ZOOMISO QUICK START GUIDE & FAQ

What is ZoomISO?

ZoomISO is a macOS program that allows individual Zoom participants to be exported as isolated outputs. These outputs may be in a number of formats, including NDI, Syphon, or a physical display.

ZoomISO can export these video feeds at HD when the Zoom Meeting / Webinar supports it.

ZoomISO can also automatically crop and export users from the Gallery View, and it can be remote controlled via OSC to manage feed routing from a Stream Deck, for example.

Is Zoom OK with you using ZoomISO for pulling isolated outputs?

Zoom representatives have publicly stated that Zoom is aware of ZoomOSC and ZoomISO and supports the projects. Liminal engages with Zoom directly on developing within their ecosystem, and its portfolio of technologies are even used within Zoom's own events division when appropriate.

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BEFORE STARTING

ZoomISO versus the new NDI features in Zoom Rooms

zoomrooms

ZoomISO and Zoom Rooms are designed for different use cases and provide optimizations for distinct workflows.

Each has advantages and disadvantages tailored to their intended use case.

Please see the next page for a comparison chart

Zoom Rooms (Zoom)	ZoomISO (Liminal)
Only supports NDI 4	Supports NDI 4, NDI 5, and additional output options
Currently can output 3 feeds (corresponding to the 3 outputs available in Rooms)	Can output more than 3 feeds
Supports isolated audio with the NDI feeds	This capability is not yet available in ZoomISO
Can be controlled via a GUI that runs on tablet apps	Can be controlled directly from production systems via OSC
Can only export the combined Gallery View to see the participants	Can automatically export each user from the gallery view as isolated video
macOS and Windows	macOS only
Uses a a custom interface	Uses the Zoom Meeting / Webinar client interface
Converts the hosting computer into a Zoom endpoint	Exists as a standalone application on the host computer
First-party technology from Zoom	Third-party application developed by Liminal
Designed for perpetual installations in conference rooms and digital signage	Designed for video production

BEFORE STARTING

The Logistics - 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, 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.

BEFORE STARTING

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 as a result of its consolidated design.

BEFORE STARTING

The Logistics - M1 Macs vs Intel Macs

The newest Macs run Apple Silicon, AKA an M1 chip. Older macs have Intel chips.
If you don't use an M1 Mac, you can skip this page.

Would we recommend using ZoomISO on one of these newer, M1 Macs?

Rosetta 2 enables a Mac with Apple Silicon to use apps built for a Mac with an Intel processor. In this case, and by using Rosetta 2, ZoomISO can run on Apple Silicon without a significant detriment to performance in our tests.

If you are using an M1 Mac, we recommend using NDI 5 because it has native Apple Silicon support. For best results, ensure that all encoders and decoders in your workflow are using the same version of NDI.

We have not observed any negative impact on **Syphon** when using ZoomISO on Apple Silicon. Syphon allows applications to share frames between each other in realtime.

BEFORE STARTING

How many video feeds can ZoomISO output?

There is no upper limit imposed by the ZoomISO software on the number of output feeds that can be created, however, the Zoom platform itself appears to send up to 5 HD (720p/1080p) video feeds to a client at 30FPS.

After the fifth+ HD feed(s) are added, the sending FPS may reduce to 15FPS.

In our testing, ZoomISO 1080p 30fps NDI video outputs send at roughly 50 mb/s on the network.

Please note . . .

Not all Zoom meetings support HD. This setting must be enabled by Zoom support and enabled in your interface. Regardless of the resolution the Zoom reflector is sending, ZoomISO will always automatically output the requested resolution, even if upscaling is needed.

Adding more 360p outputs after adding 4 HD outputs does not appear to trigger Zoom to reduce FPS.

At 360p, there does not appear to be a limitation imposed by the Zoom platform on the number of feeds that can be created at 30FPS, so the number of outputs at this quality will be limited by the hardware encoding abilities of the Mac running ZoomISO

To sum it up,

Expect to get 5 HD outputs at 30FPS plus as many additional 360p 30FPS outputs as your hardware can handle. Recent versions (last 3-5 years) of Macbook Pros, iMacs, Mac Pros, Mac Minis, and the new M1 chip all appear capable of generating the 5 HD outputs or at least 8 360p outputs.

LET'S GO!

Choosing between Syphon, NDI 4, and NDI 5

Syphon and NDI are often used in similar situations but have vastly different underlying technologies, offering unique advantages and disadvantages depending on use case:

- Syphon has significantly **less latency** than NDI
- NDI can be made available **across an entire LAN**, whereas Syphon only operates within a **single computer**
- Syphon is **less processor intensive** than NDI, utilizing more of the GPU than the CPU (at least compared to NDI 4)
- Syphon has **less overhead** and can be used for tasks such as exporting to BlackMagic SDI devices (see Black Syphon)
- NDI is **cross platform** whereas Syphon is **macOS exclusive** technology, although there is a Syphon alternative for Windows called Spout

Regarding NDI 4 vs NDI 5:

- Match encoders and decoders. If using NDI 4 for vMix, for example, use NDI 4 for ZoomISO.
- NDI 5 is native to Apple Silicon, so if using an M1 Mac, NDI 5 is highly suggested.

To sum it up,

If your application supports Syphon and is running on the same Mac as ZoomISO, it may be a better option than NDI, but in any other situation, NDI will be the best option in comparison. Use NDI 4 or NDI 5 depending on your current infrastructure.

LET'S GO!

Send a Zoom participant to NDI, Syphon, or Screen

1. Join a meeting with ZoomISO (**Same process as ZoomOSC**)
2. In the Outputs Tab of ZoomISO, **set the number of outputs** to 4, for example. This will create floating windows.
3. In the Participant Column of each ZoomISO Output, **select a participant from the drop-down**. This will route users to these floating windows.
4. You can leave the resolution to the default size, or you can select a different **resolution** for each user. You can also select **Full Screen** and select a **Display** from the rightmost column to route that user to that screen
5. Ensure **"Enable NDI" and/or "Enable Syphon" are checked** at the bottom of the application window

Send a Zoom participant to SDI

1. Output the participant as **Syphon**
2. Use **Black Syphon** to **route the user to the proper output** on a BlackMagic DeckLink.
3. You can connect your DeckLink either via PCI-E if you have a Mac Pro, or you can place it in a TB3 Enclosure. In our testing, a DeckLink Quad 2 attached to a Sonnet Echo Express SE1 with a TB3 connection to an M1 Mac Mini works really well as an SDI output box. Other converters from Syphon / NDI to SDI are available, such as this options from Gallery Sienna

LET'S GO!

Export individual participants in Gallery View

1. Join a meeting with ZoomISO (**Same process as ZoomOSC**)
2. Set ZoomISO to **Gallery View** in the Zoom UI
3. Open the **Outputs Tab** of ZoomISO
4. Check any of the **output options** under Gallery Outputs
   a. For each setting checked, an array of outputs will be posted to NDI / Syphon using the identification convention you selected.
5. These feeds are automatically cropped from the Zoom Gallery View, so to maximize the resolution, **run this on a high resolution display and make the Gallery View window as large as possible**

Get the Screen Share, Gallery View, or Active Speaker Output

ZoomISO can export it's **primary** and (if available) **secondary Zoom Window**s as Outputs.

Setting these windows to the **proper views** and **subscribing to those NDI / Syphon outputs** will allow you to access these views in isolation from the other outputs.

TROUBLESHOOTING

Verifying the received frame rate and resolution from Zoom

In the Zoom settings window, under **statistics for video**, you can view the **sending and receiving resolution and FPS** from Zoom.

We will work on supporting per-output readouts in the future, as Zoom does not make this data available to developers yet.

Fixing low frame rate / dropping frames

If you are experiencing the issue on HD feeds, try temporarily **stepping down to 360p and then back up to HD**.

It may take a few moments for the FPS to recover while these changes are applied.

If the issue persists, you might also try **setting the outputs to zero and then setting them back up again**.

Verify that the floating window is accurately reflecting the FPS you want if your NDI/Syphon feed appears to stutter to **ensure that the issue is not with Zoom's delivery of the video frames**.

TROUBLESHOOTING

Fixing a black / transparent bar on your output

For ZoomISO to function properly, there is a requirement that the **floating participant window be fully visible on a single display**.

Though other windows can cover it up, it must not travel outside of the borders of the screen.

The window can be dragged between displays and still function, however, there is a possibility that, **after dragging from one screen to another of a different resolution, the video feed may shift**.

Please report this bug, along with the screen resolutions used, to **info@liminalet.com** if you encounter it.

INTEGRATIONS

ZoomOSC

ZoomISO contains two license key entry boxes . . .

- One for ZoomISO itself, which will r**emove the watermark** and unlock the **../list OSC output**
- One for ZoomOSC Pro, which enables **ZoomISO to send and receive all OSC commands in ZoomOSC Pro**

This flexibility in licensing allows you to **consolidate your keys into a single app** instance, but also permits you to **split them up** when multiple clients are desirable, or when you don't need to license ZoomOSC Pro.

ATEM Mini

You can use ZoomISO with an ATEM Mini either by

- (1) taking the HDMI outputs from the hosting computer **directly into the ATEM** or
- (2) by using a **DeckLink and converting the SDI to HDMI** for the ATEM Mini to pull in.

INTEGRATIONS

Stream Deck (OSC)

ZoomISO can be controlled via **Open Sound Control (OSC)**, which is a protocol supported by most production systems.

While ZoomISO contains all of the OSC commands from ZoomOSC Essentials, as well as the ../list output from ZoomOSC Pro, there is a **special user action command that is exclusive to ZoomISO**:

../outputISO TARGET OUTPUT_ID

For example, if you wanted to route participant James to output 2, and you want to identify them by their Zoom username, you would send the command:

/zoom/userName/outputISO "James" 2

This command could be entered into Bitfocus Companion using the Generic OSC Module to create an easy method of routing.

For the best results, use the latest beta version of the Liminal ZoomOSC Companion Module, which contains ../outputISO as a new command option, allowing you to configure the entire system automatically with instance feedback.

See the User Guide for a full list of commands.