

ZOOMISO VERSION 2.4

ZOOMISO V2.4

USER MANUAL

Overview

Thank you for downloading ZoomISO v2, a macOS program for exporting the participants in a Zoom Meeting or Webinar as isolated video and audio outputs in a variety of popular formats. ZoomISO also contains an OSC engine, allowing the app to be remote controlled by devices like a StreamDeck to provide a wide variety of AV routing workflows for the Zoom ecosystem.

In this Document

We have listed several categories of information that should prove useful

- **Quick Start Guide** contains helpful information for those using ZoomISO for the first time
- **Installation, Accounts, and Licensing** guides you through the initial setup process
- **User Interface Guide** examines the GUI to provide familiarity with the application
- **OSC for Remote Routing** provides information that you can use to remotely operate ZoomISO from other software and hardware

Please also review [these additional documents](#) related to our *ZoomOSC* technology, whose capabilities are bundled inside of ZoomISO

- **ZoomOSC Command Syntax (API)** where you can find information on all of the commands and outputs of the ZoomOSC application
- **ZoomOSC Quick Start Guide** which contains helpful information for those just getting started with ZoomOSC for the first time

QUICK START

What is ZoomISO?

ZoomISO is a macOS program that allows individual Zoom participants to be exported as isolated outputs. These outputs can be assigned to a number of video technologies including NDI 5, Metal Syphon, SRT, Physical Displays / DisplayLink, SDI through Blackmagic Desktop Video and AJA Hardware products, and audio tools including Dante Virtual Soundcard, Loopback, Black Hole, and more.

ZoomISO can export its video feeds at HD when the Zoom Meeting / Webinar supports it. Audio feeds can be embedded in video outputs or independently assigned.

ZoomISO can also be remote controlled via OSC to manage feed routing from a Stream Deck, for example.

ZoomISO is an official tool created by Zoom Video Communications, Inc.

Following Zoom's asset purchase of Liminal Entertainment Technologies in December of 2021, ZoomISO is developed, maintained, supported, and designed by Zoom.



QUICK START

The Requirements - Operating System

First of all, ZoomISO is a **macOS program**.

If you don't need to use Windows, you can skip to the next page.

Nevertheless, there is still value to ZoomISO even if Windows computers are essential to your workflow.

We always recommend that users have a separate "**ingest computer(s)**" **when trying to bring remote content into a production ecosystem.**

We suggest this practice because it becomes important to keep **encoding/vision mixing tasks** (operated in programs like vMix) from impacting **decoding tasks** (from software like Zoom) and vice-versa.

With dedicated hardware for each task, it is easier to keep your workflow separate and orderly.

With these two types of tasks separated, you can still use Windows 10 programs for production as long as you also have a dedicated macOS ingest computer.

The macOS ingest computer with ZoomISO can decode, while the other Windows computer with the vision mixer can be dedicated to encoding and vision mixing tasks.

QUICK START

The Requirements - Continued

To sum it up,

ZoomISO was designed to replace the paradigm of "pinning machines," where tables full of dual screen laptops with single users pinned to each would be "screen scraped" into programs like vMix for isolated vision mixing.

A single ZoomISO running on macOS could replace multiple Windows "pinning machines" and simultaneously offers substantially more flexibility and quality control as a result of its consolidated design and isolated audio export capabilities.

QUICK START

The Requirements - Why Apple Silicon?

As of 2020, the newest Macs run Apple Silicon. Older Macs have Intel chips. **ZoomISO v2 is only supported on Macs that use Apple Silicon. Furthermore, ZoomISO v2 is not supported on macOS versions older than Monterey.**

Why do we impose this requirement for ZoomISO?

ZoomISO takes advantage of **Apple's accelerated scaling and conversion APIs**, which allow us to achieve an incredible level of performance from Apple Silicon. Many of these APIs were introduced in more recent versions of macOS. As a result, and in accordance with Apple's developer guidance moving forward, **ZoomISO has been built to take full advantage of the latest acceleration frameworks available**, and is not optimized for the older Intel Macs or older versions of macOS.

That being said, it is still possible to dismiss the warning that we present in ZoomISO v2 when running on an unsupported configuration. Please be advised that doing so means that you may experience degraded performance, and we will be unable to provide support if you dismiss the warning.

QUICK START

ZoomISO Lite vs Pro

ZoomISO v2 is distributed in two versions: Lite and Pro. Below are the differences between the versions. Please refer to the comparison chart on the website for the most up-to-date information.

	ZoomISO Lite \$29/mo	ZoomISO Pro \$45/mo
Zoom Raw Data Access	✓	✓
Apple Silicon Acceleration	✓	✓
Maximum Outputs	4	Unlimited*
Zoom High Bandwidth Mode**	✓	✓
ZoomOSC Included	Essentials	Pro
NDI Support	✓	✓
Metal Syphon Support	✓	✓
Physical Display / DisplayLink Support	✓	✓
Output Modes (Participant, Active Speaker, Spotlight Index)	✓	✓
Screenshare Output Mode	✓	✓
Video Loss Modes	✓	✓
In-App Video Previews	✓	✓
Customizable Output Names	✓	✓
Participant Management Interface	✓	✓
Embedded NDI ISO Audio	✓	✓
Save, Load, Merge Configurations	✓	✓
../outputISO OSC Command	✓	✓
Support for Zoom's ZoomISO Bitfocus Companion Module	✓	✓
BlackMagic Desktop Video SDI Support		✓
Advanced Audio Interface (Dante Virtual Soundcard, Loopback, etc)		✓
../audioISO OSC Command		✓

QUICK START

How many video feeds can ZoomISO output?

ZoomISO Lite can export 4 video feeds.

ZoomISO Pro has a feature known as "high bandwidth mode" that allows it to pull significantly more bandwidth from the Zoom Cloud, which can be used to create more outputs. **For ZoomISO Pro, the exact limits depend on the hardware and network configuration.** See the Liminal Website for benchmarks and additional information.

ZoomISO Pro will be able to export additional participant video feeds so long as system utilization remains under 80% and the network WAN link to the Zoom Cloud does not exceed 100mb/s (1080p video feeds from Zoom are 4-6 mb/s each).

If you exceed the network limit, frame rate will be throttled. If you exceed the system utilization limit, Zoom will send ZoomISO a lower resolution video feed, which will potentially cause the scaling units to engage to meet the output target. This additional scaling may lead to an increase in CPU use vs a decrease, and so Zoom may be forced to throttle down to 360p before CPU use enters a healthy range.

Please note . . .

Not all Zoom meetings support HD. This setting must be enabled by Zoom support and enabled in your interface. Regardless of what the Zoom Cloud is sending, ZoomISO will always automatically output the requested resolution and frame timings, even if up/down scaling or frame repeating/dropping is needed.

QUICK START

Creating Video Outputs with ZoomISO

1. Join a meeting with ZoomISO. You can also sign into ZoomISO with OAuth
2. Go to the Outputs Tab of ZoomISO, and **set the number of outputs** to 4, for example.
3. You will now see 4 rows in the table, where you can select the participants and configure the outputs
4. Obtain host, co-host, or local recording permission for your meeting
5. Set the Output Engine to Enabled and the Capture Mode to Recording. This will send a recording consent prompt to all participants, and the outputs will begin to display participant data. You can inspect the feeds with the preview button, and see the statistics for the outputs under the Status column.

ZoomISO - Settings

ZoomISO Trial

Outputs Advanced Audio Participant Management OSC Settings Log Licensing

Number of outputs: 4 Video Loss Mode: Testcard

Default output resolution: 1080p

Default framerate: 29.97fps

NDI and Syphon outputs will always use the default framerate

Enabled	Index	Output Name	Mode	Selection	Output Type	Resolution	Embedded Audio	Status	Preview
<input checked="" type="checkbox"/>	1	ZoomISO 1	Partici...	Mitchell Hill	NDI	1080p	ISO	1920 x 1080 - 30.06 fps out	
<input checked="" type="checkbox"/>	2	ZoomISO 2	Partici...	Harshid Trive	DeckLink Quad...	1080p		1920 x 1080 - 29.67 fps out	
<input checked="" type="checkbox"/>	3	ZoomISO 3	Partici...	WLM Brandor	Dell U2419Hx (1)	Full S...		1280 x 720 - 29.48 fps out	
<input checked="" type="checkbox"/>	4	ZoomISO 4	Partici...	Brandon Butr	Syphon	1080p		960 x 540 - 29.16 fps out	

ZoomISO version: Trial Version

Save Load Merge

Enable Output Engine: Disabled Standing By Enabled

You can now capture

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QUICK START

Creating Audio Outputs with ZoomISO Pro

1. Join a meeting and/or sign in with ZoomISO Pro. The Lite version can only use embedded audio, which is instead configured on the outputs page vs the Advanced Audio page.
2. Select an Audio Device from the dropdown list. You can also specify a default attenuation.
3. You will now see one row for each channel on the selected device, where you can configure the source properties and selection methods on a channel-by-channel basis.
4. Obtain host, co-host, or local recording permission for your meeting
5. Set the Output Engine to Enabled. This will send a recording consent prompt to all participants, and the channels will begin to play participant audio. You can monitor the channels with the built-in meters.

ZoomISO Pro - Settings

ZoomISO Pro

Outputs Advanced Audio Participant Management OSC Settings Log Licensing

Audio Output Mapping

Audio Device: Dante Virtual Soundcard

Default Gain Reduction: 0

Select the audio feed for each channel of audio output - Note that this does not affect the standard zoom audio output

Channel	Mode	Gain Reduction	Selection	Meters
Channel 1	Parti...	0	André Doelle	
Channel 2	Parti...	0	Cindy Drozda	
Channel 3	Parti...	0	Eric Butkus	
Channel 4	Parti...	0	George E. Ken	
Channel 5	Parti...	0	Greg Grichtme	
Channel 6	Parti...	0	Javier Alfaro	
Channel 7	Parti...	0	John Ittelson	
Channel 8	Parti...	0	John Puett	
Channel 9	Parti...	0	Kyle Hamman	
Channel 10	Parti...	0	Mitchell Hill	
Channel 11	Parti...	0	Alex Lindsay	
Channel 12	Parti...	0	Alan MacPhers	
Channel 13	Mix	0		
Channel 14	Output	-12	Output 1	
Channel 15	Output	-12	Output 2	
Channel 16	Output	-12	Output 3	

On the page, select your audio output device and assign content to the available output channels

Enable Output Engine

Disabled Standing By Enabled

You can now capture

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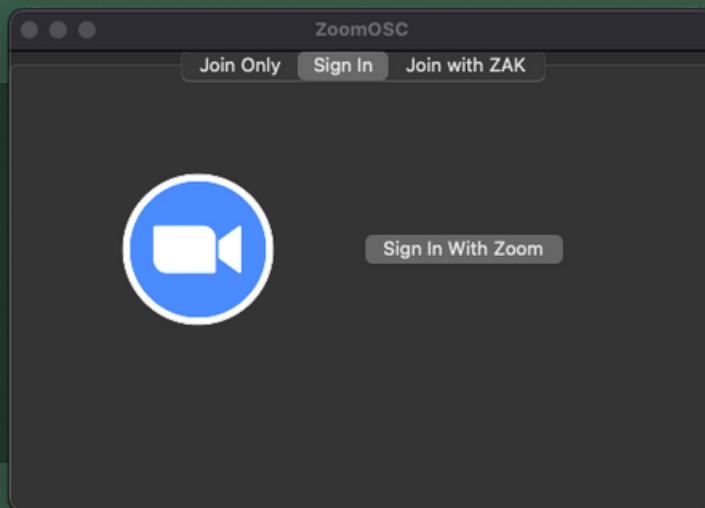
INSTALLATION AND ACCOUNTS

Sign in with Zoom - Adding the App to your Zoom Account

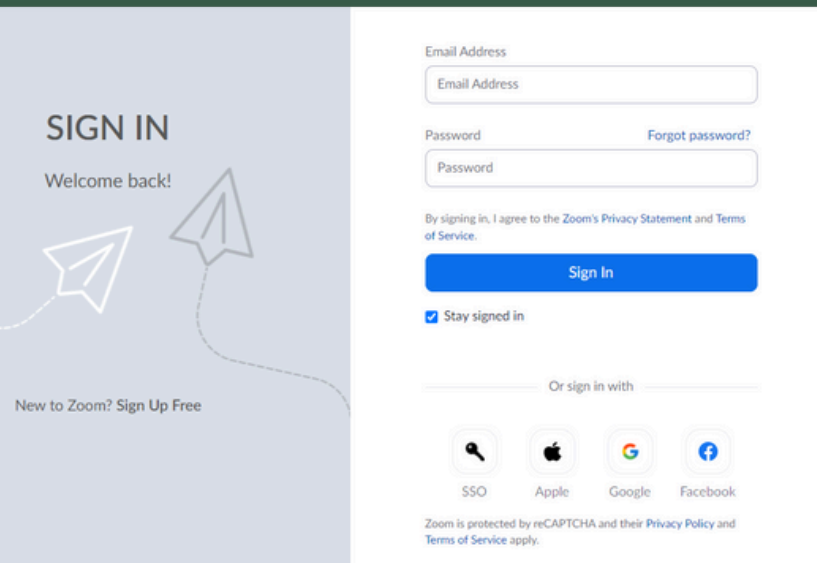
ZoomISO v2 introduces a new, online sign-in option called "Sign in with Zoom," which allows you to use your Zoom account to log into ZoomISO. Signing in allows ZoomISO to start and join meetings on behalf of the signed in account.

To add ZoomISO to your account and complete sign in, use the following steps:

1. Launch ZoomISO
2. Click the "Sign In" tab on this window:



INSTALLATION AND ACCOUNTS



SIGN IN

Welcome back!

New to Zoom? Sign Up Free

Email Address

Password [Forgot password?](#)

By signing in, I agree to the Zoom's Privacy Statement and Terms of Service.

Sign In

Stay signed in

Or sign in with

SSO Apple Google Facebook

Zoom is protected by reCAPTCHA and their Privacy Policy and Terms of Service apply.

3. Click on the “Sign in with Zoom” button

4. You will now be presented with a Zoom website to log into your Zoom account

- During this step, you can optionally select the option to “Stay signed in” for faster access in the future

5. If this is the first time you have logged into ZoomISO, you will be prompted to add ZoomISO to your Zoom account. Click Allow.

6. If the above steps are successful, you will be logged into ZoomISO

- On macOS, The pop up window will automatically close, and a few seconds later, you will advance to the logged in UI screen of ZoomISO

Are you a business/enterprise end-user?

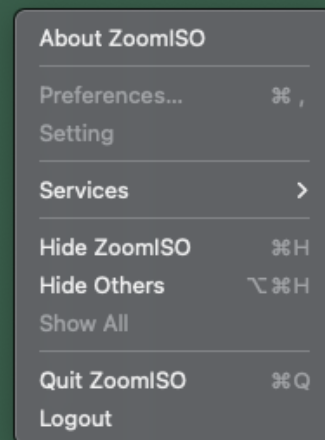
You may need to contact your IT department to allow ZoomISO to be added to your Zoom account, depending on how the organization is configured. IT can add ZoomISO to your organization at

https://marketplace.zoom.us/apps/UqVYnn3dR1KfBz2q_ju-Gw

INSTALLATION AND ACCOUNTS

Troubleshooting Login

- The account you are logging in with should be your Zoom account. No special/new account is required for ZoomISO
- It is required that ZoomISO be installed via the official installer in order for Sign in with Zoom to work properly. ZoomISO is not a portable application.
- If you accidentally click "Stay Signed In" there are a few options to "forget" the account
 - You can either click Sign Out at the top right of the pop up window during the authorization process, or you can click "Logout" under the ZoomISO macOS top menu bar



Removing ZoomISO from your Zoom Account

Should you decide you no longer need your Zoom Account attached to ZoomISO:

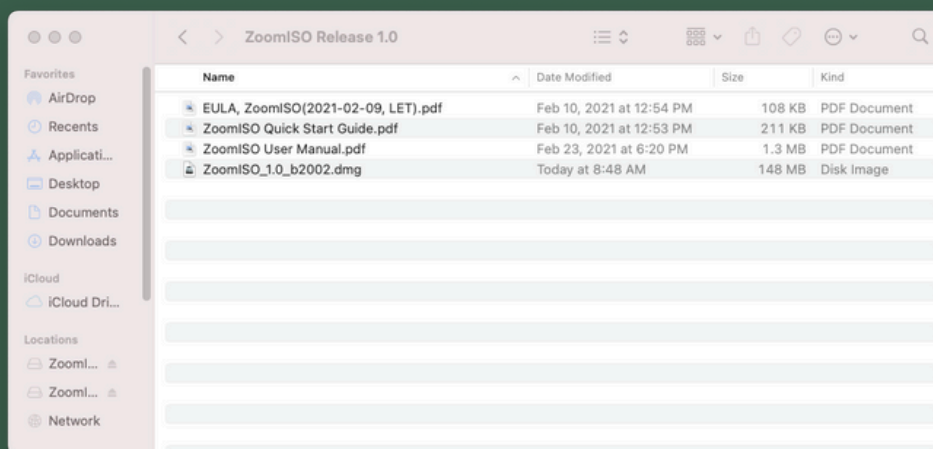
- Login to your Zoom Account and navigate to the Zoom App Marketplace.
- Click Manage >> Added Apps or search for the "ZoomISO" app.
- Click the "ZoomISO" app.
- Click "Remove".

INSTALLATION AND ACCOUNTS

For macOS Monterey or later

Installation

ZoomISO is installed via a .dmg file on macOS. Download the official installer from www.liminalet.com/zoomiso-downloads.



Drag and drop the
ZoomISO
app icon into the
applications folder.

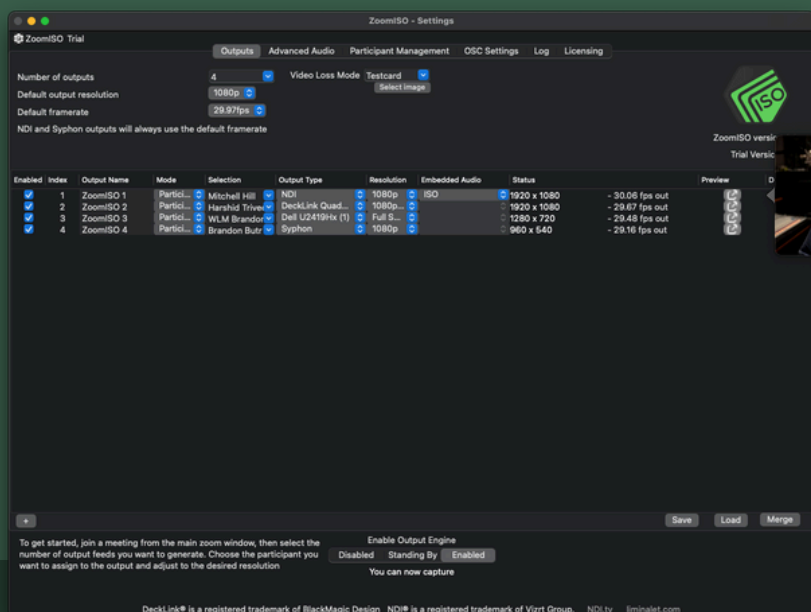
USER INTERFACE GUIDE

Outputs Tab

In this view, video exports are created via an "output focused" workflow.

The number of video feeds, the protocol/device to render them to, and the resolution/frame-rate to create render them at are managed on this page.

After the output quantity is set, the rows of the middle table allow for the routing of specific users to specific outputs via a series of dropdowns.



System Resource Utilization

If CPU usage exceeds 80%, or network requests from the Zoom Cloud exceed 30 mb/s or 100mb/s depending on your account when using ZoomISO Pro, resolution and frame rate may be significantly reduced.

Output Engine

The Output Engine manages the capture of participant data and the state of the outputs. When DISABLED, the outputs will not be present to the operating system or network. When STANDING BY, the outputs will be published, but their contents will be set to the Video Loss Mode, which determines what media to assign to outputs in the event that participant data becomes unavailable. When ENABLED, the outputs will contain participant data. It is required to be host, co-host, or have local recording permission in order to enable the output engine. **Before you can start the Output Engine, you must satisfy the Capture Mode requirements (see next page).** When the engine is enabled, all participants will receive a notification. Pausing or disabling the engine will stop the notification. No participant media is being recorded to a file during this process. It may take 20 seconds per output for the target resolution to be reached.



USER INTERFACE GUIDE

Understanding Capture Mode

ZoomISO v2.1 introduces the concept of a Capture Mode, which is a choice that allows you to define how ZoomISO will get permission to obtain the raw video and audio streams of the Zoom participants. The choice of Capture Mode is an important part of accurately reflecting the purpose of the raw data access and gaining the permission to use it.

At this time, two Captures Modes are supported:

1) **Live Stream** (default) - The meeting will use Live Streaming permissions and notifications. Participants will see a badge that will provide information on ZoomISO's ability to capture and export audio and video content from the call.

2) **Recording** - The meeting will use Local Recording permissions and notifications. Participants will get a notice that the meeting is being recorded. Local recording must be enabled for the call in order for this Capture Mode to work properly. **Using Recording Capture Mode will not actually record the call inside of ZoomISO.**

Live Stream Capture Mode may be easier to deploy in most situations, although certain setups may prefer Recording instead.

Capture Mode is selected via a drop-down menu at the top of the Outputs Tab.

Petitioning the Host

If you attempt to start the Output Engine without the necessary permission for the selected Capture Mode, and you are not the host of the call, ZoomISO will invite you to request the required permission from the host. If you trigger this request, the host will receive a pop-up asking them to grant the requested permission. If the host accepts the request before it expires, ZoomISO will start the Output Engine.



USER INTERFACE GUIDE

Advanced Audio Tab - ZoomISO Pro

The Lite version of ZoomISO can only use embedded audio, which is instead configured on the Outputs tab vs the Advanced Audio tab. The Advanced Audio tab allows any multichannel audio device on the system to receive participant audio, including Dante Virtual Soundcard and Loopback.

In Advanced Audio, you can select an Audio Device from a dropdown list. You can also specify a default attenuation, which can also be helpful as a stereo pan law. After selecting a device, you will see one row for each channel on the selected device, where you can configure the source properties and selection methods on a channel-by-channel basis, including support for multi-language interpretation audio and a variety of mix modes. You can monitor the channels with the built-in meters. You can also manage stereo audio. Be sure to enable the outputs engine!

ZoomISO - Settings

ZoomISO Pro

Outputs Advanced Audio Participant Management OSC Settings Log Licensing

Audio Output Mapping

Audio Device: Dante Virtual Soundcard

Default Gain Reduction: 0

Select the audio feed for each channel of audio output - Note that this does not affect the standard zoom audio output

Channel	Mode	Gain Reduction	Selection	Meters
Channel 1	Parti...	0	André Doelle	
Channel 2	Parti...	0	Cindy Drozda	
Channel 3	Parti...	0	Eric Butkus	
Channel 4	Parti...	0	George E. Ken	
Channel 5	Parti...	0	Greg Grichtme	
Channel 6	Parti...	0	Javier Alfaro	
Channel 7	Parti...	0	John Ittelson	
Channel 8	Parti...	0	John Puett	
Channel 9	Parti...	0	Kyle Hamman	
Channel 10	Parti...	0	Mitchell Hill	
Channel 11	Parti...	0	Alex Lindsay	
Channel 12	Parti...	0	Alan MacPher	
Channel 13	Mix	0		
Channel 14	Output	-12	Output 1	
Channel 15	Output	-12	Output 2	
Channel 16	Output	-12	Output 3	

On the page, select your audio output device and assign content to the available output channels

Enable Output Engine

Disabled Standing By Enabled

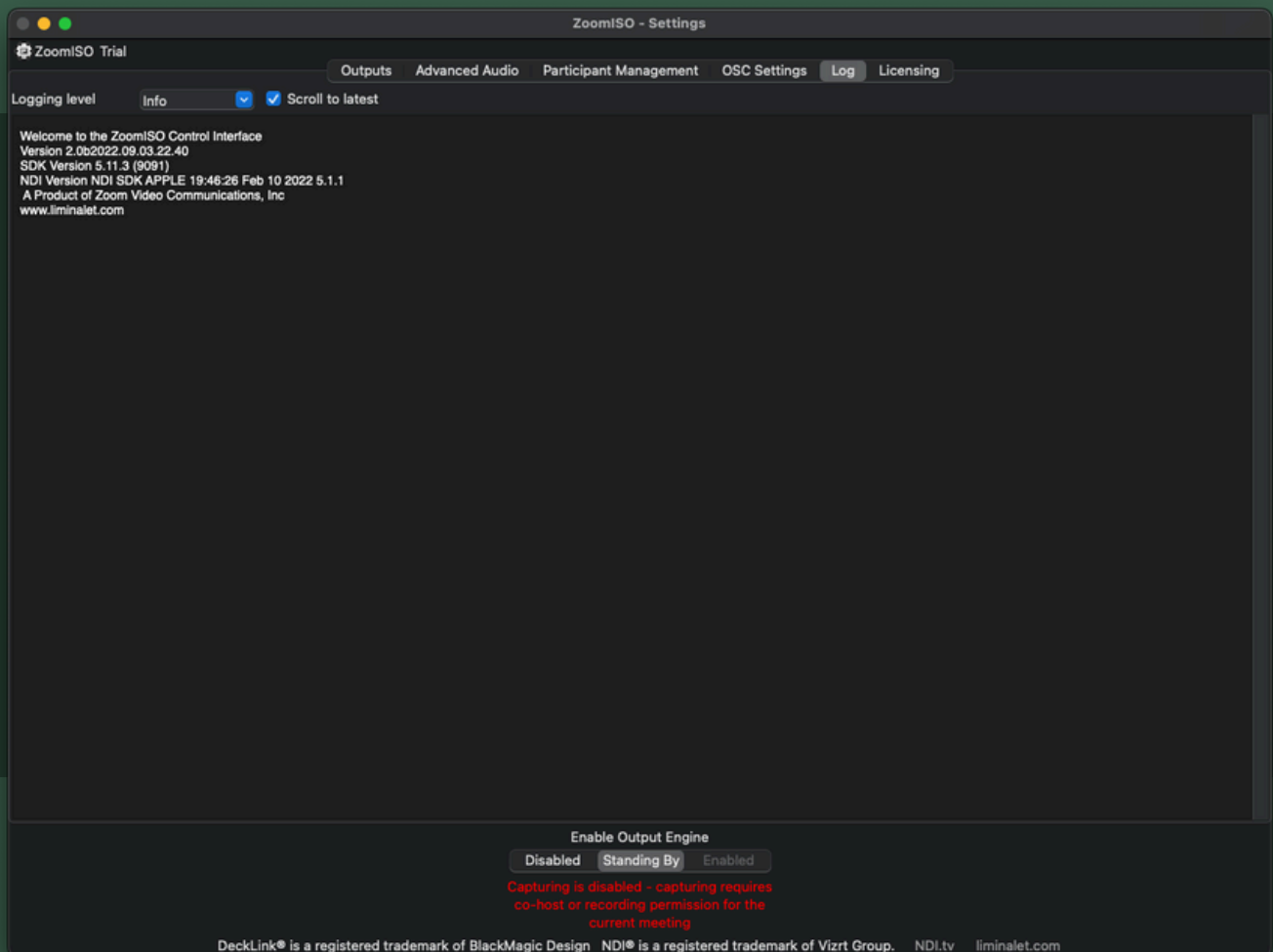
You can now capture

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USER INTERFACE GUIDE

Log Tab

This view contains all outputs of the ZoomISO Program. There are 5 levels of filtration access through the Logging Level selection menu: None, Errors, Warnings, Info, and Verbose. Reducing the logging level may improve performance at scale.

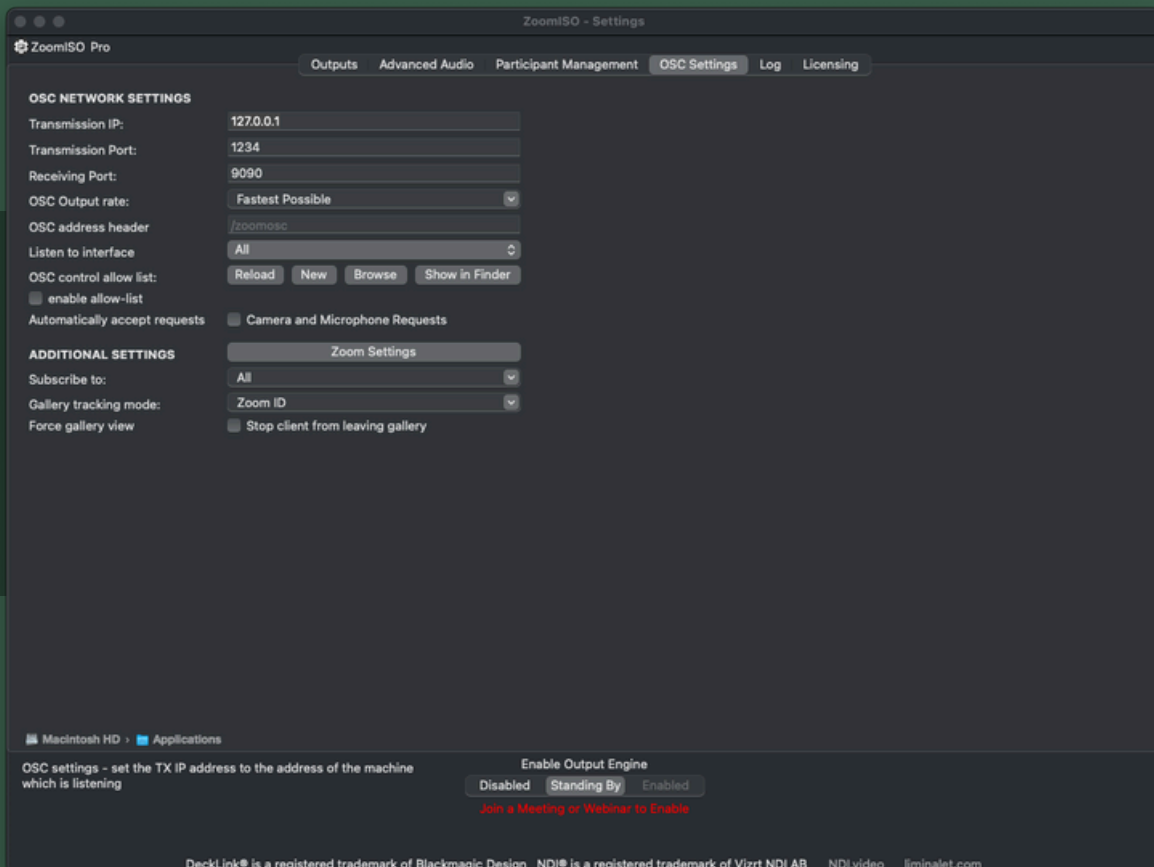


USER INTERFACE GUIDE

OSC Settings Tab

OSC Network Settings

- Transmission IP (IP where ZoomOSC will send messages to)
- Transmission Port (port where ZoomOSC will send messages to)
- Receiving Port (port where ZoomOSC will listen for messages)
- OSC Output Rate (delay to introduce to OSC outputs for compatibility with slower programs)
- OSC Header allows you to customize the output prefix



USER INTERFACE GUIDE

OSC Settings Tab (Continued)

Additional Settings

- Listen to interface
 - Allows you to select which network interface to route OSC traffic on
- OSC Control Allow List
 - Configure a file containing the IP addresses to allow for OSC traffic, one per line
- Automatically Accept Requests
 - Determine if ZoomISO should automatically accept incoming requests to enable mic and camera
- Zoom Settings
 - Opens the Zoom Settings Menu (helpful for confirming receiving resolutions).
- Subscribe to group
 - Determine who ZoomOSC sends OSC status updates about
- Gallery Tracking Mode
 - Preference on how Gallery Order is reported
- Enable Breakout Command
 - Temporary toggle between breakout UI and OSC commands
- Force Gallery View
 - After receiving a spotlight command, the client will return to Gallery View to continue the OSC gallery tracking



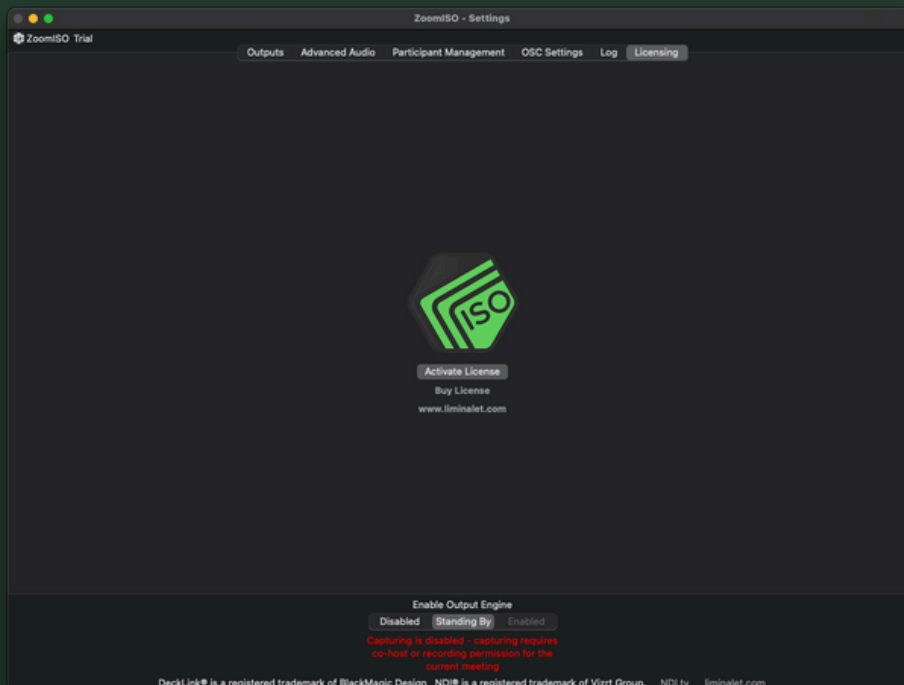
INSTALLATION AND ACCOUNTS

Licensing Tab

How ZoomISO Licenses Work

ZoomISO is licensed in two versions, Lite and Pro. See the earlier comparison table for details. ZoomISO can also run in Trial Mode, which has all ZoomISO Pro features available, but will display a NO LICENSE card for 2 seconds every 60 seconds. When this card is on screen, audio outputs will also be muted.

Upon request, a web portal can be created to manage activations of ZoomISO and ZoomOSC Pro online. Contact info@liminalet.com for support on setting up your management portal.



Hub Host License Option

As an alternative to activating with a device-based license sold from the Liminal website, if you sign into ZoomISO with a Zoom account that is a Hub Host role in the Zoom Events platform, the app will activate to ZoomISO Pro. Please contact support with any questions on Hub Host licensing.

OSC FOR REMOTE ROUTING

The `../outputISO` and `../audioISO` Commands

ZoomISO has special OSC user actions that are not available in ZoomOSC Pro. For example, `../outputISO` and `../audioISO`. These take two arguments: the target and the ID of the output/channel to route them to. ZoomISO supports the same target types as ZoomOSC: `../targetID`, `../userName`, `../galIndex`, `../galleryPosition`, `../me`, and `../zoomID`. If these are unfamiliar, review the ZoomOSC documentation.

A sample OSC command might be:

```
/zoom/userName/outputISO "Andy Carluccio" 2
```

This command would place a participant with Zoom username Andy Carluccio to output number 2, if it exists.

```
/zoom/userName/audioISO "Jonathan Kokotajlo" 4
```

This command would place a participant with Zoom username Jonathan Kokotajlo to channel number 2 of the selected audio device in Advanced Audio, if it exists.

ALL OSC COMMANDS

ROUTING COMMAND

Route Participant to Output

Routes participant video to specified output, if it exists
PLEASE NOTE: OutputIDs begin with 1

../outputISO {int outputID}

Route Participant to Audio Channel

Routes a participant to the specified audio channel of the active audio device in Advanced Audio

../audioISO {int channelID}

ENGINE CONTROLS

Stop ISO Engine

Sets the engine state to Disabled

/zoom/stopISOEngine

Set ISO Engine to Standby

Sets the engine state to Standing By

/zoom/standbyISOEngine

Start ISO Engine

Sets the engine state to Enabled

/zoom/startISOEngine

Request Capture Permissions

Petitions the host for the permission needed for the selected Capture Mode

/zoom/requestCapturePermission

OUTPUT SETTINGS CONTROLS

Set the number of Outputs

Sets the number of video outputs

/zoom/setOutputCount {int count}

Enable an Output

Enable an output for live video receive and export

**/zoom/enableOutput {int output_index
|OR| string output_name}**

Disable an Output

Unsubscribe output from live video and set to Video Loss Mode

**/zoom/disableOutput {int output_index
|OR| string output_name}**

Set Output Mode

Set the Mode parameter for an output

**/zoom/setOutputMode {int output_index |OR| string
output_name, string exact_name_of_output_mode}**

Set Output Name

Change the name of an output

**/zoom/setOutputName{int output_index |OR| string
output_name, string new_output_name}**

Set Video Loss Mode

Select the video loss mode by name

**/zoom/setVideoLossMode {string loss_mode_name}
(names are Black, Freeze, Transparent, Image, Testcard)**

Add Output

Add an output

/zoom/addOutput

Delete Output

Delete an output

**/zoom/deleteOutput {int output_index |OR| string
output_name}**

Set Audio Mode

Set the Mode parameter of an audio output

**/zoom/setAudioMode {int output_index |OR| string
output_name}**

ALL OTHER OSC COMMANDS

DATA ACCESSORS

Request state of Engine Send a request for the state of the engine	<code>/zoom/getEngineState</code>
Request Audio Levels Request a series of packets describing the level of each audio channel	<code>/zoom/getAudioLevels</code>
Request Output Routing Request a series of packets describing the configuration of each video output	<code>/zoom/getOutputRouting</code>
Request Audio Routing Request a series of packets describing the configuration of each audio output	<code>/zoom/getAudioRouting</code>

RETURN INFORMATION AND CALLBACKS

Engine State Returns 0 (disabled), 1 (standing by), or 2 (enabled)	<code>/zoomosc/engineState {int 0 1 2}</code>
Audio Levels A series of packets displaying the audio level for each output	<code>/zoomosc/audioLevels {int channel_index, int level (0 to 255)}</code>
Output Routing A series of packets describing the configuration of each video output	<code>/zoomosc/outputRouting {int num_outputs, int this_output_num, int enabled, string output_name, string mode, string selection, string resolution, string embedded_audio_info, string status}</code>
Audio Routing A series of packets describing the configuration of each audio output	<code>/zoomosc/audioRouting {string audio_device_name, int num_channels, int this_channel, string mode, int gain_reduction, string selection, int audio_level}</code>
Request Granted Returns when permission is granted by host for Capture Mode	<code>/zoomosc/capturePermissionGranted</code>



RESOURCES

SIGN UP FOR LIMINAL'S [NEWSLETTER](#) TO STAY UP TO DATE ON UPDATES AND NEW RELEASES

SUBSCRIBE TO LIMINAL ON [YOUTUBE](#) FOR TRAININGS AND TUTORIALS

EMAIL INFO@LIMINALET.COM FOR SUPPORT FOR ZOOMISO AND ALL LIMINAL APPS

