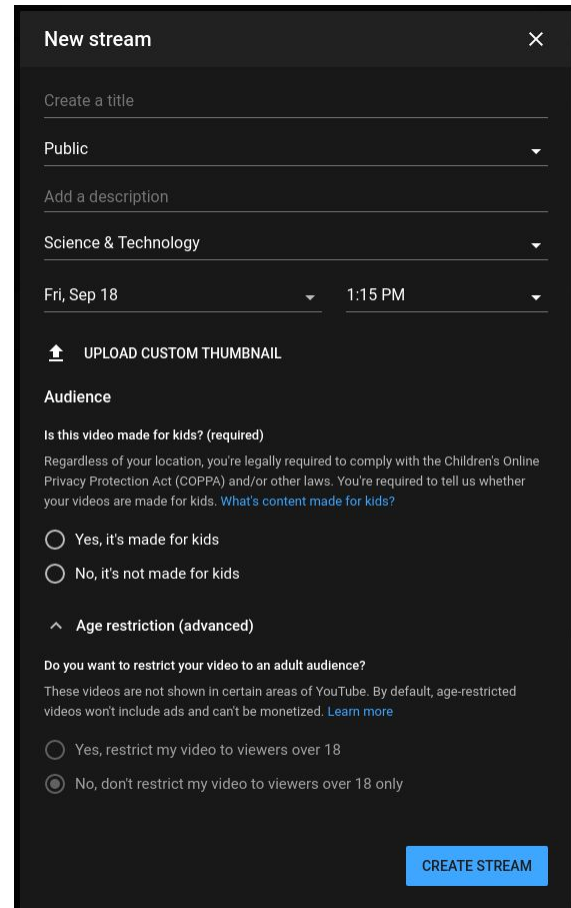
To stream an event, start by creating a new stream on YouTube. Use the button ( ) to **Go live** again. This will take you to the Live Control room. On the left will be three tabs, **Stream** ( ), **Webcam** ( ), and **Manage** ( ). The **Webcam** tab is not relevant, since YouTube will be receiving the video stream from Zoom, not directly from a camera.

If you start in the **Stream** tab, you will be automatically prompted to edit the settings for a new stream. This will start a stream immediately, so instead use the **X** at the top of the prompt (next to **Edit stream**) to close the prompt and switch to the **Manage** tab, where you can schedule new streams to start in the future. Push the **SCHEDULE STREAM** button in the top right corner to create a stream. In the future, you may be asked whether you want to reuse the same settings from a previous stream, or create a new stream from scratch. In this case, choose **CREATE NEW** to ignore settings from previous streams.

The "New stream" window will now be displayed (see image). The title and description are self-explanatory, but most of the other settings need to be considered carefully. All of these settings can be changed later.

Starting from the top, you must choose whether the livestream is **Public** ("Anyone can search for and view"), **Unlisted** ("Anyone with the link can view"), or **Private** ("Only you can view"). This setting controls who can watch your livestream on YouTube, and how they can find it. I recommend setting it to **Public**, so that your audience members can easily search for and find your livestream. For practice sessions, **Unlisted** is another reasonable choice if it is important that you do not have any unintended viewers. I discourage testing in **Private** mode, since it changes the way certain other features behave.

I am not sure what effect the livestream category has (in my example image, it is currently set to **Science & Technology**), but I recommend choosing the category based on the livestream's content rather than its purpose. For my Ph.D. Defense, the livestream was being created for educational purposes, but my defense was not about the subject of education, so I did not use the **Education** category.

The date and time should be set to the scheduled date and time for the event. The stream does not start automatically at the time you set, it's just used for informational purposes. When an audience member opens your link early, YouTube uses this date and time to tell users when the stream will start. YouTube also shows a countdown timer.

I recommend uploading a custom thumbnail for all livestreams, even if it is something generic like a university logo. Without a custom thumbnail, YouTube will use the livestream account's user profile image in its place as a temporary thumbnail until the livestream is complete, at which point YouTube may replace the temporary thumbnail with a screenshot.

To answer the question, "**Is this video made for kids?**", I recommend choosing "**No, it's not made for kids**". COPPA established strict limitations on the way websites interact with children, and selecting **Yes** will disable many YouTube features so that YouTube can comply with COPPA. This setting is for people who are creating children's content.

To answer the question, "**Do you want to restrict your video to an adult audience?**", in most cases I would recommend choosing "**No, don't restrict my video to viewers over 18 only**". This setting is intended to protect minors from accidentally viewing unsuitable content. Aside from the more obvious circumstances, you may want to choose **Yes** if your livestream will contain graphic images, even in a non-violent and non-sexual context, such as real photographs of surgery.

Once the appropriate settings have been configured, use the **CREATE STREAM** button to setup the YouTube side of the livestream. This creates the YouTube link that can be shared with the public. The new stream will now appear in the **Manage** tab under your list of **Upcoming** streams. If you move your mouse over the livestream in the list, it will be highlighted, and an options menu will appear next to the stream title, represented by a small column of three dots, which enables you to change the title and description, copy the YouTube link so that you can paste it into an email or social media post, or finally delete the livestream.

From the **Manage** tab, clicking on the stream title or thumbnail will take you to the main controls for your livestream. If you need to change any of the settings you chose when creating your livestream, use the **EDIT** button in the top right corner of the upper panel of your screen. The left side of the upper panel shows a preview window, which will be blank because Zoom is not sending any video to YouTube yet.

The lower panel has three tabs, but **STREAM SETTINGS** is the only tab of interest right now. The left side has the most important streaming settings. The stream key serves two purposes and must be kept secret. First, this is the key that you give Zoom which *authorizes* Zoom to send video to your YouTube livestream. Second, when YouTube receives this key from Zoom, it uses it to decide *which* livestream should broadcast the incoming video stream. If Alice and Bob both setup Zoom-via-YouTube livestreams at the same time, YouTube will see two incoming Zoom connections, one with Alice's key and one with Bob's key, and will use those keys to match the Zoom connections to the appropriate livestreams. If Alice later creates an additional livestream, her new livestream will have a new (unique) key. If Bob mistakenly (or maliciously) configured Zoom to use Alice's key, his Zoom meeting would be broadcast to Alice's YouTube livestream instead of his own. Confusingly, Zoom also asks for the YouTube video link, but that link only serves the purpose of offering Zoom participants a convenient shortcut to monitor the livestream. That link is not used to configure the livestream itself.

The next section down is **Stream latency**, which I recommend setting to **Ultra low-latency** if possible. When accepting questions from the YouTube audience (via the text-based live chat), the latency will be the amount of time between asking for questions, and the audience *hearing* you ask for questions, and can be as bad as 20 to 30 seconds in some cases, but can be as low as 2 to 3 seconds in other cases. The actual latency also depends on how the audience members watch the video, with some devices adding an additional few seconds of delay in order to buffer the video and ensure smooth playback. If there is no audience interaction, then **Normal latency** may have some advantages, such as improved video quality or smoother playback on older devices or slower connections, but I was not able to see any such differences in my testing.

On the right side are the **Additional settings**, which I'll explain very briefly, indicating my suggestions in brackets. The sliders are turned on when moved to the right, and turned off when moved to the left. **Enable Auto-start** [OFF] will automatically start the YouTube livestream as soon as it receives the connection from Zoom. **Enable Auto-stop** [OFF] will automatically stop the YouTube livestream when Zoom closes the connection. **Enable DVR** [ON] allows viewers to rewind your livestream to rewatch a section that they missed (this is separate from making the completed recording available to watch later). **360° video** [OFF] tells YouTube that the incoming video data is coming from a 360° video camera, which lets viewers see different parts of the scene by moving their virtual camera, or by wearing a virtual-reality headset and moving their head. **Added delay** [None] is self-explanatory, and is used to give people writing captions time to transcribe live speech. I am not familiar with the **Closed captions** [OFF] settings, so please explore them for yourself. **Unlist live replay once stream ends** [OFF] can be used to prevent viewers from searching for your livestream after the livestream is completed. Links to the livestream will still work, however, so be sure to change the **Enable DVR** option mentioned previously if you don't want anyone to be able to watch your livestream later. A more permanent option would be to delete the livestream once the event has concluded.
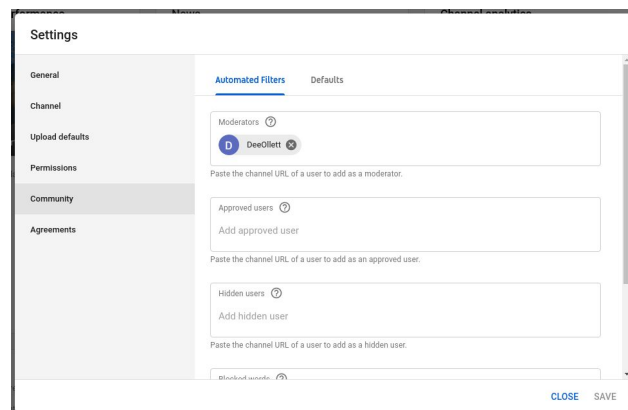
There are a few hidden options in the **Stream settings** window, accessible from the gear icon (⚙) in the top right corner of your screen. Most of these settings are self-explanatory, but there are a couple that are not obvious. In the **Details** tab, **Allow embedding** [ON] will let websites show your livestream without requiring visitors to go to YouTube. In the **Live Chat** tab, **Allow Live Chat to replay** will show chat messages to viewers at the timestamp that they were submitted, so if someone is re-watching the video after the livestream has ended, they will see messages appearing that are relevant to the part of the video they are actually seeing that moment. **Slow mode** prevents individual audience members from single-handedly flooding your live chat with tons of messages.

To the left of the **Stream settings** gear-shaped button is the share button ↗( ), which is mostly self-explanatory, and can be used to retrieve the video link for audience members without having to go back to your list of livestreams. If not using the **Enable Auto-start** feature from earlier, the **GO LIVE** button will be located to the right of the **Stream settings** gear-shaped button. **GO LIVE** will be disabled (greyed-out) until Zoom starts sending video data to YouTube. Even after the Zoom connection becomes active, your audience will not see anything until you push this button. Once your livestream has started, the **GO LIVE** button will turn into an **END STREAM** button, which does exactly what it says: ends the livestream.

Your livestream is almost ready to go, but I recommend configuring a moderator for your YouTube live chat. This setting applies to *all* livestreams hosted by your YouTube account, so when you choose a moderator, that person can moderate the chats for all of your videos. The purpose of the moderator is to make sure the chat runs smoothly. The moderator may have to remove inappropriate or offensive messages, hide misbehaving users entirely, etc… please see https://support.google.com/youtube/answer/9826490 for more information about moderator capabilities. Moderators are not configured from your livestream controls. Don't worry about leaving the livestream controls page, you can get back to it at any time by using the video camera button to **Go live**, going to the **Manage** tab on the left, and choosing the desired livestream.

YouTube moderators must have their own YouTube channels. To create a channel, a YouTube user should click on their user icon in the top right corner of the YouTube homepage and choose **Create a channel**, which is probably the first item on the menu that pops up. If it says **Your channel** instead, then that user already has a channel, and there's no need to create a new one. Once the user has a channel, they can click their icon and choose **Your channel** to bring up their channel page. From there, they should copy the URL from the address bar and send it to you, since this is what you need to add them as a moderator.

To add a moderator for your livestreams, open YouTube Studio either by clicking on your user icon and choosing it from the list, or by going to https://studio.youtube.com, and then choose **Settings** from the list on the left. This is different from your normal YouTube settings pages. Open the **Community** tab from the list on the left side of your **Settings** window (see image). Click in the **Moderators** box, and paste the URL of your moderator's channel page. I also encourage you to review the other settings here as well as in the **Defaults** tab at the top, as well as in the other tabs on the left. Don't forget to hit **SAVE** when you're done.
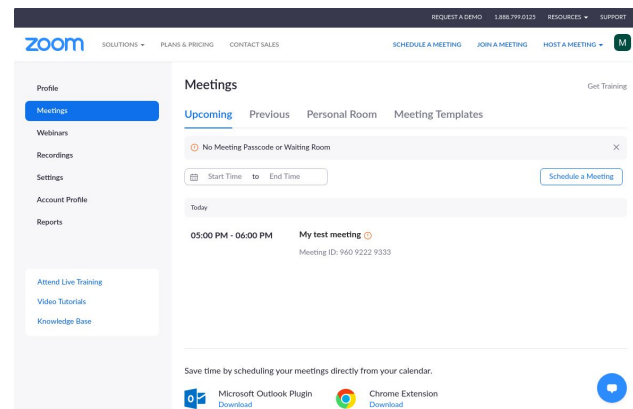
The YouTube side of your livestream is ready now. In my understanding, every livestream gets a unique link, and each stream can only "go live" once. This means that once a livestream ends, a new livestream must be created for you to stream again, with a new link as well. For my example of a Ph.D. defense, you cannot use the same stream (or link) for a practice session and for the actual defense. After the stream for the defense is created and sent to the department and audience members, it is important to never start the defense livestream by accident (such as for a practice session), because then a new stream would need to be created and a new link will need to be shared with everyone.
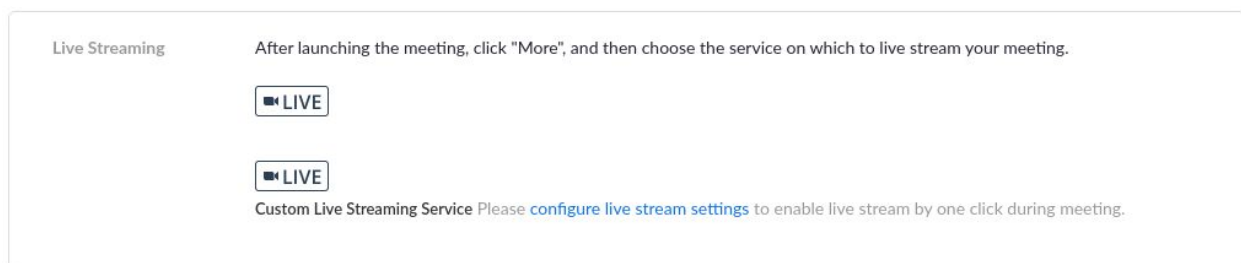
The Zoom Setup

Similar to how the YouTube stream was prepared in advance, the Zoom meeting must also be prepared in advance, and like before, you can perform these steps on any computer, and your internet connection speed doesn't really matter. Since Zoom has a lot more options and there are plenty of resources available for learning to configure a Zoom meeting, I'm only going to cover the options specifically relevant to livestreaming to YouTube.

Start by opening the Zoom website, and logging in to your Zoom account. Open your account page either by clicking on **MY ACCOUNT** from the upper right corner of the Zoom homepage, or by going directly to https://zoom.us/profile. From your account page, choose the **Settings** tab from the left, and scroll down to find the option **Allow live streaming meetings**, and make sure this option is turned ON (meaning, the slider is to the RIGHT). Once enabled, make sure the **Custom Live Streaming Service** box is checked (enabled). The **YouTube** box is for Zoom's simplified YouTube-specific integration, which we're not using right now. Additionally, I recommend configuring Zoom to save a recording of your meeting as well (just in case something goes wrong with the YouTube recording), but that is outside the scope of these instructions.

Now schedule a new meeting for the date and time of your event (this is different from hosting a new meeting immediately). Once your new meeting has been scheduled, open your account page again, and choose the **Meetings** tab from the left, and you should see a page like the one shown in the image to the right. Click on the title of your meeting (in my example image, the words "My test meeting") to manage the meeting. Scroll to the bottom to find the livestreaming settings.
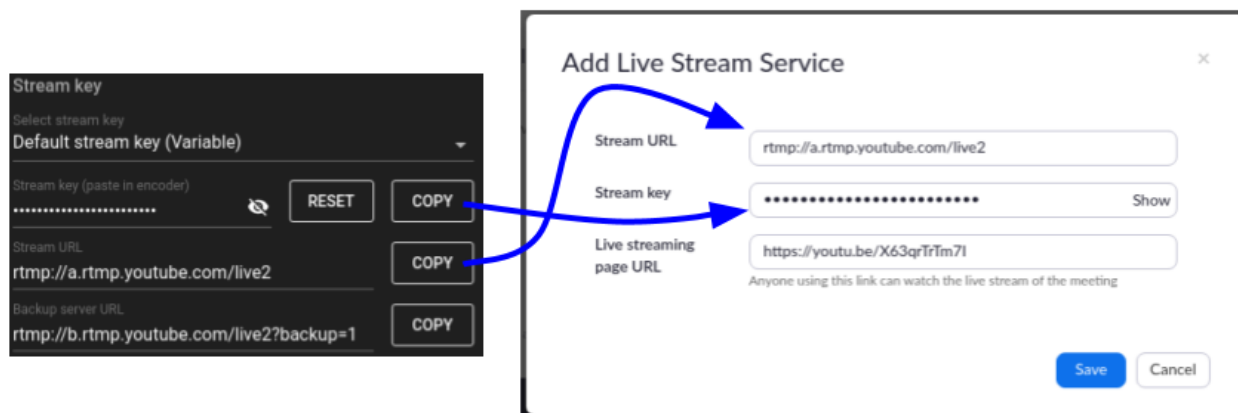

Depending on your other account settings, you may have multiple tabs at the bottom, in which case you need to open the **Live Streaming** tab. You should see options that look like the image below.

Click **configure live stream settings,** and then in a separate web browser window, open the YouTube livestream control page (from YouTube's homepage, use the video camera button to **Go live**, go to the **Manage** tab on the left, and choose the desired livestream). From the
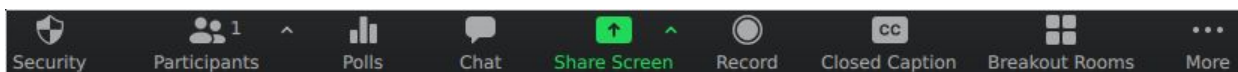
YouTube livestream control page, click the **COPY** button next where it says **Stream key (paste in encoder)**. Paste this into the **Stream key** box on the Zoom page. Go back to the YouTube page, and click the **COPY** button next where it says **Stream URL**. Paste this into the **Stream URL** box on the Zoom page. Finally, use the share button at the top of the YouTube page and copy the public video link (this is the same link you shared with your audience members… it should look something like https://youtu.be/X63qrTrTm7I) and paste it into the **Live streaming page URL** on the Zoom page. Click the **Save** button on the Zoom page, and your Zoom meeting is now ready to go. Please note that the Zoom live stream settings must be configured before you start the Zoom meeting (and possibly even before you open your Zoom app, although I have not tested this thoroughly).

Just like with the YouTube livestream, I would not attempt to use this Zoom meeting multiple times. I am not sure how a Zoom meeting handles being stopped and restarted, and if a meeting can not be resumed after being stopped, it may be embarrassing to have to email your Zoom participants a new meeting link.

Starting the Event

With all of the preparation work done, starting the event is relatively simple. At this point, all of your audience members should presumably already have your YouTube livestream link, and all of your Zoom participants should have your Zoom meeting link. I recommend starting your Zoom meeting at least 30 minutes early, so that you can troubleshoot any issues that might arise. Start the event normally. Once you are in your zoom meeting, you can activate the connection to YouTube immediately as long as you did NOT select **Enable Auto-start** in your YouTube livestream controls. If you did select **Enable Auto-start**, activating the connection to YouTube will immediately start broadcasting your Zoom meeting to all of your audience members on YouTube. If you did not select **Enable Auto-start**, then your audience will not see anything change. When you're ready, activate the connection to YouTube by choosing **Live on Custom Live Streaming Service** from the **More** button from your Zoom meeting controls, shown at the far right in the image below.

It may take a few seconds for Zoom to complete the connection. Once the connection is active, you'll see the preview appear in the livestream control page, and the **GO LIVE** button will turn blue (unless you used **Enable Auto-start**). At this point, I recommend waiting for your other Zoom participants to become ready before starting the YouTube stream. Once all of your Zoom participants have joined, remind them that the meeting is being recorded and publicly broadcast live on YouTube. Start the public livestream by pushing the blue **GO LIVE** button in the top right corner of the YouTube livestream control page.

Don't forget to make sure someone is moderating your YouTube chat in case any troublemakers arrive.

Also remember to have one of your Zoom participants monitor the YouTube live chat for audience participation. Make sure to wait at least 30 seconds (literally!) for audience members to respond. One might naturally only wait 5 seconds when prompting for questions, but many audience members won't even receive that prompt until 20 seconds after you speak the words. Additionally, there is no typing indicator, so you won't know about a question in-progress until it's sent in the chat. Finally, if you have **Allow Live Chat to replay** enabled, make sure the person monitoring the live chat does not pause the video (since that will only show the chat messages that had been sent before the point in the video where they paused it) and similarly make sure they stay live (meaning that their **LIVE** indicator stays red, next to the speaker icon in their YouTube livestream window), so that they see the latest chat messages as they arrive.

If you are presenting a slideshow, modern compression algorithms can efficiently compress the large blocks of solid colors to transmit the data more efficiently. Upon noticing the small data size, YouTube may instead assume that the video quality is degraded, and issue a warning, for example, "The stream's current bitrate (372.34 Kbps) is lower than the recommended bitrate. We recommend that you use a stream bitrate of 2500 Kbps." This can be safely ignored.

Once your event has concluded, I recommend ending the livestream first using the red **END STREAM** button in the top right corner of the YouTube livestream control page. Confirm the decision by pressing the red **END** button. At this point, the YouTube live chat will be closed, but audience members can still leave standard comments on the YouTube video. You can now stop streaming to YouTube from Zoom at any time by clicking the **More** button again and choosing "**Stop Live Stream**", and then when you're finished discussing with the other Zoom participants, end the Zoom call like normal.

If you used my recommended settings, a recording of your YouTube livestream will automatically be available at the same link you already shared with your audience. There may be a short delay between the end of the livestream and the availability of the recording.

The Short Version

1. Create a YouTube account, and start the 24-hour waiting period by clicking on the video camera icon ( ), choosing **Go live**, and following the instructions. (This only needs to be done once.)
2. Schedule a new YouTube livestream.
   a. Click on the video camera icon ( ) and choose **Go live** again.

    b. Close the **Edit stream** window if it appears, and switch to the **Manage** tab on the left.

    c. Push the **SCHEDULE STREAM** button in the top right corner.

    d. Fill in the details appropriately.

    e. Set the stream to be **Public**.

    f. Add a thumbnail.

    g. Push **CREATE STREAM**.

3. Configure the livestream controls.

    a. Click on the title of the livestream in the **Upcoming** list of the **Manage** tab.

    b. Set the **Stream latency** to **Ultra low-latency**.

    c. Under **Additional settings**, turn off everything except for **Enable DVR**, which you should turn on.

    d. Click the gear icon in the top right corner, and make sure **Enable Live Chat** and **Allow Live Chat to Replay** are turned on.

4. Share the YouTube livestream link with your audience (and optionally with your Zoom participants).

5. Add a YouTube chat moderator.

    a. Open YouTube Studio by going to https://studio.youtube.com.

    b. Choose **Settings** from the list on the left.

    c. Open the **Community** tab.

    d. Politely ask someone to moderate your YouTube chat for you. Paste your moderator's channel page URL into the **Moderators** box.

    e. Press **SAVE**.

6. Enable livestreaming on your Zoom account. (This only needs to be done once.)

    a. Open https://zoom.us and login to your Zoom account.

    b. Open https://zoom.us/profile/setting.

    c. Turn on **Allow live streaming meetings**.

    d. Check the box next to **Custom Live Streaming Service**.

7. Schedule a new Zoom meeting like normal.

8. Configure the livestreaming settings for your Zoom meeting.

    a. Open https://zoom.us/profile.

    b. Choose the **Meetings** tab from the left.

    c. Click the title of your Zoom meeting. (Do not click the **Edit** button!)

    d. Scroll to the bottom, and choose the **Live Streaming** tab if present. If the tab is not present, the relevant settings should already be visible.

    e. Click **configure live stream settings**.

    f. Fill in the stream key by copying it from your YouTube livestream controls page.

    g. Fill in the stream URL by copying it from your YouTube livestream controls page.

    h. Put your public YouTube livestream link (the same one from Step 4) into the **Live streaming page URL** box.

    i. Click **Save**.

9. Share your Zoom meeting link with all of your Zoom participants, but do not share it with the public or with your audience members.

10. On the day of your event, start your Zoom meeting like normal.

11. Activate the connection between Zoom and YouTube by choosing **Live on Custom Live Streaming Service** from the **More** button of your Zoom meeting controls.
12. Remind all of your Zoom participants that they are being recorded and that they will be broadcast live on YouTube.
13. When you're ready to make the video stream public, push **GO LIVE** on your YouTube livestream controls page.
14. When interacting with the audience, always wait at least 30 full seconds for audience responses to account for streaming delays.
15. When you're ready to stop the public portion of your event, push **END STREAM** on your YouTube livestream controls page.
16. Stop the Zoom/YouTube connection by choosing "**Stop Live Stream**" from the **More** button of your Zoom meeting controls.
17. When you're finished discussing with Zoom participants, end the Zoom meeting like normal.