INVICTUS ENTERTAINMENT



Nexus

Operating Manual

NDI® management for macOS

November 2026

Invictus Entertainment, LLC

About This Manual

Nexus Operating Manual
November 2026

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How to use this manual

The chapters follow the order in which most people set up and run a show: install, network, Discovery Server, then the four working tabs (**STREAMS**, **MATRIX**, **MULTIVIEWS** and **DEVICES**), followed by show files, integrations and licensing. Chapter 12 collects all troubleshooting in one place. Appendix A lists the on-screen labels by location, and Appendix B is a glossary.

On-screen labels appear in **bold**, with the same capitalization used in the app (for example **USE DISCOVERY SERVER** or **Select All**). Short selector labels such as `ANY` and `ALL` appear in code style so they read as labels. Menu paths use arrows, as in **Help → License Agreement...**. IP addresses in this manual are examples only.

Callouts:

Callout	Meaning
Note	Useful background or a detail that is easy to miss.
Important	A setting or step that prevents a problem later.
Caution	An action that can interrupt live outputs or routes.
Tip	A faster or more convenient way to work.

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CHAPTER 1

Welcome to Nexus

Nexus is an NDI® management app for the Mac from Invictus Entertainment. From a single window, an operator can see the NDI sources Nexus finds on the network, check them, route them, convert a route's picture with a framesync, build custom multiviewers, and publish those layouts back onto the network as NDI outputs.

What Nexus does

Nexus is organized into five tabs along the top of the window, with a **SYSTEM STATUS** sidebar on the left that is always visible.

Tab	What you do there
STREAMS	Find NDI sources, see their status and format, watch the selected source with scopes and audio meters, and review the Event Log.
MATRIX	Route sources to destinations on a crosspoint grid, create Virtual Destinations, and store and take salvos.
MULTIVIEWS	Build multi-window monitoring layouts and publish each one as its own NDI output.
DEVICES	See the NDI encoders and decoders Nexus finds, their role and address, and open their web pages.
SETTINGS	Licensing, the walk-away lock, the Multiview Full-res budget, network adapters, Discovery Server, multicast, time, the Test Generator, IP tally and Bitfocus Companion control.

The top bar also holds the show-file controls (**SAVE**, **SAVE AS...**, **OPEN...**), the **LOCK** button and a status chip that summarizes NDI receive.

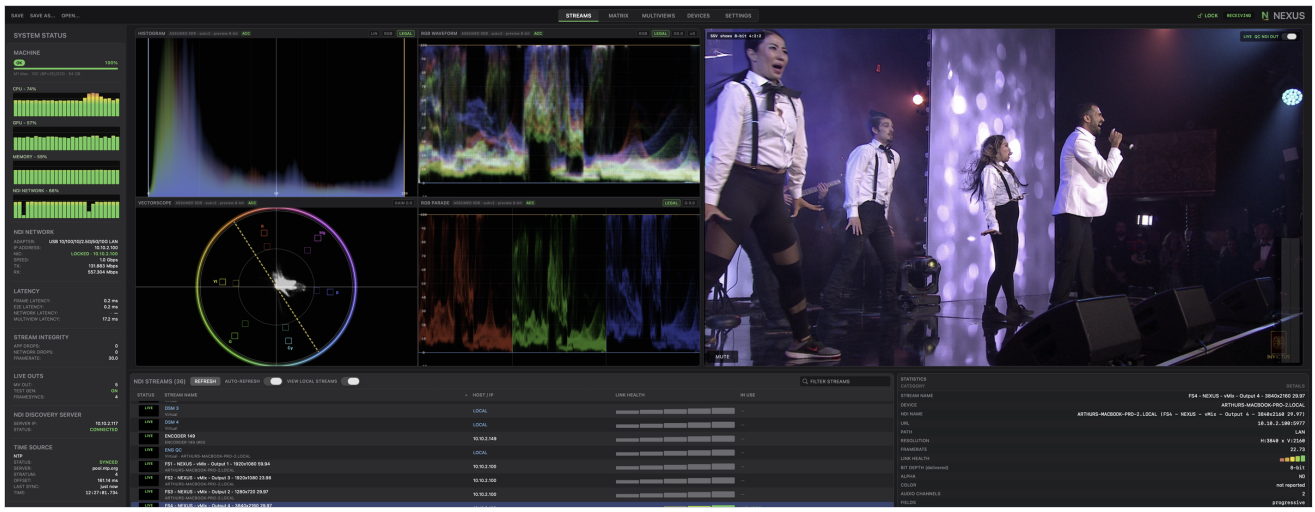


Figure 1.1. Nexus main window with top bar, tabs and SYSTEM STATUS sidebar (STREAMS tab shown)

Who this manual is for

This manual is written for show operators, technical directors and engineers who set up and run Nexus at a production. It assumes you are familiar with NDI and with basic IP networking on a Mac. It does not cover the

configuration of switches, cameras, switchers or third-party NDI devices; refer to those manufacturers' documentation.

System requirements

Item	Requirement
Computer	A Mac with Apple silicon. Intel-based Macs are not supported.
Operating system	macOS 14.0 or later.
Network	A network adapter connected to your NDI network. A wired connection is recommended.
Second network adapter	Recommended. Required if you want to control Nexus from Bitfocus Companion (see below).
Permissions	macOS Local Network access for Nexus.
Internet access	Needed for license activation, purchase and license checks (Chapter 11).

Why a second adapter. Nexus uses two network roles: **NDI NETWORK** carries NDI video, audio and discovery, and **MANAGEMENT NETWORK** carries control traffic such as Bitfocus Companion. Nexus never allows both roles on the same adapter. You can run Nexus with a single adapter for NDI, but Companion control is only available on a separate management adapter, and keeping control and media traffic apart makes both easier to troubleshoot. On a MacBook, a USB or Thunderbolt Ethernet adapter can serve as the second interface.

Good practice for live shows

A few rules apply throughout this manual:

- **Change network settings only between shows.** Changing the NDI adapter, multicast or Discovery Server rebuilds Nexus's NDI connections, which briefly stops program receive, Multiview outputs and the Test Generator.
- **Save a show file once the setup is right.** A show file restores routes, layouts, names and settings in one step (Chapter 9).
- **Confirm on the real destination.** After a route change or layout change, check the decoder, monitor or recorder that receives the signal, not only the Nexus screen.
- **Use LOCK, not Quit, when you step away.** The walk-away lock freezes the interface while outputs and routes keep running (Chapter 9).
- **Check your license before show day.** If a license problem occurs during a session, live outputs are designed to keep running, but some tabs lock (Chapter 11). Before the show, check that **LICENSE STATUS** shows **VALID**, and click **Refresh** if it does not.

CHAPTER 2

Install and First Launch

This chapter takes you from installing Nexus to an idle window that is ready for network setup. It covers the prompts you see the first time you open Nexus, the choice between a fresh start and loading a show file, and the controls in the top bar.

Install Nexus

1. Quit any copy of Nexus that is already running.
2. Copy **Nexus** into the **Applications** folder on your Mac.
3. Open Nexus from the Applications folder or with Spotlight.

To see the copyright notice without opening Nexus, select **Nexus** in the Applications folder and choose **File → Get Info**. It reads "© 2026 Invictus Entertainment, LLC. NDI® is a registered trademark of Vizrt NDI AB." **About Nexus** shows the version and the full NDI® notice.

> **IMPORTANT** Always run Nexus from the Applications folder, and keep a single copy on the Mac. macOS grants Local Network access to a specific copy of the app, so a second copy elsewhere on the disk needs its own permission and can appear to find no sources.

Open Nexus for the first time

The first time you open Nexus, several prompts appear in turn.

1. **Nexus License Agreement.** Nexus asks you to read the agreement: "Please read the license agreement for Nexus (version ...) below before you use Nexus." Then: "Click Accept to agree to it and continue, or Quit to close Nexus. You can't use Nexus without accepting." Click **Accept** to continue. You can read the agreement again at any time from **Help → License Agreement...** or from **About Nexus**. If the agreement changes in a later version, Nexus shows **Nexus License Agreement updated** the next time it opens: "We've updated the license agreement for Nexus (now version ...). Please read it below." Read it, then click **Accept** to continue ("You can't keep using Nexus without accepting.").
2. **Trial notice.** If this Mac has no license yet, Nexus shows **Nexus — 14-day trial** with the number of days left and the end date, and a note that you can activate anytime in **Settings → LICENSE STATUS**. Click **Continue**. You can activate a paid license at any time (Chapter 11).
3. **Choose how to start.** The launch chooser appears. Choose **FRESH START** or **LOAD FROM FILE**, as described below.
4. **Local Network.** After you confirm the NDI adapter or load a show file, macOS asks whether Nexus may find devices on your local network. Click **Allow**. Without this permission, Nexus cannot see NDI sources on other computers.

If your trial has ended and no license is active, the **License Required** window appears instead of the launch chooser. See "Activate a license" in Chapter 11.

> **NOTE** While Nexus is running, it keeps the Mac from going to sleep.

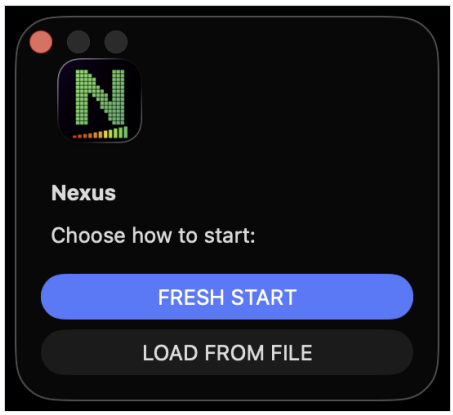


Figure 2.1. Launch chooser with FRESH START and LOAD FROM FILE

Choose FRESH START or LOAD FROM FILE

Every time Nexus opens, it shows the launch chooser ("Choose how to start:"). The exception is when you open Nexus by double-clicking a show file in the Finder: Nexus skips the chooser and loads that file.

FRESH START opens a completely clean session. It removes:

- all Multiview layouts and any Multiview outputs
- the NDI network adapter selection and the management adapter selection
- Discovery Server, multicast and Test Generator settings
- NTP server settings and Bitfocus Companion settings
- Matrix destination and source settings: **Companion name (short)** for sources and destinations, destination locks, **Allow Companion routing while locked** and **Allow re-entry as source**
- the Matrix lock, filters and destination scope
- display names you gave devices on the **DEVICES** tab
- the link to the last saved show file

FRESH START keeps your **license** and your **LOCK passcode**.

> **IMPORTANT** If you control Nexus from Bitfocus Companion, FRESH START removes the short names that your Companion buttons use, and your destination locks. These Matrix destination and source settings are kept on this Mac only and are not stored in show files, so note them before a fresh start and enter them again afterward.

LOAD FROM FILE opens a show file (`.ndc`) that you saved earlier and loads **all six sections** of it (Chapter 9). There is no section picker here. To load only some sections, start fresh and then use **OPEN...** in the top bar.

Start fresh

1. In the launch chooser, click **FRESH START**.
2. In **Choose NDI NETWORK Adapter**, select the macOS network service that carries NDI on this Mac, such as **Ethernet** or the name of your USB or Thunderbolt Ethernet adapter.
3. Click **OK**.

Nexus uses only the adapter you choose for NDI, and does not look for NDI sources until you confirm. Continue with Chapter 3 to check the adapter and to set up the management adapter.

> **IMPORTANT** The adapter you choose here is the NDI adapter. Do not choose the adapter you use for office, internet or control traffic if you have a separate one.

Load a show file

1. In the launch chooser, click **LOAD FROM FILE**.
2. Select the `.ndc` file. Nexus loads every section of the file: Engineering Notes, mute state, Matrix, Multiviews, device and stream names, and Settings.
3. Wait for the **Restoring Nexus** progress window to finish.
4. Open **SETTINGS** and confirm that **NDI NETWORK** is set to the correct adapter for this Mac before you take any routes.

You can also double-click a `.ndc` file in the Finder to open it in Nexus. This loads all six sections, in the same way as **LOAD FROM FILE**.

Nexus does not open a show file while the license is inactive or while the Matrix shows **LOCKED** (see "Show files, salvos and locks" in Chapter 6).

> **CAUTION** **LOAD FROM FILE** and a double-click in the Finder always load the **Settings** section (NDI adapter, Discovery Server and other settings) and the **Matrix** section (live routes). A file from another Mac can select an adapter that does not exist on this Mac, or one that is on a different network. To load only some sections, use **OPEN...** (Chapter 9).

The main window

The **top bar** runs across the top of the window.

Control	What it does
SAVE	Saves the current show file (⌘S). If no file is open yet, it works like **SAVE AS...**.
SAVE AS...	Saves the show to a new file (⇧⌘S).
OPEN...	Opens a show file (⌘O).
STREAMS, **MATRIX**, **MULTIVIEWS**, **DEVICES**, **SETTINGS**	Switch between tabs.
LOCK	Locks the interface behind a passcode while outputs keep running (Chapter 9).
Status chip	Summarizes NDI receive on this Mac (see below).

The **SYSTEM STATUS** sidebar on the left shows the health of the Mac, the NDI adapter, latency, stream integrity, live outputs, the Discovery Server and the time source. See "The SYSTEM STATUS sidebar" in Chapter 9.

Read the status chip

The status chip at the top right reports NDI receive on this Mac. It does not report the Discovery Server; that has its own **STATUS** in **SETTINGS** (Chapter 4).

Chip	Meaning	What to do
RECEIVING (green)	Frames from the stream selected on **STREAMS** are arriving.	Nothing.
READY (green)	An NDI adapter is set and Nexus is looking for sources, but no stream is selected or no frames are arriving for it yet.	Select a stream if you expect a picture.
DISCOVERY LOCKED (yellow)	An NDI adapter is set, but Nexus has not started looking for sources yet, for example before you confirm the adapter or while a show file is loading.	Wait for a show file to finish loading. Otherwise click **APPLY** on **NDI NETWORK** (Chapter 3).
STALE (yellow)	Nexus has lost the live picture of the selected stream and is holding the last frame.	See "Picture is black or STALE" in Chapter 12.
OFFLINE (red)	No NDI adapter is set.	Set the NDI adapter (Chapter 3).

Other messages you may see

- **Mac critical — Nexus under heavy load** appears when the Mac is close to its limits. Click **MULTIVIEWS** in the banner to open the **MULTIVIEWS** tab, where you can reduce the load (Chapter 7, "Full-res and Proxy").
- **License inactive** appears if the license becomes inactive while Nexus is open. If you are on **MATRIX**, **MULTIVIEWS** or **DEVICES** at that moment, Nexus switches to **SETTINGS** (Chapter 11).

Quit Nexus

1. Make sure Multiview outputs and important routes are in a known state, or hand them over to another system.
2. Quit Nexus from the app menu (⌘Q).
3. When Nexus asks **Do you wish to save before exiting?**, click **Yes** to save, **No** to quit without saving, or **Cancel** to keep working. **Yes** saves all six sections to a show file; there is no section picker. Choose a name and location and click **Save**. If you cancel the save window, Nexus keeps running.

If the file cannot be saved, Nexus shows **Couldn't save**: "The file could not be saved. Retry, quit without saving, or cancel." Click **Retry** to try the save again, **Quit without saving** to quit, or **Cancel** to keep Nexus running.

You cannot quit while Nexus is locked; unlock it first (Chapter 9).

> **CAUTION** Quitting stops every output that Nexus generates, including Multiview outputs, Virtual Destinations, **QC NDI OUT** and the Test Generator. Use **LOCK** for short absences.

CHAPTER 3

Network Setup

Nexus uses two network roles on the Mac. This chapter explains what each one is for, how to assign adapters to them, and how to use the multicast and status cards. Set up the network before you connect to a Discovery Server or build a show.

NDI and management adapters

Role	Where to set it	What it carries
NDI NETWORK	**SETTINGS → NDI SETTINGS → NDI NETWORK**	NDI video, audio and source discovery.
MANAGEMENT NETWORK	**SETTINGS → NETWORK SETTINGS → MANAGEMENT NETWORK**	Control traffic, including Bitfocus Companion OSC.

Nexus uses only the **NDI NETWORK** adapter for NDI. The two roles must always use different adapters. Each adapter picker leaves out the adapter that the other role is already using. If the NDI card is somehow set to the management adapter when you click **APPLY**, Nexus refuses the change and resets the picker.

The four unlabeled address fields on both cards (IP address, subnet mask, gateway and DNS server, from top to bottom) are display-only. They show the address macOS has assigned to that adapter. To change an address, use macOS System Settings, then return to Nexus and click **APPLY** again.

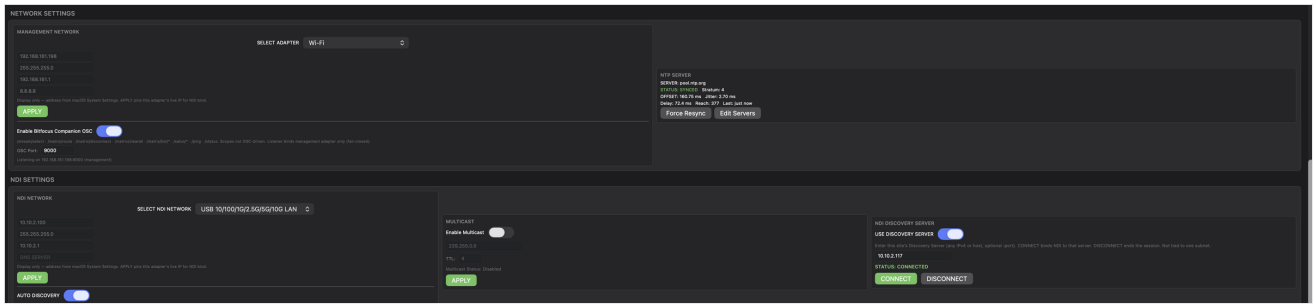


Figure 3.1. SETTINGS tab with the NETWORK SETTINGS and NDI SETTINGS cards

Set the NDI adapter

1. Click **SETTINGS**.
2. Under **NDI SETTINGS**, find the **NDI NETWORK** card.
3. From **SELECT NDI NETWORK**, choose the macOS network service connected to your NDI network.
4. Check that the display-only address fields show the address you expect for that cable. If they do not, correct the address in macOS System Settings first.
5. Click **APPLY**.
6. Check that the status chip in the top bar moves away from **DISCOVERY LOCKED**.

> **TIP** Label the Mac's NDI cable and its switch port with the same name as the network service you select.

AUTO DISCOVERY

The **AUTO DISCOVERY** switch on the **NDI NETWORK** card is on by default. It re-scans the network for NDI sources about every two seconds. It refreshes the list of sources only; it does not re-probe sources that are already being received. It has the same effect as **AUTO-REFRESH** on the **STREAMS** and **DEVICES** tabs.

Set the management adapter

1. In **SETTINGS**, find **NETWORK SETTINGS → MANAGEMENT NETWORK**.
2. From **SELECT ADAPTER**, choose a different network service from the one used for NDI.
3. Check the display-only address fields.
4. Click **APPLY**.

If you have only one adapter, leave the management adapter unset. Nexus works normally for NDI, but Bitfocus Companion control is not available (Chapter 10).

> **IMPORTANT** A device can appear as an NDI source on the NDI adapter and still be unreachable for its web page or control on the management side, or the other way round. When something is "visible but not reachable," check which adapter role is involved.

Multicast

The **MULTICAST** card lets Nexus use multicast for NDI where your network is designed for it. Use it only when your network engineer asks you to.

1. In **SETTINGS → NDI SETTINGS**, find **MULTICAST**.
2. Turn on **Enable Multicast**.
3. Enter the multicast group (the default is 239.255.0.0) and the **TTL** (the default is 1; you can enter 1 to 255).
4. Click **APPLY**.

The line **Multicast Status** below the fields shows **Enabled** with the group, or **Disabled**.

> **NOTE** When you load a show file that includes the **Settings** section, Nexus always turns multicast off, even if it was on when the file was saved. Turn it on again if your show needs it.

The NDI STATUS card

NDI STATUS in **SETTINGS** summarizes the health of NDI on this Mac:

- **STREAM INTEGRITY** shows **APP DROPS**, **NETWORK DROPS** and **DELIVERY FPS** for the stream selected on the **STREAMS** tab. These counters reset when you select a different stream. **APP DROPS** should always be 0.
- The adapter section shows which network interface (NIC) NDI uses, followed by its address:
- **NIC: LOCKED**: NDI uses only the address of the selected NDI adapter. This is the normal state.
- **NIC: NOT FOUND**: the saved adapter's address is not live, so Nexus uses any NIC. The card reads "Saved NIC not found — using any NIC; some destinations may miss". Check the adapter and cable, then click **APPLY**.

- `NIC: ANY`: NDI is not limited to one adapter, for example after you click **DISCONNECT** on the Discovery Server card. The address line shows `All adapters`, or **No NIC selected** if no NDI adapter is set.
- **MULTICAST** shows whether multicast is in use.
- **DISCOVERY** repeats the Discovery Server **STATUS** (Chapter 4).

Below the cards, a hint line explains what other NDI tools need in order to see Nexus's outputs, and a timestamp shows when Nexus last wrote its NDI configuration.

Changing network settings during a show

Changing the NDI adapter, multicast or the Discovery Server makes Nexus rebuild its NDI connections. Depending on what you change and what is running, Nexus may ask you to confirm first:

- **Restart NDI network stack?** appears when receive, Multiview outputs or the Test Generator are running, and warns that they will stop while Nexus rebuilds. Click **Restart Network** to continue, or **Cancel** to leave the current settings in place.
- **Restart Nexus to apply network change** appears when the change can only take effect after a restart. Click **Restart Nexus** to quit and reopen Nexus now, or **Later** to keep working and apply the change at the next restart.

Change the NDI adapter safely

1. Choose a moment when no outputs need to stay on air.
2. Click **SAVE** so you can restore the show if needed.
3. In **NDI NETWORK**, select the new adapter and click **APPLY**. Confirm it is not the management adapter.
4. If you use a Discovery Server, check its **STATUS** and click **CONNECT** again if needed (Chapter 4).
5. Confirm that sources reappear on **STREAMS** and **DEVICES**, then check routes and Multiview outputs.

> **CAUTION** Do not change the NDI adapter during a live show unless you have rehearsed it. A wrong adapter looks like "no sources" and can take time to diagnose.

Network checklist

Before you connect to a Discovery Server or build a show, confirm that:

- **NDI NETWORK** and **MANAGEMENT NETWORK** use different adapters (or management is unset)
- the display-only addresses match what your network engineer expects
- the top-bar status chip is no longer **DISCOVERY LOCKED**
- the license status is **VALID** or **TRIAL** (Chapter 11)

CHAPTER 4

Discovery Server

An NDI Discovery Server is a service on your network that keeps a central list of NDI senders and receivers. This chapter explains when you need one, how to connect Nexus to it, and how to read its status.

When you need a Discovery Server

Without a Discovery Server, Nexus finds NDI sources on the local network segment of the NDI adapter using standard NDI discovery. This is often enough for a single network where the sources are nearby.

Use a Discovery Server when:

- sources are on other subnets or VLANs, or multicast discovery is filtered on your network
- your facility standard requires one
- **you want to route to network decoders.** Nexus learns about NDI receivers on the network, such as hardware decoders, from the Discovery Server. Network destinations appear on the **MATRIX** tab only while Nexus is connected to a Discovery Server that lists them.

Nexus can route to NDI receivers that the Discovery Server lists. For information about specific decoder models, contact Invictus support.

Connect to a Discovery Server

1. Make sure the NDI adapter is set and applied (Chapter 3).
2. Click **SETTINGS** and find **NDI SETTINGS → NDI DISCOVERY SERVER**.
3. Turn on **USE DISCOVERY SERVER**.
4. Enter the server address. You can enter an IPv4 address (192.168.1.10), an address and port (192.168.1.10:5959) or a hostname (ds.local). 0.0.0.0 is not accepted.
5. Click **CONNECT**.
6. Wait for **STATUS** to change from **CONNECTING...** to **CONNECTED**.
7. Open **STREAMS** and **DEVICES** and confirm that the sources and receivers you expect appear.

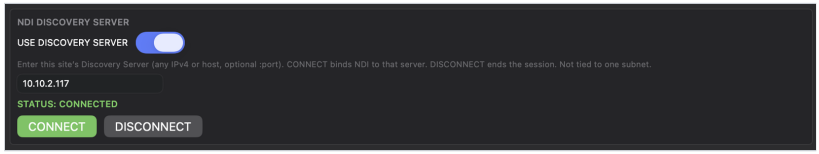


Figure 4.1. NDI DISCOVERY SERVER card showing STATUS: CONNECTED

> **IMPORTANT** Use the Discovery Server address for this site. An address copied from another venue or another show is a common cause of missing sources.

Disconnect or turn off the Discovery Server

- To end the session but keep the address, click **DISCONNECT**. **STATUS** changes to **DISCONNECTED**, and Nexus returns to local discovery.
- To stop using a Discovery Server altogether, turn off **USE DISCOVERY SERVER**. The **STATUS** line is hidden on the card while the switch is off; the sidebar and the **NDI STATUS** card show **OFF**.

Once you have clicked **CONNECT**, Nexus stays with that Discovery Server for the session, even if the server stops responding. It does not switch to local discovery on its own. To use local discovery instead, click **DISCONNECT**.

Disconnecting changes how Nexus finds sources, which can interrupt receive, Multiview outputs and routes to network decoders. Do it between shows, not during one.

Read the Discovery Server STATUS

While **USE DISCOVERY SERVER** is on, **STATUS** on the **NDI DISCOVERY SERVER** card shows one of the values below. The same value appears in the **SYSTEM STATUS** sidebar under **NDI DISCOVERY SERVER**, and on the **NDI STATUS** card under **DISCOVERY**.

STATUS	Meaning
OFF	**USE DISCOVERY SERVER** is turned off.
ENTER SERVER IP	The switch is on, but there is no usable address (empty or 0.0.0.0).
CONNECTING…	A connection you started with **CONNECT** is in progress.
CONNECTED	The NDI software in Nexus reports that it is connected to the Discovery Server.
DISCONNECTED	The switch is on and an address is set, but Nexus is not connected, either because you clicked **DISCONNECT** or because the server cannot be reached.

CONNECTED confirms the connection to the server. It does not prove that the sources you expect are registered there. If a source is missing while **STATUS** is **CONNECTED**, check that the source is registered with the same Discovery Server.

Discovery Server and show files

A show file can store Discovery Server settings in its **Settings** section. When a file is loaded with that section, Nexus applies these rules:

- **When you load a file yourself** (with **LOAD FROM FILE**, **OPEN…** or a double-click in the Finder), Nexus reconnects to the Discovery Server saved in the file.
- **If the file contains no Discovery Server**, Nexus turns the Discovery Server off and clears the address.
- **When Nexus restores state on its own** (for example after a restart), it fills in the address and the switch but does not connect until you click **CONNECT**.
- The connected state itself is never stored in a file. **STATUS** always reflects the live connection.

> **TIP** After loading a show file on a different Mac, always check **NDI NETWORK** and the Discovery Server address before you take routes.

Quick health check before a show

1. **NDI NETWORK** shows the correct adapter and address.
2. **NDI DISCOVERY SERVER** shows this site's address, and **STATUS** is **CONNECTED** if the show needs it.
3. **STREAMS** lists the sources you expect.
4. **DEVICES** lists the encoders and decoders you expect.
5. If another NDI viewer on the same network sees a source that Nexus does not, note the adapter name and Discovery Server address and see Chapter 12.

CHAPTER 5

Streams and Scopes

The **STREAMS** tab is where you find NDI sources and check them. The left side lists the NDI sources Nexus finds; the right side shows the selected source with its statistics, picture, scopes and audio meters. The Event Log, also on this tab, is described in Chapter 9.

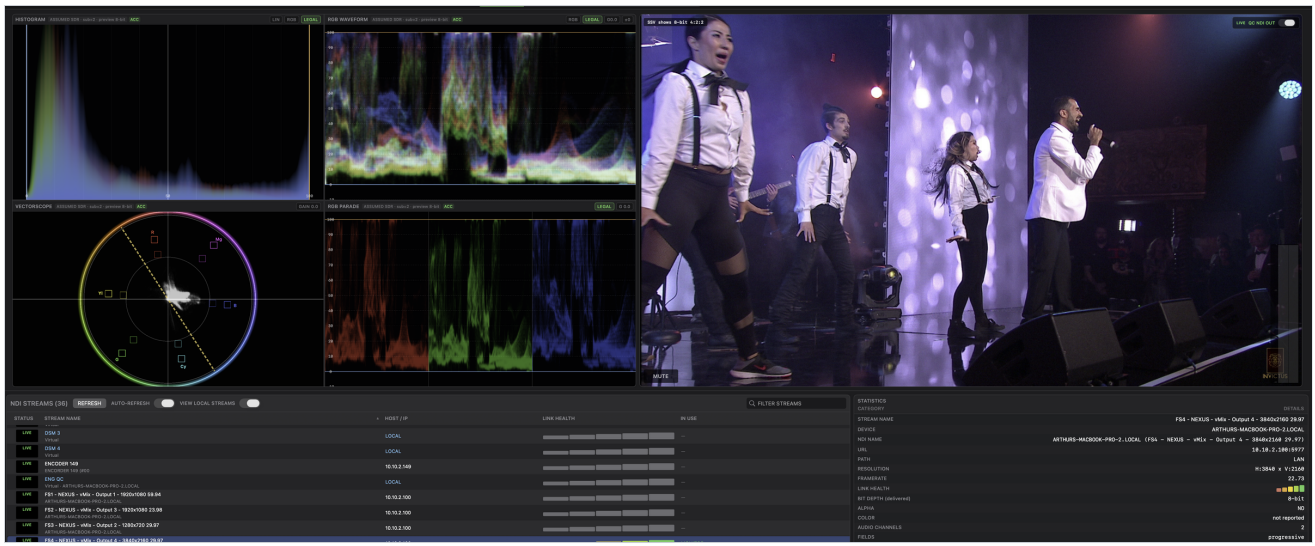


Figure 5.1. STREAMS tab with the scopes, Selected Stream Video, the source list and STATISTICS

The source list

The list is titled **NDI STREAMS** followed by the number of sources shown. It has five columns.

Column	What it shows
STATUS	**LIVE** (green) when the source is present, **OFFLINE** (red) when it has gone, or a neutral marker while presence has not yet been measured.
STREAM NAME	The source name, or the display name you gave it with **Rename…**.
HOST / IP	The address of the computer or device sending the source. Outputs that Nexus itself generates (Virtual Destinations, Multiview outputs, the Test Generator) show **LOCAL**.
REACHABLE	Bars showing the quality of the network path from this Mac to the source. Gray bars mean the path has not been measured yet.
IN USE	**MONITOR** when the source is being watched in Selected Stream Video, **ROUTED** when it is routed on the **MATRIX** tab, or both.

Format details such as resolution, frame rate and bit depth are shown in **STATISTICS** for the selected source, not in the list.

If the list shows **NDI NETWORK ADAPTER NOT SET**, Nexus has no NDI adapter yet. Choose one with **FRESH START** or set **NDI NETWORK** in **SETTINGS** (Chapter 3).

Toolbar controls

Control	What it does
REFRESH	Refreshes the source list now. When nothing is being received, Nexus runs a full check of the sources it finds. While you are monitoring or routing, it only adds and removes sources, so live receive is not disturbed.
AUTO-REFRESH	Off by default. Re-scans for sources about every two seconds. It updates the list only; format details fill in when you select a source.
VIEW LOCAL STREAMS	On by default. Shows the outputs Nexus generates on this Mac (Virtual Destinations, Multiview outputs, the Test Generator) and other NDI sources on the same Mac. Turn it off to see only sources from other computers and devices.
FILTER STREAMS	Shows only sources whose names contain the text you type. Filtering does not change the selected source.

> NOTE Turning off **VIEW LOCAL STREAMS** only hides those rows. The outputs keep running on the network.

Find and select a source

1. Click **STREAMS**.
2. If the list is long, type part of the name in **FILTER STREAMS**.
3. Click the source row.

The source starts playing in Selected Stream Video, **STATISTICS** fills in, and the scopes and audio meters follow the new source. The **IN USE** column shows **MONITOR**.

When you switch to another tab, Nexus pauses the picture on **STREAMS**; receive continues in the background. The picture resumes when you return.

Rename a source

You can give a source a clearer display name, such as "Cam 1 Wide," without changing the source itself.

1. Right-click (or Control-click) the source and choose **Rename...**.
2. In **EDIT STREAM NAME**, type the new name.
3. Click **Save**.

The new name is used only inside Nexus. The source's NDI name, and any routing that uses it, are unchanged.

STATISTICS

The **STATISTICS** panel lists details for the selected source in two columns, **CATEGORY** and **DETAILS**. If no source is selected, it shows **No stream selected**.

Category	What it tells you
STREAM NAME / **NDI NAME**	The display name and the full NDI name of the source.
URL	The connection address of the source, when available.
RESOLUTION	The picture size the source reports.
FRAMERATE	The frame rate the source declares. It shows — when the source does not declare a rate.

Category	What it tells you
DELIVERY FPS	The number of new frames per second arriving at Nexus while you watch. A repeated frame is not counted. It shows — until the first second of measurement is complete, and **STALE** when no new frame has arrived from the source for about a second. Compare it with **FRAMERATE**.
BIT DEPTH / **ALPHA** / **COLOR**	Bit depth, whether the source's pixel format carries an alpha channel, and its color space.
LINK HEALTH	Quality of the network path from this Mac. Gray bars mean the path has not been measured yet.
SOURCE TIMECODE	Timecode embedded in the current frame from the source, when present. It shows — when no live frame is arriving. This is not the Mac's clock.
IP TALLY	**PREVIEW** or **PROGRAM** if a switcher reports this source through IP tally (Chapter 10). Display only.
DEVICE / **PATH**	The device that sends the source and the network path class.
AUDIO CHANNELS	The number of audio channels in the source.

INSIGHT

Below the statistics, **INSIGHT** gives a short advisory reading of the selected source, based on delivery, frames dropped inside Nexus, link quality and a sample of the picture taken about once a second. Its header shows the main finding and an overall status, for example **Attention**.

- **PICTURE** describes what Nexus sees in the image, for example a frozen or moving picture.
- **MEANING** explains what the readings suggest.
- **CHECK NEXT** suggests what to look at next.

If Nexus has more than one finding, the other findings are listed below, separated by dots.

Just after you select a source, **INSIGHT** reports that delivery is still being measured. Wait about a second for **DELIVERY FPS** to fill in.

An **ANE** badge appears when **Neural picture analysis (ANE / Vision)** is turned on in **SETTINGS → STREAM INSIGHT**. This option uses the Mac's Neural Engine, where available, to improve freeze and motion detection. It is off by default.

> **NOTE** INSIGHT is advisory only. It never changes routing, Multiview outputs or what you see in Selected Stream Video.

Selected Stream Video

Selected Stream Video is the picture of the source you selected. Use it to answer one question quickly: is this the right source, and does it look right?

The picture carries a few small labels:

- **SSV shows 8-bit 4:2:2** sits at the top left whenever a source is selected. It is a reminder that this preview picture is displayed as 8-bit 4:2:2. To see the format the source itself sends, check **BIT DEPTH** and **COLOR** in **STATISTICS**.
- **QC NDI OUT** and its switch sit at the top right. **LIVE** appears beside **QC NDI OUT** when that output is sending.

- **STALE** appears at the top center when Nexus has lost the live picture and may be holding the last frame. Do not trust a **STALE** picture; see Chapter 12.
- **MUTE** / **UNMUTE** sits at the bottom left, and the audio meters at the bottom right.



Figure 5.2. Selected Stream Video with SSV shows 8-bit 4:2:2 at the top left, QC NDI OUT with LIVE at the top right and MUTE at the bottom left

Open the picture in its own window

1. Double-click the picture.

The picture opens in a separate window, titled with the name of the selected source, which you can move to another display and resize. There is only one such window: double-clicking the picture again brings the existing window to the front instead of opening another. While it is open, the panel on **STREAMS** shows **EXTERNAL DISPLAY** with the hint "Double-click to focus window"; double-click the panel to bring the window to the front. Close the window to return the picture to the panel.



Figure 5.3. Selected Stream Video in its own window, titled with the name of the selected source

QC NDI OUT

QC NDI OUT sends the selected source back onto the network as an NDI output named **Nexus QC Out**. Because it follows whatever you select on **STREAMS**, it is useful for sending a "check" feed to another room, recorder or display. Nexus QC Out also appears as a source on the **MATRIX** tab.

QC NDI OUT is on by default. To stop the output, turn off the **QC NDI OUT** switch at the top right of the picture.

> NOTE **QC NDI OUT** is a different output from a Multiview output. A Multiview output sends a whole layout (Chapter 7); **QC NDI OUT** sends only the selected source.

Audio meters

The audio meters show the levels of each audio channel in the selected source. Click **MUTE** to silence the source's audio on this Mac, and **UNMUTE** to hear it again. The mute state can be saved in a show file.

Scopes

The scopes follow the selected source and update while you watch. They are intended for quick visual checks of exposure, color balance and levels during a show. They are not a substitute for calibrated test and measurement equipment.

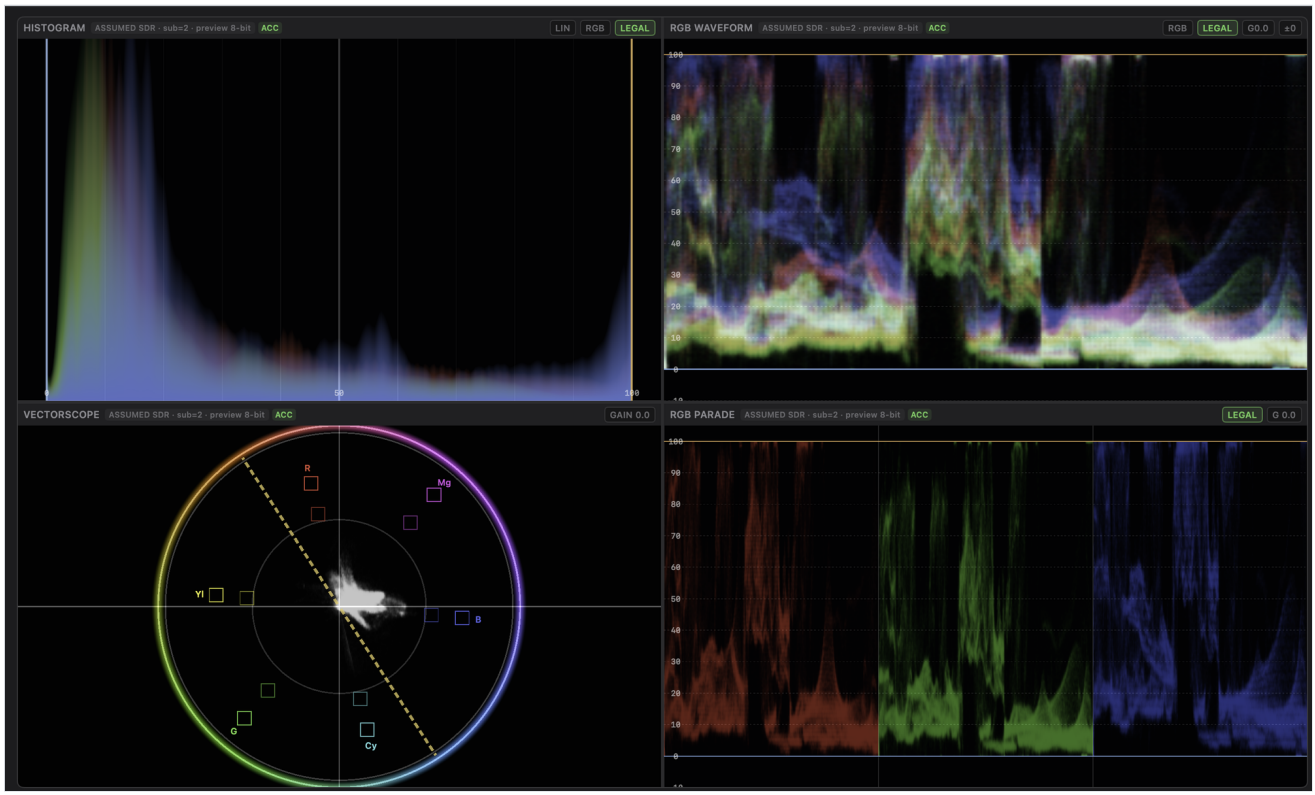


Figure 5.4. Scopes for the selected stream: histogram, RGB waveform, vectorscope and RGB parade

Scope	Use it to check
LUMA WAVEFORM / **RGB WAVEFORM**	Exposure and levels across the picture: crushed blacks, clipped highlights and channel balance.
VECTORSCOPE	Color balance and saturation, for example skin tones and graphics. Use **GAIN** to magnify low-saturation pictures.
RGB PARADE	The red, green and blue channels side by side, to spot a color cast.
HISTOGRAM / **HISTOGRAM Y′**	How levels are distributed between shadows and highlights. Switch between RGB and luma (**Y′**), and between linear (**LIN**) and logarithmic (**LOG**) scales.

Each scope has small controls along its top edge:

- **LEGAL** draws markers at the limits of the studio video range (16 and 235 on an 8-bit scale). It is on by default. It is not available, and is turned off, for **PQ** and **HLG** sources.
- A **color tag** shows the color space Nexus is using for the scope: **SDR 709**, **SDR 601**, **SDR 2020**, **PQ** or **HLG**, taken from the source. When the source does not report one, the tag reads **ASSUMED SDR**. Click the tag to override the color space; each click moves to the next choice (automatic, 709, 601, 2020, PQ, HLG). While an override is set, the tag shows **· man**.
- For HDR sources, a second tag sets the peak reference of the scale. Click it to cycle between 1000, 4000 and 10000 nits.

To see a scope at a larger size, double-click it. The scope opens in its own window.

> **TIP** If the scopes look right but the story is wrong, check **NDI NAME** in **STATISTICS**: you may be watching a different source from the one you intended.

CHAPTER 6

Matrix Routing and Salvos

The **MATRIX** tab is a crosspoint router for NDI. Sources run across the top as columns and destinations run down the side as rows. Clicking a cell routes that source to that destination. This chapter also covers Virtual Destinations, destination settings, salvos, and saving and loading routes.

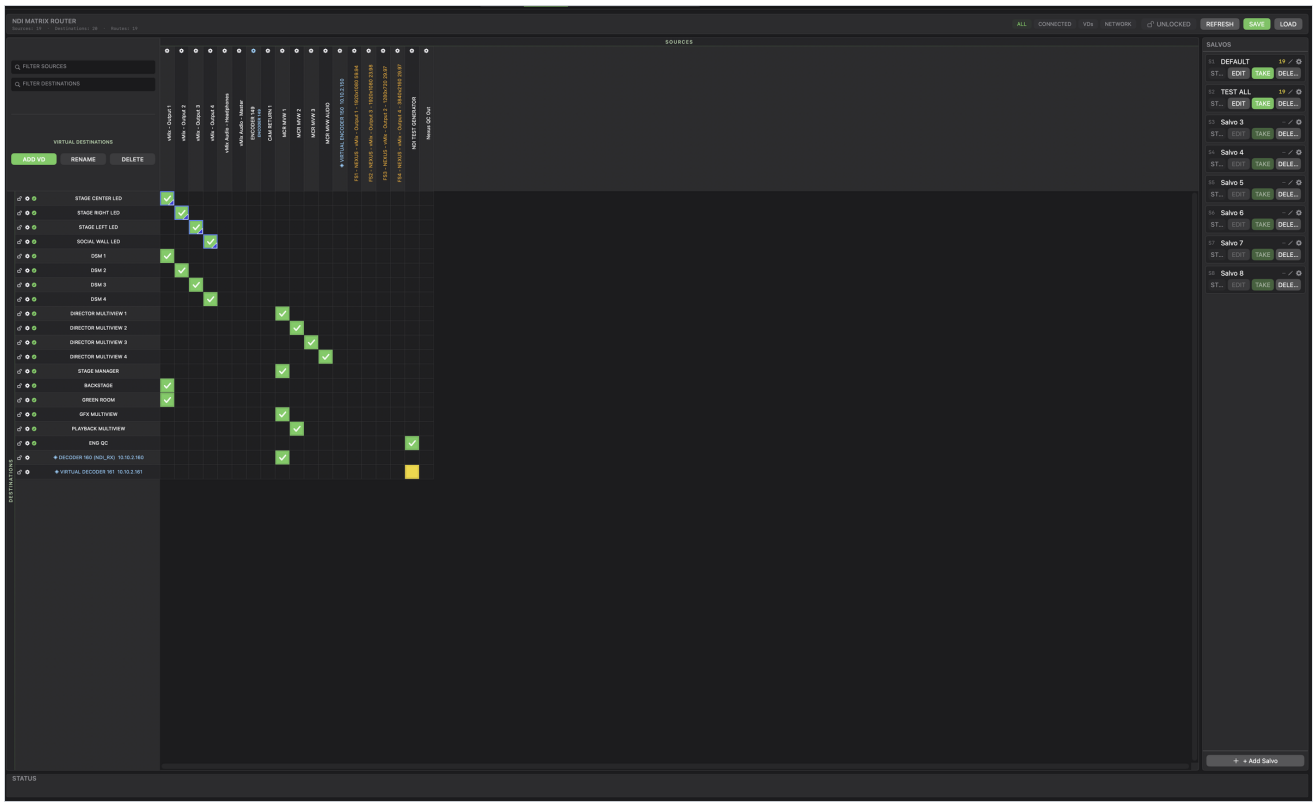


Figure 6.1. MATRIX tab with the crosspoint grid and corner box

The Matrix workspace

Area	What it holds
Header	**NDI MATRIX ROUTER**, counts of sources, destinations and routes, the selected destination, the Matrix lock (**LOCKED** / **UNLOCKED**), **REFRESH**, **SAVE** and **LOAD**.
Destination scope chips	`ALL`, **CONNECTED**, **VDs** and **NETWORK**.
Corner box	**FILTER SOURCES**, **FILTER DESTINATIONS**, and the **VIRTUAL DESTINATIONS** controls **ADD VD**, **RENAME** and **DELETE**.
Grid	Source columns and destination rows. Each destination row starts with a lock icon and a settings (gear) icon.
SALVOS rail	Stored sets of routes that you can take in one step.

Destinations

There are two kinds of destination:

- **Virtual Destinations (VDs)** are routing outputs that Nexus creates on this Mac. Each one appears on the network as an NDI source, so NDI receivers that can discover it can use it. Whatever source you route to a VD is what that NDI source carries.
- **Network destinations** are NDI receivers on the network, such as hardware decoders. They appear while Nexus is connected to a Discovery Server that lists them (Chapter 4). You cannot rename or delete them on this tab; use display names on the **DEVICES** tab instead.

Each destination carries one source at a time. Routing a new source to a destination replaces the previous route.

Take and break routes

Take a route

1. Click **MATRIX**.
2. If needed, use the filters or scope chips so that the source and destination are easy to see.
3. Click the cell where the source column and the destination row meet.
4. Check that the cell shows the route as connected.
5. Confirm the picture on the destination: the decoder output, the Multiview window or the monitor.

> **NOTE** A route to a Virtual Destination appears in the grid straight away. A route to a network decoder paints the cell yellow while Nexus waits for the decoder to confirm, then green with a check once the decoder reports the new source. The Event Log records each result as ✓ **CONFIRMED** or **UNCONFIRMED** (Chapter 9).

Break a route

1. Click the connected cell again.
2. Confirm that the destination no longer shows that source.

> **CAUTION** Breaking a route to an on-air destination leaves it without a picture. If your facility parks destinations on a standby source, take that source instead of breaking the route.

Route with the keyboard

1. Click in the grid so that it has focus.
2. Use the arrow keys to move the highlight.
3. Press Space or Return to take or break the highlighted cell.
4. Press Esc to clear the highlight.

Locks

Lock	Effect
Destination lock (lock icon on the row)	Blocks routing changes to that destination, from the grid, salvos and Bitfocus Companion.

Lock	Effect
Matrix lock (**LOCKED** / **UNLOCKED** in the header)	Locks the Matrix grid so clicks in Nexus can't change crosspoints. It also blocks keyboard takes, **ADD VD**, **RENAME** and **DELETE**, the **SALVOS** rail (**TAKE**, **STORE**, **EDIT** and **DELETE**), **LOAD**, and opening show files.
LOCK in the top bar	Locks the whole interface; routes keep running (Chapter 9).

The Matrix lock stays on until you unlock it, including after you quit and open Nexus again.

> **IMPORTANT** While the Matrix shows **LOCKED**, Nexus refuses Bitfocus Companion route, connect and disconnect commands, and replies `/nack` with the reason **matrix-locked**. The exception is a destination with **Allow Companion routing while locked** turned on (see "Destination and source settings" below), which Companion can still change unless the row is locked or the license is inactive. Companion clear, salvo store and salvo delete commands are always refused while the Matrix is locked. A Companion salvo take is refused unless that salvo allows Companion to fire it while the Matrix or Nexus is locked (see "Salvos" below).

Show files, salvos and locks

While the Matrix shows **LOCKED**, Nexus does not open a show file or Matrix file, and the salvo buttons in the **SALVOS** rail do not work. Nexus shows a message instead:

- Opening a file: **Matrix locked — unlock the Matrix to open this file.**
- Using a salvo: **Matrix locked — unlock to use salvos.**

While the license is inactive, the same actions are refused with a license message instead (Chapter 11). This applies to **OPEN...** in the top bar (⌘O), **LOAD** on the **MATRIX** tab, **LOAD FROM FILE** in the launch chooser, and a double-click on a `.ndc` or `.mtx` file in the Finder. Unlock the Matrix, then try again.

> **CAUTION** A destination lock (the lock icon on the row) also blocks salvo takes to that destination.

Filter the grid

- Type in **FILTER SOURCES** to show only matching source columns.
- Type in **FILTER DESTINATIONS** to show only matching destination rows.
- Use the scope chips to choose which destinations appear:

Chip	Shows
`ALL`	VDs and the network destinations that Nexus finds.
CONNECTED	Only destinations that currently have a route. Useful for checking what is routed during a show.
VDs	Only Virtual Destinations.
NETWORK	Only network destinations.

If a source or destination seems to be missing, clear both filter fields and click `ALL` before you look further.

Virtual Destinations

Add a Virtual Destination

1. In the corner box under **VIRTUAL DESTINATIONS**, click **ADD VD**.
2. A new destination appears in the list, named "Virtual Destination" followed by a number.
3. Route a source to it.
4. To confirm the output, open **STREAMS** with **VIEW LOCAL STREAMS** turned on; the VD appears with **HOST / IP** showing **LOCAL**.

Rename or delete a Virtual Destination

1. Click the name of the Virtual Destination in the destination column to select it.
2. Click **RENAME**, type the new name and click **Rename**; or click **DELETE** and confirm.

If no Virtual Destination is selected, Nexus asks you to select one first.

When you rename a VD that is already on the network, Nexus re-creates its routing under the new name. When you delete a VD, its NDI output disappears, and receivers using it lose that picture.

> TIP Give VDs clear names, such as "PGM Feed" or "Stage Left Monitor," before the show starts.

Destination and source settings

Click the gear icon at the start of a destination row to open **Destination settings**:

Setting	What it does
Companion name (short)	A short name, such as "PGM" or "LX PVW," used on Bitfocus Companion buttons and in OSC commands. If empty, the full Matrix name is used.
Allow Companion routing while locked	Lets Bitfocus Companion change this destination's source while the Matrix or Nexus is locked. The grid in Nexus stays locked. Salvo store and delete stay blocked, and clear-all is blocked while the Matrix is locked. The destination lock blocks all changes. A Companion salvo changes this destination only if that salvo is set to fire while the Matrix or Nexus is locked.
Allow re-entry as source	For a Virtual Destination: also shows it as a source on the grid, so you can route it to network destinations. Routing a VD to another VD is always blocked.

Click **Done** to close the sheet. These settings are kept on this Mac; they are not stored in show files or Matrix files, and **FRESH START** removes them.

Sources have a similar gear icon that opens **Source settings**, where you can set a **Companion name (short)** for the source, such as "CAM 1" or "REPLAY."

Framesync on a crosspoint

A framesync converts the picture (and optionally the sound) on one Matrix crosspoint before it reaches the destination. The Matrix still shows the original source you took; the converted stream appears on the network under its own FS name (see below).

Open the Framesync panel

On a crosspoint square, a small right-triangle mark sits in the bottom-right corner, like a folded page corner. That mark is the control that opens the **Framesync** panel.

- On hover, when no conversion is set, the mark is a black triangle with a white hairline edge.
- When a conversion is applied, the mark is a deep-blue triangle with the same edge, and a blue frame surrounds the square. The mark stays visible without hovering.
- The mark appears only when the grid squares are large enough to hold it.

Click inside the triangle itself to open **Framesync**. A click anywhere else in the cell, including just beside the triangle, takes or breaks the route as usual.

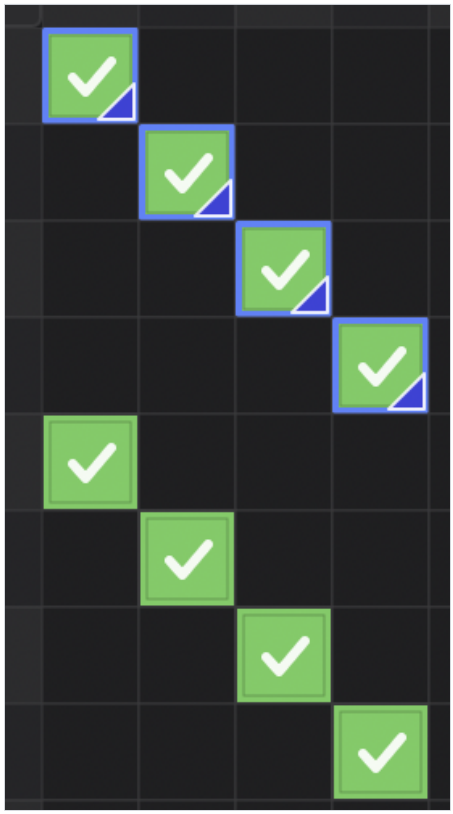


Figure 6.2. Crosspoint corner marks: converted crosspoints (deep-blue triangle and blue frame, top) and plain routed crosspoints (below)

Set Resolution and Frame rate

The panel title is **Framesync**. It shows the source and destination names, then:

Control	What it does
Resolution	First item **Plain (no change)** (no conversion). Named sizes: **480i NTSC**, **576i PAL**, **720p**, **1080**, **1440p**, **UHD 4K**, **DCI 4K**. Sizes larger than 1920×1080 append `(counts 4)` in the list.
Frame rate	Separate dropdown. Disabled when **Resolution** is **Plain (no change)**, or when the chosen size locks the rate.
Frame rate change	Segmented: **Drop / repeat** or **Blend**.
Mute sound	When on, the converted stream goes out silent.

Control	What it does
Channels	One checkbox per audio channel of the source, with **All** and **None**. Untick a channel to send it silent. If Nexus has not yet seen the source's channel count, it shows two channels and the note **Channel count not seen yet: showing 2.** If the source is not live, the note reads **Channels as last seen.**

If you choose **480i NTSC** or **576i PAL**, Nexus locks the frame rate and shows a note such as "**480i NTSC** is sent as whole frames at 29.97 (progressive, not fields)." For **576i PAL**, the rate is 25.

The panel also shows:

- **In use on this Mac (framesyncs + Multiview outs): X of Y.** and, when a picture size is chosen, **This picture counts Z.**
- **480i, 576i, 720p and 1080 count 1 at any frame rate. 1440p, UHD 4K and DCI 4K count 4 at any frame rate. Blend counts 1.5 times.**
- **Unticked channels go out silent; channel numbers never move.**
- A note on sound: the converted stream carries the source's own sound, all channels at 48 kHz, held back automatically to match the picture. Different sound settings use their own FS number and their own share of the limit.

Buttons are **Cancel** and **Apply**. For a Virtual Destination or virtual source crosspoint, the panel also notes: **Virtual crosspoint: planning only (picture and sound). It goes live after takeover + TAKE.**

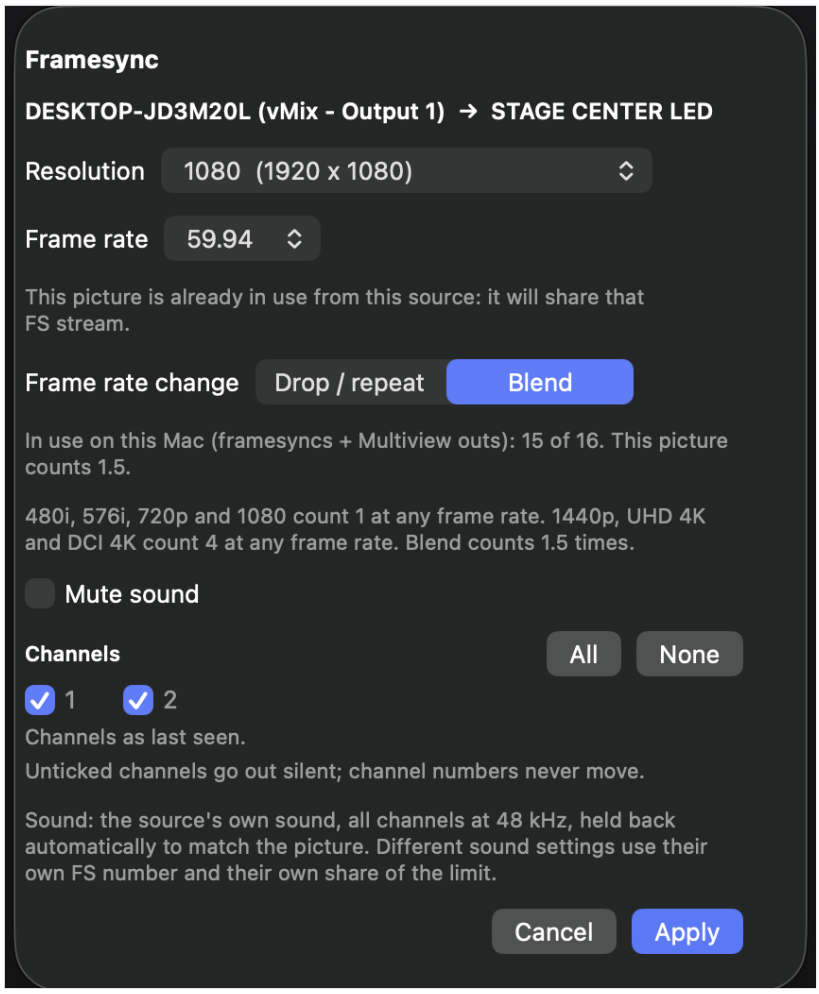


Figure 6.3. Framesync panel with a picture size chosen, showing Resolution, Frame rate, Frame rate change, Mute sound, Channels and the In use line

> CAUTION Framesyncs and Multiview outputs share an estimated limit on this Mac, shown on the **In use** line of the panel. Going past it does not stop a take, and Nexus does not show a separate warning, but pictures can drop frames. Check the **In use** line before you add conversions, and prefer **Drop / repeat** and HD sizes when you need many. The **FRAMESYNCS** row in **SYSTEM STATUS** shows how many converted streams are running (Chapter 9).

Converted stream names

When a conversion is live, Nexus publishes a converted NDI stream with a name in this form:

```
FS1 - NEXUS - <source short name> - <width>x<height> <rate>
```

for example `FS1 - NEXUS - …`. Each framesync crosspoint keeps its own FS number for as long as its setting exists, so its stream name stays the same. Framesync settings are saved with the Matrix in show files and Matrix files (Chapter 9); when you load the file, each framesync returns under the same stream name, so receivers that select it by name find it again. The Matrix continues to show the original source you took; the decoder receives the FS stream.

Converted streams that are on the network also appear as source columns on **MATRIX**. Their names are shown in orange, and they sit after your other sources, in order of their FS numbers, followed by the Test Generator and then **Nexus QC Out**, which is always the last source column.

If a framesync cannot start, Nexus refuses the take, leaves the route as it was and shows a message that starts with **Framesync** and ends with **Route not changed.** If the framesync settings in a Matrix file cannot be restored, Nexus does not load the file, shows **This Nexus file could not be opened.**, and keeps its current setup. In a show file, Nexus does not apply the Matrix section and shows a message that starts with **Framesync**.

If the Mac is already busy when a framesync starts, the **MATRIX** tab shows a message that the Mac is busy and that the framesync has started; watch the converted picture.

Salvos

A salvo is a stored set of routes that you can take in one step, for example a complete routing setup for a segment of the show. Salvos live in the **SALVOS** rail on the right of the grid. Each salvo slot is labeled **S1**, **S2** and so on, with buttons **STORE**, **EDIT**, **TAKE** and **DELETE**, a pencil to rename it, and a gear icon that opens **Salvo settings**.

The top of the rail shows the current mode:

- **PICK** while you are choosing the routes for a salvo. In this mode, clicking cells marks them (amber) as part of the salvo instead of taking them.
- **PREVIEW** when you select a stored salvo. Its routes are shown in amber on the grid, but nothing is taken.

Store a salvo

1. Click **+ Add Salvo** if you need a new empty slot.
2. On the slot, click **STORE**. The rail switches to **PICK**.
3. Click each cell you want in the salvo. Marked cells turn amber. You can mark any cell, whether or not it is routed now.
4. Click **Done** to save the salvo, or press Esc to cancel.

If you switch to another tab while you are picking or editing, Nexus cancels the pick, and the salvo keeps its previous routes.

Change, rename or delete a salvo

- To change its routes, click **EDIT**, change the marked cells, and click **Done**. Press Esc to keep the previous version.
- To rename it, click the pencil, type a name and click **OK**. The pencil only renames the salvo.
- To remove it, click **DELETE** and confirm. The remaining slots are renumbered. Deleting a salvo never changes routes that are already live.

Take a salvo

1. Select the salvo to preview its routes in amber.
2. Click **TAKE**.

Nexus takes each route in the salvo. Routes that are already correct are left as they are. If the salvo is empty, Nexus reports that there is nothing to take.

Salvos are saved with the Matrix in show files and Matrix files, and can also be stored and taken from Bitfocus Companion (Chapter 10). While the Matrix shows **LOCKED**, the salvo buttons in the rail do not work (see "Locks" above).

Let Companion fire a salvo while locked

Each salvo has one setting, **Allow Companion to fire this salvo while the Matrix or Nexus is locked**. It is off for new salvos.

1. On the salvo slot, click the gear icon. **Salvo settings** opens.
2. Turn on **Allow Companion to fire this salvo while the Matrix or Nexus is locked**.

With this setting on, Companion can fire this salvo while the Matrix or Nexus is locked. Only destinations set to allow Companion routing change. The others are skipped, and so are locked rows. Salvo buttons in Nexus stay locked.

You can change the setting only while the Matrix, Nexus and the license are unlocked; otherwise **Salvo settings** shows **Unlock to change this setting.** The gear icon turns green when the setting is on. The setting is saved with the salvo.

Save and load routes

The **SAVE** and **LOAD** buttons in the Matrix header save and load a Matrix file (`.mtx`) containing routes, Matrix lock, filters, destination scope, the salvo bank and framesync settings. Full show files can also include the Matrix (Chapter 9).

Save the routes

1. On **MATRIX**, click **SAVE**.
2. Choose a name and location, and click **Save**.

Load routes

1. Click **LOAD** and choose a `.mtx` file. **LOAD** does not work while the Matrix shows **LOCKED** or the license is inactive.
2. While Nexus applies the routes, the header shows **CHECKING ROUTES...** and then **VERIFYING WIRE...**. Wait for the banner to clear.
3. Check important destinations before you rely on them. If the header shows **WIRE VERIFY ABORTED**, verification did not finish; check those routes by hand.

> **CAUTION** Loading routes changes live destinations. Load a Matrix file between shows or when you are sure the change is wanted.

Automatic re-sending of routes to decoders

Nexus re-sends the last Matrix route to network decoders when it has reason to believe a decoder may have lost it:

- after you load a show file or Matrix file, once Nexus starts finding sources again
- after a network refresh or a restore
- when a decoder reappears on the network under a new identity

- when a network decoder drops off the Discovery Server list and comes back (for example after a reboot) showing a different source from its Matrix route

Hardware decoder drop and restore

When a hardware or network decoder leaves the network, Nexus keeps its Matrix row for a short wait, then drops it from the destination list. When that decoder returns, Nexus restores the last route that was taken to it — the source that was confirmed before it left — unless you routed something else to it while it was gone, or cleared the route while it was gone (a clear means there is nothing to restore). The newest take you made while it was gone becomes the restored target.

In that return case, Nexus re-sends the route once, after a short wait, and records it in the Event Log as **RE-ROUTE** followed by the destination and source. Shortly afterward, the log shows **RE-ROUTE CONFIRMED** or **RE-ROUTE NOT CONFIRMED**. Nexus does not re-send when:

- the destination is locked (**RE-ROUTE SKIPPED ... (ROW LOCKED)**)
- the source is no longer on the network (**RE-ROUTE SKIPPED ... (SOURCE OFFLINE)**)
- a re-send to that decoder recently failed (**RE-ROUTE SKIPPED ... (BACKOFF)**); Nexus waits before it tries again, and waits longer after repeated failures
- you take a new route to that decoder after it comes back, or a show file or Matrix file is loading
- the source is a Virtual Destination used as a source

This works only while Nexus is connected to a Discovery Server, and only for routes the decoder had confirmed before it dropped off. The Matrix lock does not stop it; a destination lock does.

Nexus does not repeatedly re-send routes on a timer during normal operation. Unlocking the walk-away lock (Chapter 9) does not re-send routes.

REFRESH in the Matrix header reloads the router table if routes did not appear correctly, for example after switching tabs.

CHAPTER 7

Multiviews

The **MULTIVIEWS** tab builds monitoring layouts with several windows on one canvas, and publishes each layout to the network as its own NDI output, ready for monitors, recorders or decoders. Each layout can carry source labels, audio meters, borders, tally and clocks.

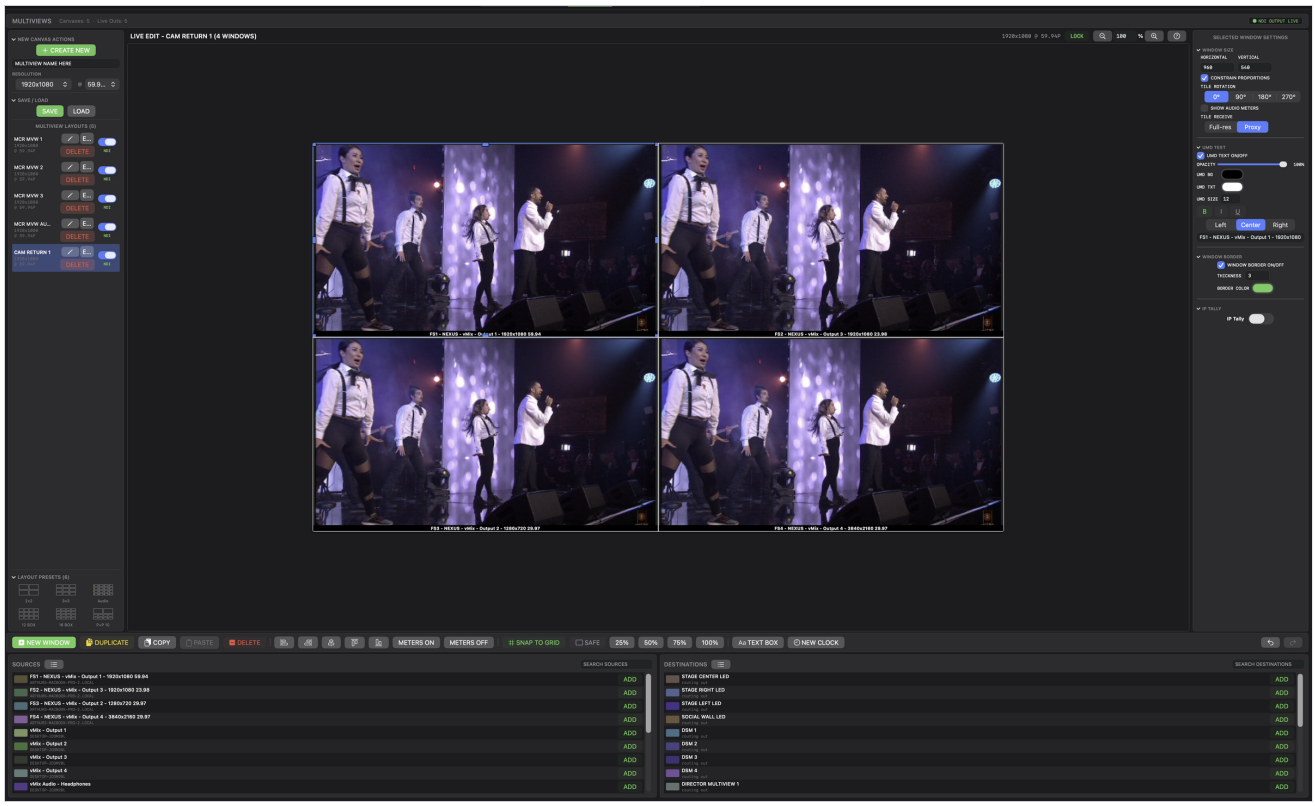


Figure 7.1. MULTIVIEWS tab with the header counts, layout list, LIVE EDIT canvas, canvas tools, SOURCES and DESTINATIONS bins and inspector

The Multiviews workspace

Area	What it holds
Header	**MULTIVIEWS**, the line **Canvases:** *n* · **Live Outs:** *n* (the number of layouts and the number of Multiview outputs running), and **NDI OUTPUT LIVE** when the selected layout's output is running.
NEW CANVAS ACTIONS	The **CREATE NEW** button, with the name, **RESOLUTION** and frame rate for a new layout.
SAVE / LOAD	Save and load Multiview files (`.mvw`).
MULTIVIEW LAYOUTS	Your layouts, each with a pencil button (rename), **EDIT**, **DELETE** and an **NDI** switch that starts and stops its output.
LAYOUT PRESETS	Six starting layouts.
LIVE EDIT canvas	The layout you are editing, with its resolution and frame rate, the canvas tools and **LOCK** / **UNLOCK**.

Area	What it holds
SOURCES / **DESTINATIONS**	Bins of NDI sources and Matrix destinations that you can assign to windows.
SELECTED WINDOW SETTINGS	The inspector for the selected window.

Create a layout

1. Click **MULTIVIEWS**.
2. Under **NEW CANVAS ACTIONS**, type a name in the name field.
3. Choose a **RESOLUTION**: 1920×1080, 1280×720, 3840×2160 or 720×480.
4. Choose a frame rate: 59.94P, 50P, 29.97P, 25P, 23.98P, 60P, 30P or 24P.
5. Click **CREATE NEW**.
6. Select the new layout in **MULTIVIEW LAYOUTS**. The canvas title changes to **LIVE EDIT -** followed by the layout name and the number of windows.

> TIP Match the layout's resolution and frame rate to the monitors or recorders that will receive it.

Start from a preset

LAYOUT PRESETS offers six starting points: **2×2**, **3×3**, **Audio**, **12 BOX**, **16 BOX** and **P+P 10**. Each preset button shows a small drawing of its window layout; the **Audio** drawing marks the audio meters that the preset turns on.

1. Select the layout you want to change.
2. Click a preset.
3. Click **Replace** to confirm. The preset replaces all windows on the canvas. You can undo this.

Edit or delete a layout

- To rename a layout, click its pencil button and type the new name.
- To change a layout's name, resolution or frame rate, click **EDIT**, make the changes in **Edit Multiview**, and click **Save**. If the layout's output is running, it restarts with the new format.
- To delete a layout, click **DELETE** and confirm. If the layout's output is running, the confirmation warns you that it will stop. Deleting cannot be undone.

Build the layout on the canvas

Add and arrange windows

The canvas tools sit in the toolbar below the canvas.

Tool	What it does
NEW WINDOW	Adds an empty window.
DUPLICATE	Duplicates the selected windows (⌘D).
COPY / **PASTE**	Copies and pastes windows (⌘C, ⌘V).

Tool	What it does
DELETE	Deletes the selected windows (Delete key).
Align buttons (icons)	Align the selected windows left, right, center, top or bottom.
METERS ON / **METERS OFF**	Turn audio meters on or off for the selected windows.
SNAP TO GRID	Snaps windows to a grid as you move and resize them.
SAFE	Shows action-safe (about 90%) and title-safe (about 80%) guides.
25%, **50%**, **75%**, **100%**	Set the selected window to a preset size.
TEXT BOX	Adds a text label to the canvas.
NEW CLOCK	Adds a clock window (see "Clocks" below).
Undo / redo arrows	Undo or redo canvas changes.

Click a window to select it. ⌘-click to add windows to the selection, Shift-click to select a range, or drag a marquee around several windows. Click **CANVAS SHORTCUTS** for the full list of keyboard shortcuts. You can undo canvas changes.

When the layout is right, click **LOCK** above the canvas to prevent accidental changes. Click **UNLOCK** to edit again.

Assign sources to windows

1. Select one or more windows on the canvas.
2. In **SOURCES**, find the source (type in **SEARCH SOURCES** to filter the bin).
3. Click **ADD SOURCE**, or double-click the source in the bin.

To show a Matrix destination instead, use **DESTINATIONS**, **SEARCH DESTINATIONS** and **ADD DESTINATION**. A window assigned to a destination shows whatever source is routed to it, and changes automatically when you take or break a route on **MATRIX**.

> **NOTE** Multiview windows cannot show the outputs that Nexus itself generates: the Test Generator, Virtual Destinations, **Nexus QC Out** and Multiview outputs. A window assigned directly to one of them shows **NOT AVAILABLE**. A window assigned to a destination whose route comes from one of them shows **ROUTED**. To check these outputs, select them on **STREAMS** or watch them on a downstream receiver.

When several windows are selected, the bulk actions **COPY**, **PASTE**, **CLEAR UMD** and **CLEAR ASSIGN** apply to all of them.

> **TIP** Assign windows that must follow show changes to Matrix destinations rather than directly to sources. You can then change what they show from **MATRIX** without editing the layout.

Window settings

Select a window to see its settings in **SELECTED WINDOW SETTINGS**. To change several windows at once, ⌘-click them first.

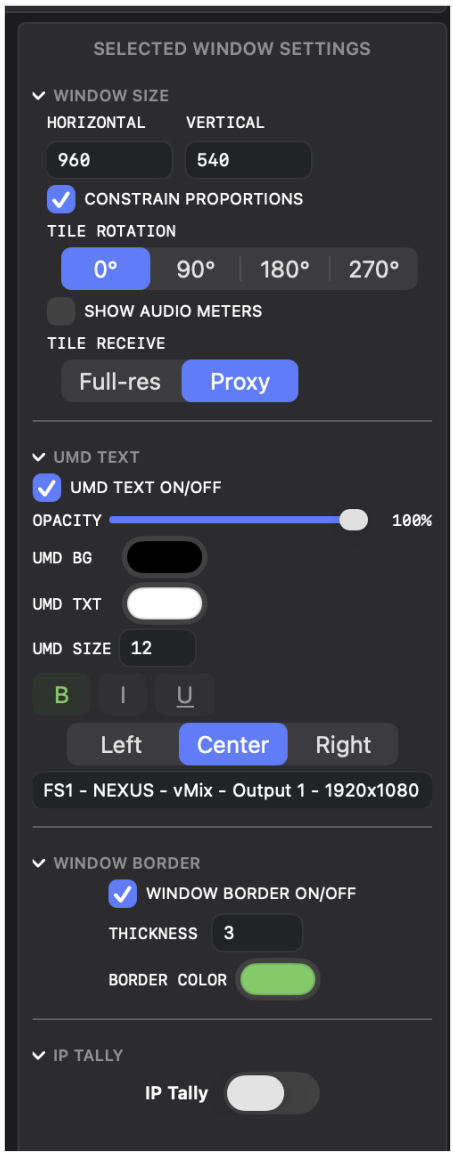


Figure 7.2. SELECTED WINDOW SETTINGS inspector

Setting	What it does
WINDOW SIZE: **HORIZONTAL** / **VERTICAL**, **CONSTRAIN PROPORTIONS**	Width and height of the window. With **CONSTRAIN PROPORTIONS** on, changing one value keeps the window's aspect ratio.
TILE ROTATION	Rotates the whole window, including picture, label, meters and border, by **0°**, **90°**, **180°** or **270°**. At 90° and 270°, width and height swap.
SHOW AUDIO METERS	Shows audio meters in the window.
TILE RECEIVE	**Full-res** or **Proxy** (see below).
UMD TEXT: **UMD TEXT ON/OFF**	Shows a source label (UMD) in the window. Set **OPACITY**, the background color (**UMD BG**), the text color (**UMD TXT**), **UMD SIZE**, bold, italic or underline (**B**, **I**, **U**), the alignment (**Left**, **Center**, **Right**) and the label text.

Setting	What it does
WINDOW BORDER: **WINDOW BORDER ON/OFF**	Draws a border. Set **THICKNESS** and **BORDER COLOR**.
IP TALLY: **IP Tally**	Shows tally from your switcher as a colored border: turn on **Preview** for green, **Program** for red, or both (Chapter 10). Not available for windows assigned to destinations.

Full-res and Proxy

TILE RECEIVE sets how each window receives its source:

- **Full-res** receives the full-quality stream. It looks best and uses the most processing.
- **Proxy** receives the lower-bandwidth version of the stream. It uses much less processing and is usually enough for a small window.

A window uses **Proxy** unless you set it to **Full-res**.

Nexus sets a **FULL budget**, the maximum number of windows on this Mac that can receive Full-res at once, based on the Mac's hardware. The budget is shared by every layout. Windows set to **Full-res** beyond the budget receive **Proxy** until a Full-res slot is free.

The budget is set in **SETTINGS → MULTIVIEW**, not in the window inspector:

- The card shows the hardware Nexus detected, its default budget, and the current **FULL budget**.
- **Full-res tile budget** changes the budget, within limits that Nexus sets.
- **Allow UHD tiles to use Full-res** lets Ultra HD sources use Full-res. Ultra HD sources use **Proxy** while it is off. It is off by default, except on Macs in Nexus's highest hardware class with 64 GB of memory or more.
- **Reset to hardware default** returns both settings to the hardware values.

TILE RECEIVE stays in **SELECTED WINDOW SETTINGS** for each window.



Figure 7.3. SETTINGS → MULTIVIEW card with Full-res tile budget, Allow UHD tiles to use Full-res and Reset to hardware default

If Nexus shows **Mac critical — Nexus under heavy load**, switch some windows to **Proxy**, or stop outputs you do not need. Under critical load, Nexus also moves Full-res windows to **Proxy** on its own to protect the outputs. Those windows stay on **Proxy** until you change their setting again.

Clocks

Click **NEW CLOCK** to add a clock window, then set it under **CLOCK CONFIG**:

- **Timezone** and **Offset (hours)**. Time zones follow daylight saving rules.
- **Clock Size**.
- **Add Framerate (true TC)** adds frames to the display, using the **Frame Rate** you choose; turn on **Drop Frame** where appropriate.

Clocks use the Nexus time base: an NTP server if one is configured, otherwise the Mac's clock (Chapter 10).

Window messages

Message	Meaning
NO SOURCE	Nothing is assigned to the window.
NOT AVAILABLE	The assigned source cannot be found on the network, has not delivered a picture yet, or is one of Nexus's own outputs.
NO ROUTE	The window is assigned to a Matrix destination that has no route. Take a route to the destination on **MATRIX**.
ROUTED	The window is assigned to a Matrix destination whose route comes from one of Nexus's own outputs (Test Generator, Virtual Destination, **Nexus QC Out** or a Multiview output). The route exists, but the window cannot show that picture.
DESTINATION	The window is assigned to a Matrix destination but is not following its route.

Publish a layout as an NDI output

Each layout has an **NDI** switch in **MULTIVIEW LAYOUTS**. Turning it on publishes that layout to the network as an NDI source on the NDI adapter. Each layout's output runs independently, so start only the outputs the show needs.

Start a Multiview output

1. Check window assignments and the layout's resolution and frame rate.
2. Turn on the layout's **NDI** switch.
3. With the layout selected, check that **NDI OUTPUT LIVE** appears at the top right of the **MULTIVIEWS** header.
4. On **STREAMS**, with **VIEW LOCAL STREAMS** on, check that the output appears with **HOST / IP** showing **LOCAL**.
5. Confirm the picture on the monitor or decoder that receives the output.

Stop a Multiview output

1. Warn anyone who is watching the output.
2. Turn off the layout's **NDI** switch.

The **SYSTEM STATUS** sidebar shows the number of running Multiview outputs under **LIVE OUTS** as **MV OUT**, and the **MULTIVIEWS** header shows it as **Live Outs**. Multiview outputs share an estimated limit with framesyncs; see "Framesync on a crosspoint" in Chapter 6.

Editing a layout that is on air

While a layout's output is running, Nexus gives the output priority over the editing canvas. The canvas may update more slowly than the output. This is expected and does not mean the output has frozen; always judge the output on a monitor that receives it.

> **CAUTION** Large changes to a layout that is on air are visible to everyone watching. Make big changes on a copy of the layout, or with the output turned off during rehearsal.

Save and load layouts

SAVE and **LOAD** under **SAVE / LOAD** write and read Multiview files (`.mvw`), which contain your layouts and their settings. Full show files can include Multiviews as well (Chapter 9).

1. Click **SAVE**, choose a name and location, and click **Save**.
2. To restore layouts, click **LOAD** and choose a `.mvw` file.
3. After loading, check which layouts have their **NDI** switch on before assuming outputs are running as before.

CHAPTER 8

Devices

The **DEVICES** tab lists the NDI hardware and software Nexus finds on your network, typically encoders that send sources and decoders that receive them, with their role and address. Use it to check who is online and to reach a device's own web page.

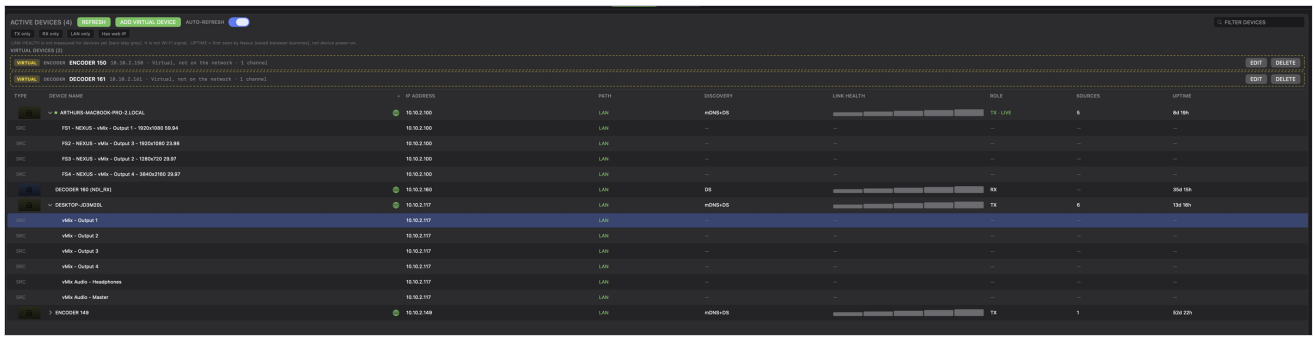


Figure 8.1. DEVICES tab with the ACTIVE DEVICES table

The ACTIVE DEVICES table

The header shows **ACTIVE DEVICES** followed by the number of devices shown.

Column	What it shows
TYPE	An icon for the kind of device: an encoder, a decoder, or a generic device when Nexus cannot tell from the name. Rows marked **SRC** are the sources a device publishes; click the arrow beside the device name to show or hide them.
DEVICE NAME	The device name, or the display name you gave it. A globe icon appears when the device has a web page; click it to open the page.
IP ADDRESS	The device's address.
PATH	**LAN** when the device is on the same local subnet as this Mac, or **NETWORK** when it is further away.
DISCOVERY	How Nexus found the device: through local discovery (**mDNS**), through the Discovery Server (**DS**), or both (**mDNS+DS** or **BOTH**).
LINK HEALTH	Bars for the network path from this Mac to the device (see below the table).
ROLE	**TX** (sends NDI), **RX** (receives NDI) or **BOTH**.
SOURCES	The number of sources the device publishes.
UPTIME	How long Nexus has known about the device.

LINK HEALTH is not measured for devices yet in this version, so its bars stay gray; it is not a Wi-Fi signal reading. **UPTIME** counts from when Nexus first saw the device, and is kept between sessions; it is not the time since the device was powered on.

If the table is empty, it shows one of two messages:

- **NDI NETWORK ADAPTER NOT SET**: set the NDI adapter (Chapter 3).
- **NO NDI-NETWORK DEVICES YET**: Nexus hasn't found devices on the NDI network yet. Check the adapter and, if your network needs one, the Discovery Server (Chapter 4).

> NOTE Decoders and other receivers usually appear only when Nexus is connected to a Discovery Server. Encoders can also appear through local discovery.

Refresh and filter the list

- Click **REFRESH** to update the list now.
- Turn on **AUTO-REFRESH** to re-scan about every two seconds. It is off by default.
- Type in **FILTER DEVICES** to show only matching names.
- Use the chips to narrow the list: **TX only**, **RX only**, **LAN only** and **Has web IP**. **TX only** and **RX only** cannot be on at the same time.

Clear the chips and the filter text to see the full list of devices Nexus finds.

Work with a device

Right-click (or Control-click) a device to see these commands:

Command	What it does
Open Web GUI	Opens the device's web page in your browser.
Copy IP	Copies the device's address.
Copy Name	Copies the device's name.
Rename...	Opens **EDIT DEVICE NAME** so you can set a display name.

Rename a device

1. Right-click the device and choose **Rename...**.
2. Type a clear name, such as "PGM Decoder A."
3. Click **Save**.

The new name is a display name inside Nexus only. It does not change the name stored on the device. Include **Devices (Edit Names)** when you save a show file to keep your names (Chapter 9).

> IMPORTANT Open a device's web page over the network your facility uses for device management. If the page does not open, check that this Mac can reach the device's address on that network.

When to escalate

Contact your network engineer, or see Chapter 12, when:

- a device is visible in another NDI tool on the same network but never appears in **DEVICES**
- an encoder's sources appear on **STREAMS**, but a decoder never appears as a destination on **MATRIX**

- a device's web page does not open even though its address is correct

CHAPTER 9

Show Files, Event Log, and Lock

This chapter covers the tools that keep a session safe: show files that save and restore your setup, the Event Log that records routing and device activity, the **SYSTEM STATUS** sidebar, and the walk-away lock.

Show files

A show file (`.ndc`) stores the state of a Nexus session. With **SAVE** and **OPEN...** in the top bar, you choose which parts to save and which parts to load, so the same file can restore a saved session or just its routes or layouts. **LOAD FROM FILE** in the launch chooser, a double-click in the Finder, and **Yes** in the quit prompt always use all six sections.

Show file sections

Section	What it stores
System Status (Engineering Notes)	The notes in the **ENGINEERING NOTES** area of the sidebar.
Streams (Mute state)	The audio mute state of Selected Stream Video.
Matrix (Crosspoints)	Routes, plus Matrix lock, filters, destination scope, the salvo bank and framesync settings.
Multiviews (Exact layouts & state)	Layouts, windows and the exact canvas state.
Devices (Edit Names)	Display names you have given devices on **DEVICES**, and display names you have given sources with **Rename...** on **STREAMS**.
Settings	All settings you have changed, including the NDI adapter and the Discovery Server.

The selection sheets **Select what to SAVE** and **Select what to LOAD** have **Select All** and **None** buttons. All sections are selected by default.

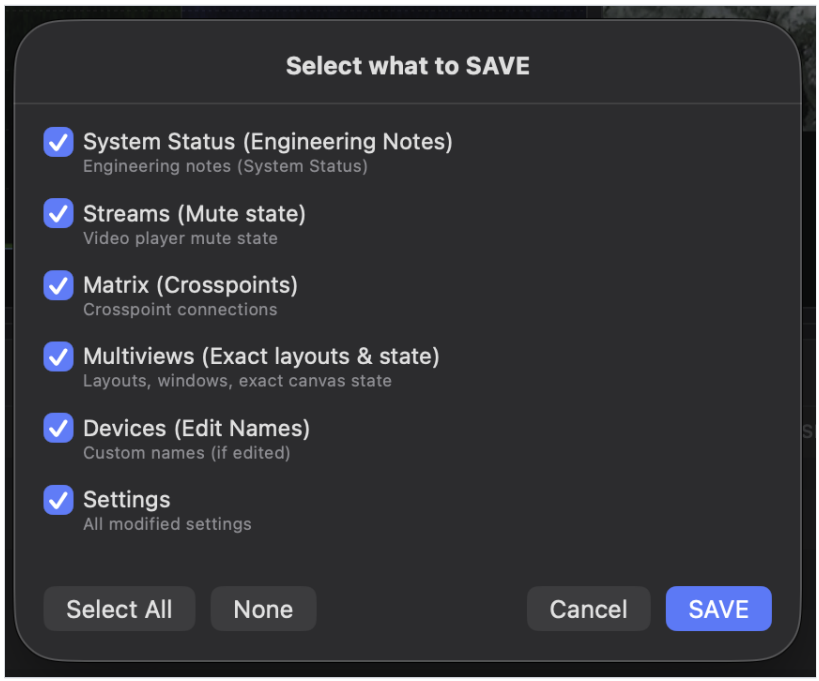


Figure 9.1. Select what to SAVE sheet

Save a show file

1. Click **SAVE** in the top bar, or press ⌘S.
2. In **Select what to SAVE**, leave the sections you want selected.
3. Click **SAVE**. If no show file is open yet, choose a name and location, then click **Save**.

To save a copy under a new name, for example a dated file for each show day, click **SAVE AS…** (⇧⌘S) instead.

> TIP Keep show files in a folder that is backed up, not in Downloads.

Open a show file

1. Click **OPEN…** in the top bar, or press ⌘O.
2. In **Select what to LOAD**, select the sections you want to apply.
3. Click **LOAD**, then choose the `.ndc` file.
4. Wait for the **Restoring Nexus** progress window to finish.
5. Check **NDI NETWORK** and the Discovery Server in **SETTINGS** before you take routes.

Nexus does not open a show file while the Matrix shows **LOCKED** or while the license is inactive. Instead it shows **Matrix locked — unlock the Matrix to open this file.** or the license message described in Chapter 11. Click **OK**, unlock the Matrix or activate the license, then open the file again.

When a file is loaded with the **Settings** section:

- the NDI adapter saved in the file becomes the NDI adapter for this session
- the Discovery Server follows the rules in Chapter 4, "Discovery Server and show files"
- multicast is always turned off

When a file is loaded with the **Matrix** section, routes to network decoders are re-sent (Chapter 6).

> **CAUTION** Loading the Settings section from another Mac can select an adapter that does not exist on this Mac, or one that is on a different network. Loading the Matrix section changes live routes. Use **OPEN...** and load only the sections you need. **LOAD FROM FILE** and a Finder double-click do not let you choose: they always load every section, including Settings and Matrix.

Component files

You can also save parts of a show on their own:

File	Saved from	Contains
`.ndc`	**SAVE** / **SAVE AS...** in the top bar	Any combination of the six sections.
`.mtx`	**SAVE** on the **MATRIX** tab	Routes, salvos and framesync settings (Chapter 6).
`.mvw`	**SAVE** on the **MULTIVIEWS** tab	Layouts (Chapter 7).

You can also double-click a `.mtx` or `.mvw` file in the Finder. Nexus loads it and switches to the **MATRIX** or **MULTIVIEWS** tab. A `.mtx` file does not open while the Matrix shows **LOCKED**, and neither file type opens while the license is inactive.

The Event Log

The **EVENT LOG** panel sits below **STATISTICS** on the **STREAMS** tab. It records routing results and changes in the devices Nexus can see, newest first. Click the panel title to show or hide it; the title shows the number of lines. When nothing has happened yet, it shows **No events**.

Each line starts with a time (hours, minutes and seconds), followed by the kind of event and a description. The log keeps the most recent 200 events.

Kind	What it records
ROUTE	A route was made or cleared on the Matrix, or a route command succeeded or failed. Automatic re-sends to a returning decoder appear as **RE-ROUTE** lines (Chapter 6).
CONFIRM	A network decoder confirmed the route (✓ **CONFIRMED**) or did not (**UNCONFIRMED**).
RX	Device check-in for receivers (see below).
TX	An encoder appeared, came back or went away.
DS	The Discovery Server's list of receivers became empty or came back. The summary line for left-out check-in entries (see below) also appears with this kind.
DEVICE	A network decoder that had been answering stopped answering for more than a short wait (**DEVICE NOT RESPONDING**), or started answering again (**DEVICE RESPONDING**). The line ends with a short counter.

> **NOTE** In this release, Event Log times are shown in US Pacific time, whatever the time zone of the Mac.

Device check-in

While Nexus is connected to a Discovery Server, it compares what each network decoder reports with the route on the Matrix, and records the result in the Event Log. A decoder can be new, showing the expected

source, showing nothing, showing a different source from the Matrix (a mismatch) or absent from the Discovery Server. Encoders are recorded when they appear, come back or go away.

Check-in only records what it sees; it never changes a route. The one automatic re-send, when a decoder drops off and comes back, is described in Chapter 6. If the log shows a mismatch on an important destination, take the route again on **MATRIX** and check the decoder.

To keep the log readable, Nexus limits check-in entries to 30 lines per minute and adds a summary line when entries are left out.

The SYSTEM STATUS sidebar

The sidebar on the left of the window is always visible. Click the **NDI NETWORK**, **NDI DISCOVERY SERVER** or **TIME SOURCE** sections to open the **SETTINGS** tab, where the matching cards are.

Section	What it shows
MACHINE	Overall load of the Mac, with a status chip such as **OK** and the Mac model. Graphs for **CPU**, **GPU**, **MEMORY** and **NDI NETWORK** use appear directly below it.
NDI NETWORK	The NDI **ADAPTER**, its **IP ADDRESS**, the **NIC** state (**LOCKED**, `ANY` or **NOT FOUND**, with the address), the link **SPEED**, and **TX** / **RX** throughput. The lock screen shows the same **NIC** line.
LATENCY	**FRAME LATENCY**, end-to-end (**E2E LATENCY**) and **NETWORK LATENCY** for the selected stream, and **MULTIVIEW LATENCY**.
STREAM INTEGRITY	**APP DROPS**, **NETWORK DROPS** and **DELIVERY FPS** for the selected stream.
LIVE OUTS	Outputs that Nexus is running, as three counts in this order: **MV OUT** (the number of Multiview outputs), **TEST GEN** (**ON** in green while the Test Generator is sending, otherwise **OFF**) and **FRAMESYNCS** (the number of converted framesync streams running).
NDI DISCOVERY SERVER	The server address and its **STATUS**.
TIME SOURCE	The time source in use (**NTP**, **HOST CLOCK** or **PTP (IEEE 1588)**), its **STATUS**, server, stratum, offset and last sync. With **HOST CLOCK**, **STATUS** shows **Using this Mac's clock**.
ENGINEERING NOTES	A notepad for the show.

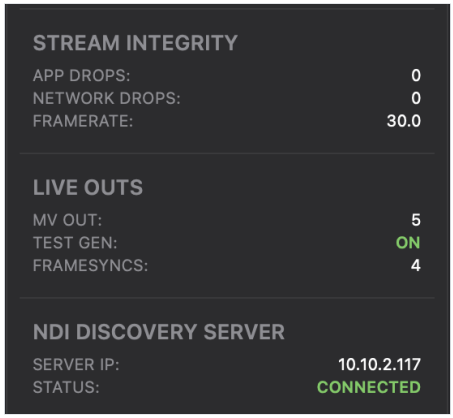


Figure 9.2. SYSTEM STATUS sidebar, LIVE OUTS section showing MV OUT, TEST GEN and FRAMESYNCS

LIVE OUTS shows counts only. To see how much of this Mac's shared framesync and Multiview-output allowance is in use, open the **Framesync** panel from a crosspoint's corner mark (Chapter 6).

Engineering notes

Use **ENGINEERING NOTES** for show notes, contact numbers or handover information. The notes support rich text; use the size control to change the font size. Click the export button (⇩) to save the notes as **Engineering Notes.rtf**. Notes are saved in show files under **System Status (Engineering Notes)**.

Lock Nexus when you step away

The walk-away lock freezes the Nexus interface behind a passcode. NDI, Multiview outputs, the Test Generator and Matrix routes keep running while Nexus is locked. Nexus never locks automatically; you lock it with **LOCK**.

Set a passcode

1. Click **SETTINGS** and find the **SECURITY** card.
2. Click **Set passcode**.
3. Type a passcode of at least 4 characters (up to 64), type it again to confirm, and save it.

Use **Change passcode** to change it later, or **Clear passcode** to remove it. **LOCK** works only after a passcode is set; until then, Nexus asks you to set one first.

Lock and unlock

1. Click **LOCK** in the top bar. The screen shows **Be Right Back** and "Nexus is locked. Outputs and NDI stay live."
2. To unlock, click **UNLOCK**, enter the passcode in **Unlock Nexus**, and click **Unlock**.

If you forget the passcode, click **Use Mac Login…** in the unlock window and authenticate with Touch ID or your Mac user password. In **SETTINGS → SECURITY**, click **Clear passcode**, then **Clear with Mac Login…** to remove the passcode the same way.

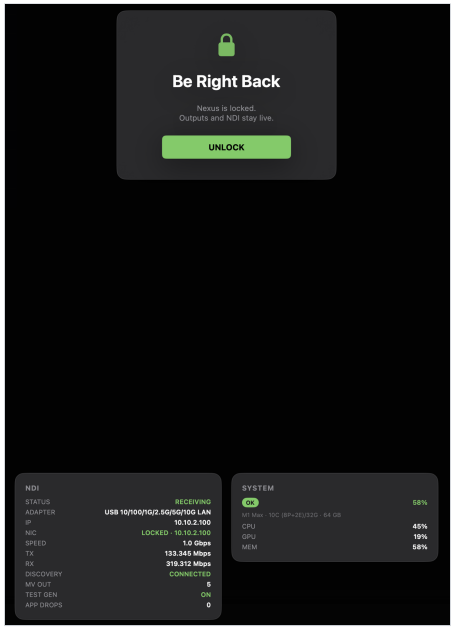


Figure 9.3. Walk-away lock screen showing Be Right Back

Below the lock card, the lock screen shows an **NDI** card (**STATUS**, **ADAPTER**, **IP**, **NIC**, **SPEED**, **TX**, **RX**, **DISCOVERY**, **MV OUT**, **TEST GEN** and **APP DROPS**) and a **SYSTEM** card (a status chip, **CPU**, **GPU** and **MEM**).

While Nexus is locked:

- you cannot save, and you cannot quit from the Nexus menu or the window's close button (Force Quit still works)
- Bitfocus Companion can change routes only for destinations with **Allow Companion routing while locked** turned on (Chapter 6); `/matrix/clear` clears only those destinations; Companion can fire a salvo only if that salvo allows it (Chapter 6), and then changes only those destinations; other Companion commands that change the show are refused
- the destination lock still blocks changes to locked destinations

Unlocking does not change or re-send any routes. Routes that were running while Nexus was locked simply continue.

CHAPTER 10

Timing, Test Generator, Tally, and Companion

This chapter covers four features in **SETTINGS**: the time source that drives Multiview clocks, the built-in Test Generator, IP tally from a switcher, and control from Bitfocus Companion.

Time source

Nexus keeps its own time base for Multiview clocks and timing readouts. It uses an NTP server when one is configured and reachable, and the Mac's system clock otherwise.

Set the NTP servers

1. In **SETTINGS → NETWORK SETTINGS**, find the **NTP SERVER** card. It shows **SERVER**, **STATUS**, **Stratum**, **OFFSET**, **Jitter**, **Delay**, **Reach** and **Last**.
2. Click **Edit Servers**.
3. In **NTP Servers**, enter one or more hostnames or IP addresses, separated by commas or new lines.
4. Click **Save & Resync**.

Click **Force Resync** at any time to synchronize again.

The **SYSTEM TIMING** card under **SYNC & TIMING** shows the **TIMING SOURCE** in use, the NTP status and the active server. Until an NTP server is active, the card shows the configured server. When no NTP server is in use, it shows **Using host system clock**.

> NOTE The time base is for display and timestamps. It does not lock the timing of NDI sources or outputs.

Test Generator

The Test Generator creates an NDI source on this Mac that sends SMPTE color bars with a tone at 48 kHz. Use it to check routing and downstream displays before cameras and other sources are available.

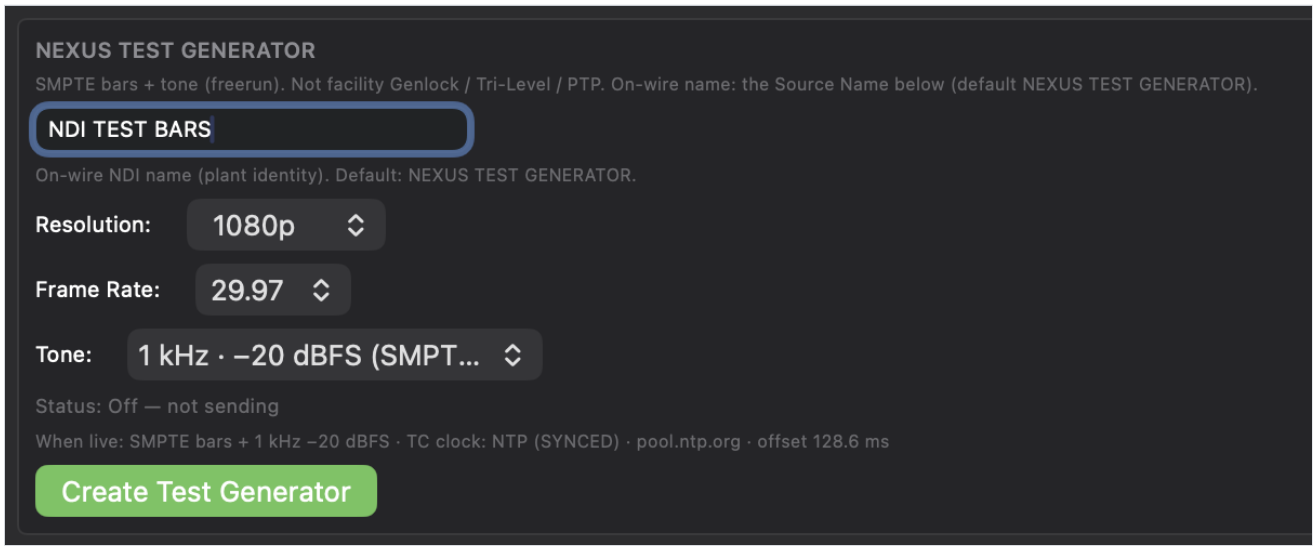


Figure 10.1. NEXUS TEST GENERATOR card

Create a test source

1. In **SETTINGS**, find **SYNC & TIMING → NEXUS TEST GENERATOR**.
2. Type a **Source Name**, or keep the default, **NEXUS TEST GENERATOR**. If this Mac already had a Test Generator before this version, it keeps its existing name.
3. Choose a **Resolution**: **720p**, **1080p** or **2160p/4K**.
4. Choose a **Frame Rate**: 23.98, 24, 25, 29.97, 30, 50, 59.94 or 60.
5. Choose a **Tone**: **1 kHz · −18 dBFS (EBU)**, **1 kHz · −20 dBFS (SMPTE)** or **Silent (no tone)**.
6. Click **Create Test Generator**.

The source appears on **STREAMS** (with **VIEW LOCAL STREAMS** on) with **HOST / IP** showing **LOCAL**, and as a source on **MATRIX**. The sidebar shows it under **LIVE OUTS** as **TEST GEN**.

While the generator is off, the card shows **Status: Off — not sending**. While it is sending, the card shows its status and a **Signal:** line with the bars, the tone and 48 kHz. The **Source Name** is the NDI name that other devices see on the network.

You can change **Tone** while the generator is sending. **Source Name**, **Resolution** and **Frame Rate** are locked while it is active; to change them, click **DELETE SOURCE** and create the generator again. To remove the source, click **DELETE SOURCE**.

Check a signal chain with the Test Generator

1. Create a Test Generator source as above.
2. On **STREAMS**, with **VIEW LOCAL STREAMS** on, select the Test Generator and confirm the bars in Selected Stream Video and the tone on the audio meters.
3. On **MATRIX**, click **ADD VD** and route the Test Generator to the new Virtual Destination.
4. On **STREAMS**, select the Virtual Destination and confirm that it shows the same bars and tone.
5. To check a network decoder, route the Test Generator (or the Virtual Destination, with **Allow re-entry as source** on) to a spare decoder on **MATRIX**. Confirm the bars on the decoder's display, and check that the Event Log shows ✓ **CONFIRMED**.
6. When you are done, break the test routes and click **DELETE SOURCE**.

You cannot check the Test Generator in a Multiview window. Multiview windows do not show Nexus's own outputs: a window assigned to a destination fed by the Test Generator shows **ROUTED** instead of bars (Chapter 7).

> **CAUTION** Do not route test sources to on-air destinations. Use a spare Virtual Destination and a spare decoder.

IP tally

IP tally lets Nexus show which sources your production switcher has on program and preview. Nexus receives tally over the network and shows it in two places: as colored borders on Multiview windows, and as **IP TALLY** in **STATISTICS** on **STREAMS**.

Nexus supports three tally inputs, which you can use separately or together:

Input	How it works	Default
vMix TCP API tally	Nexus connects to vMix and reads its tally. Enter the vMix **Host** and **Port**.	Port 8099
TSL UMD 3.1 (UDP listen)	Nexus listens for TSL 3.1 messages. Point the switcher's TSL output at this Mac.	Listen port 5001
TSL UMD 5.0 (UDP listen)	Nexus listens for TSL 5.0 messages. Red means program, green means preview.	Listen port 5002

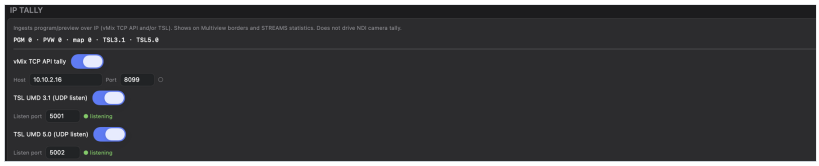


Figure 10.2. IP TALLY card in SETTINGS

Set up IP tally

1. In **SETTINGS**, find the **IP TALLY** card.
2. Turn on the input you use and enter the host or listen port.
3. On your switcher, make sure the input or UMD names match the NDI source names in Nexus. Nexus matches tally to sources automatically when the names match.
4. On **MULTIVIEWS**, select each window that should show tally, turn on **IP Tally**, and choose **Preview**, **Program** or both.

> **NOTE** IP tally in Nexus is display only. It does not send tally to NDI cameras or other devices.

Bitfocus Companion

Nexus includes an OSC server so that Bitfocus Companion, or another OSC controller, can route sources, take salvos and select streams. Nexus replies to each command and sends feedback when routes change, so buttons can show the current state.

Requirements

- A **MANAGEMENT NETWORK** adapter, separate from the NDI adapter (Chapter 3). The OSC server listens only on the management adapter. If no management adapter is set, Companion control is not available.

- The Companion computer must be able to reach this Mac's management address.

Enable Companion control

1. In **SETTINGS → NETWORK SETTINGS → MANAGEMENT NETWORK**, make sure an adapter is selected and applied.
2. Turn on **Enable Bitfocus Companion OSC**.
3. Set the **OSC Port**, or keep the default, 9000.
4. In Companion, set up an OSC connection that sends to this Mac's management IP address and the OSC port.
5. Send `/ping` and check that Nexus answers with `/pong`.

> TIP Give sources and destinations a **Companion name (short)** on the **MATRIX** tab (Chapter 6). Short names fit on buttons and are easier to type in commands.

OSC commands

Source and destination arguments can be the Companion name or the full name. Salvo slots are numbered from 0, so S1 is slot 0.

Command	Arguments	What it does
`/ping`	none	Nexus replies `/pong`.
`/status`	none	Nexus replies with `/feedback/status`.
`/stream/select`	stream name	Selects the stream on **STREAMS**.
`/stream/list`	none	Returns the list of streams.
`/matrix/route`	source, destination	Routes the source to the destination. `/matrix/connect` does the same. Refused while the Matrix shows **LOCKED**, unless the destination has **Allow Companion routing while locked** turned on.
`/matrix/disconnect`	destination, or source and destination	Clears the route to the destination. Refused while the Matrix shows **LOCKED**, unless the destination has **Allow Companion routing while locked** turned on.
`/matrix/clear`	none	Clears **all** routes. `/matrix/clearall` does the same. While Nexus is locked, it clears only destinations with **Allow Companion routing while locked** turned on. Refused while the Matrix shows **LOCKED**.
`/matrix/list/sources`	none	Returns the Matrix sources.
`/matrix/list/destinations`	none	Returns the Matrix destinations.
`/salvo/list`	none	Returns the salvo bank.
`/salvo/store`	slot	Stores the current routes in the slot. Refused while Nexus is locked or the Matrix shows **LOCKED**.
`/salvo/take`	slot	Takes the salvo. While the Matrix or Nexus is locked, refused unless the salvo allows Companion to fire it while locked; then only destinations with **Allow Companion routing while locked** turned on change, and the others are skipped.

Command	Arguments	What it does
`/salvo/recall`	slot	Replies with information about the salvo (slot, name, whether it is empty, and the number of routes). It does not take the salvo or change the grid.
`/salvo/delete`	slot	Deletes the salvo. Refused while Nexus is locked or the Matrix shows **LOCKED**.

Scopes cannot be controlled over OSC.

> **CAUTION** `/matrix/clear` removes every route at once. Protect that button in Companion.

Replies and feedback

Nexus answers most commands with `/ack` (the command was accepted) or `/nack` with a reason. Some commands have their own replies:

- `/ping` → `/pong`
- `/status` → `/feedback/status`
- `/stream/list`, `/matrix/list/sources`, `/matrix/list/destinations` and `/salvo/list` → the matching list
- `/salvo/store`, `/salvo/take`, `/salvo/recall` and `/salvo/delete` → a `/salvo/…/result` message, followed by `/ack`

When a salvo fires while the Matrix or Nexus is locked, its `/salvo/take/result` message also lists the skipped destinations and adds their number as a fifth argument. If no destination could change, Nexus replies `/nack` instead of `/ack`.

`/nack` reasons:

Reason	Meaning
app-locked	Nexus is locked.
row-locked	The destination is locked.
matrix-locked	The Matrix shows **LOCKED**. Clear, salvo store and salvo delete commands are refused until you unlock it. Route, connect, disconnect and salvo take commands are refused unless the destination or salvo allows Companion while locked (Chapter 6).
license-chrome-lock	The license is inactive. Stream select, route, connect, disconnect, clear and salvo store, take and delete commands are refused until the license is active again.
missing-args / **missing-name**	An argument is missing.
no-match	`/stream/select` did not find the stream name.
route-rejected / **disconnect-rejected**	The route or disconnect was not made, for example because a source or destination name was not found.
no-writer	Nexus could not select the stream at that moment. Try again.
unimplemented	The command exists but does nothing in this release (`/scope/gain`, `/scope/toggle`).
unknown	Nexus does not recognize the command.

> **IMPORTANT** While the Matrix shows **LOCKED**, Companion route, connect and disconnect commands are refused (**matrix-locked**) unless the destination has **Allow Companion routing while locked** turned on, and clear, salvo store and salvo delete commands are always refused. Destination locks, the walk-away lock and an inactive license also stop Companion route commands. For route, clear and salvo commands, an inactive license is reported first.

Nexus also sends these messages on its own, to the address that last sent it a command:

Message	When
`/matrix/feedback`	A route changes.
`/matrix/confirm`	A network decoder confirms a route.
`/feedback/stream/current`	The selected stream changes.
`/feedback/audio/levels`	Audio levels of the selected stream.

CHAPTER 11

Licensing

Nexus is licensed per Mac. There is one license type, and it includes every feature. This chapter explains the trial, how to activate a license, how to move it to another Mac, and what happens if a license lapses.

License overview

- **One license, all features.** Every feature in this manual is included.
- **Annual or monthly.** Nexus is a subscription, billed annually or monthly.
- **Per Mac.** Each license is for one Mac at a time.
- **14-day trial.** Nexus starts with a free 14-day trial with all features. You don't need a card or a license key to start it. The trial is one per Mac. Please don't try to reset or restart it.
- **When the trial ends.** Nexus locks **MATRIX**, **MULTIVIEWS** and **DEVICES**. Outputs already running are designed to keep running until you quit Nexus.
- **License checks.** Once a license is activated, Nexus checks it with the license server from time to time.
- **Working offline.** If Nexus can't complete a license check (for example, because it can't reach the license server), it keeps working for up to 7 days after its last successful check.
- **Live outputs.** If a license lapses or is suspended mid-session, access ends at the next license check. Live outputs are designed to keep running until you quit Nexus. The Matrix, Multiviews and Devices tabs lock, along with Test Generator create and delete, the Streams QC NDI OUT switch, and Companion stream select, route, disconnect, clear and salvo commands, until the license is active again. Streams and Settings stay available. After a restart, Nexus shows **License Required**.

For pricing and commercial terms, contact Invictus Entertainment at www.invictusent.com.

License documents

These documents apply to Nexus. You can read them on the Invictus website:

Document	What it covers	Where to read it
Nexus License Agreement	Your use of Nexus, during a free trial and under a paid subscription.	https://invictusent.com/nexus/eula.html
Nexus Terms of Sale	Buying a Nexus subscription.	https://invictusent.com/nexus/terms.html
Privacy Policy	Personal information for Nexus and invictusent.com.	https://invictusent.com/privacy.html

The agreement Nexus shows you the first time you open it is the one that applies to that version.

Sold through Link.

LICENSE STATUS

All license tasks start in the **LICENSE STATUS** card at the top of **SETTINGS**.

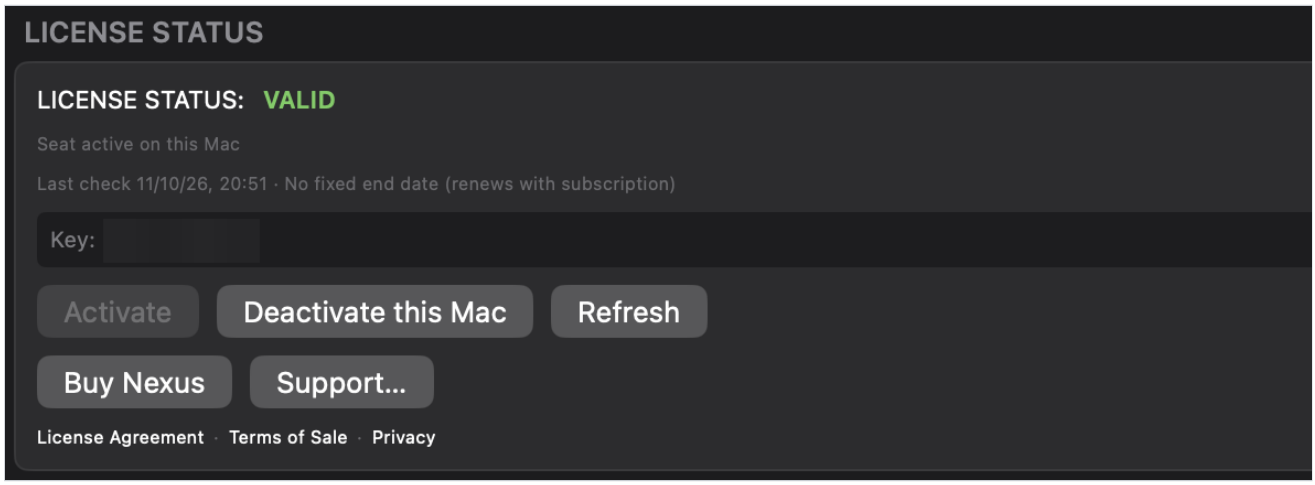


Figure 11.1. LICENSE STATUS card in SETTINGS with an active license; the key is blurred

The card shows a status and the license type (**ANNUAL**, **MONTHLY** or **TRIAL**). Below them, from top to bottom, are a line that describes the status, a line with the date of the last license check or the trial dates, the **License key** field (or the active key with **Locked — Deactivate to change**), the **Activate**, **Deactivate this Mac** and **Refresh** buttons, and the **Buy Nexus** and **Support...** buttons. If an action fails, a message appears below the buttons. At the bottom of the section are the license links: **License Agreement**, **Terms of Sale** and **Privacy**.

The status on the card tells you what Nexus can do right now:

Status	What it means	What still works	What locks	What to do
VALID	The license is active on this Mac and a recent license check succeeded. The card shows when the last check happened.	Everything.	Nothing.	Nothing.
TRIAL	The 14-day trial is active. The card shows the days left and the end date.	Everything.	Nothing.	Activate a license before the trial ends.
GRACE	The license is active, but Nexus hasn't been able to complete a license check recently, for example because it can't reach the license server. The card shows **Offline grace** with the days left and the date grace ends.	Everything. Nexus keeps trying to check.	Nothing yet. If 7 days pass after the last successful check, the status changes to **BLOCKED**.	Connect the Mac to the internet and click **Refresh**. If that doesn't work, contact Invictus support.
NEEDS ACTIVATION	The trial ended while Nexus was open.	**STREAMS** and **SETTINGS**. Live outputs are designed to keep running until you quit.	**MATRIX**, **MULTIVIEWS** and **DEVICES**, along with Test Generator create and delete, the **STREAMS QC NDI OUT** switch, and Companion stream select, route, disconnect, clear and salvo commands.	Activate a license.

Status	What it means	What still works	What locks	What to do
BLOCKED	There is no active license or trial, or 7 days have passed since the last successful license check.	If this happens while Nexus is open: **STREAMS** and **SETTINGS**, and live outputs are designed to keep running until you quit. At startup, only the **License Required** window.	While Nexus is open: **MATRIX**, **MULTIVIEWS** and **DEVICES**, along with Test Generator create and delete, the **STREAMS QC NDI OUT** switch, and Companion stream select, route, disconnect, clear and salvo commands. At startup, Nexus doesn't start looking for NDI sources until a license is active.	Connect the Mac to the internet and click **Refresh**. If that doesn't work, contact Invictus support.
REVOKED	While Nexus was open, a license check found that the license is no longer active (for example, it was suspended, has expired or was revoked).	**STREAMS** and **SETTINGS**. Live outputs are designed to keep running until you quit.	**MATRIX**, **MULTIVIEWS** and **DEVICES**, along with Test Generator create and delete, the **STREAMS QC NDI OUT** switch, and Companion stream select, route, disconnect, clear and salvo commands. Access ends at the next license check; live outputs are designed to keep running until you quit. At the next launch, the status is **BLOCKED**.	Contact Invictus support.

Buy a license

When purchasing opens, you buy a license on the Invictus website and Invictus emails your license key.

Activate a license

From SETTINGS

1. Make sure the Mac can reach the internet.
2. In **SETTINGS → LICENSE STATUS**, paste the key into **License key**.
3. Click **Activate**.
4. Check that the status changes to **VALID** and the type shows **ANNUAL** or **MONTHLY**.

Activation registers this Mac with our licensing provider, Keygen, using your license key and an identifier for this Mac. See our Privacy Policy. The free trial doesn't contact the license server.

If the key field shows **Locked — Deactivate to change**, a key is already active on this Mac. To use a different key, click **Deactivate this Mac** first.

From the License Required window

If no license or trial is active when Nexus starts, the **License Required** window appears and Nexus does not start looking for NDI sources.

1. Paste the key into **License key**.
2. Click **ACTIVATE**. The button shows **ACTIVATING…** while it works.
3. When activation succeeds, Nexus continues to the launch chooser (Chapter 2).

The window also offers **Buy Nexus** and **Support…**, and reminds you: "Key emailed by Invictus · paste to Activate".

If a license key is already on this Mac, the window also shows **Refresh**, which checks the license in the same way as **Refresh** on the **LICENSE STATUS** card.

Check the license and work offline

Once a license is activated, Nexus checks it with the license server from time to time. To check at any time, click **Refresh** on the **LICENSE STATUS** card.

What happens depends on the result of a check:

Result	Status	Effect
The check succeeds	**VALID**	Normal.
Nexus can't complete a license check (for example, because it can't reach the license server)	**VALID**, then **GRACE**	Normal. Nexus keeps trying, and keeps working for up to 7 days after its last successful check. The card shows the days left.
7 days have passed since the last successful license check	**BLOCKED**	**MATRIX**, **MULTIVIEWS** and **DEVICES** lock (see "If a license lapses during a session" below).
The license is suspended, has expired or was revoked	**REVOKED**	**MATRIX**, **MULTIVIEWS** and **DEVICES** lock; access ends at the next license check. Live outputs are designed to keep running until you quit.

When the connection returns, the next successful check sets the status back to **VALID**. You can also click **Refresh** once the Mac is online.

> **TIP** Before a show day, check that **LICENSE STATUS** shows **VALID**. If it shows **GRACE**, connect the Mac to the internet and click **Refresh**.

> **IMPORTANT** Keep the Mac's date and time correct. A wrong clock can make trial and grace periods display incorrectly.

Move a license to another Mac

1. On the old Mac, open **SETTINGS → LICENSE STATUS**.
2. Click **Deactivate this Mac**. Nexus asks **Deactivate this Mac?** and explains: "This releases the license seat and removes the key from this Mac. You'll need the key to activate again."
3. Click **Deactivate** to confirm, or **Cancel** to keep the license on this Mac.
4. On the new Mac, activate the same key.

> **CAUTION** Once you confirm, **Deactivate this Mac** releases the license seat and removes the license key from this Mac. Unless your 14-day trial is still running, the **MATRIX**, **MULTIVIEWS** and **DEVICES** tabs lock. Do not deactivate during a show.

If Nexus cannot reach the license server, it still removes the key from this Mac and shows a message that starts with **Remote deactivate:**. In that case the seat may not have been released; contact Invictus support before you activate on another Mac.

> **IMPORTANT** Keep your license key somewhere safe before you deactivate. To activate again, on this Mac or another, you need the key and an internet connection.

If a license lapses during a session

If a license lapses or is suspended mid-session, access ends at the next license check. Live outputs are designed to keep running until you quit Nexus. The Matrix, Multiviews and Devices tabs lock, along with Test Generator create and delete, the Streams QC NDI OUT switch, and Companion stream select, route, disconnect, clear and salvo commands, until the license is active again. Streams and Settings stay available. Companion status and list queries (`/ping`, `/status` and the list commands) still work.

This happens if the trial ends while Nexus is open, if a license check finds the license suspended, expired or revoked, or if 7 days have passed since the last successful license check. A banner reads **License inactive**.

While the license is inactive, Nexus also does not open show files or Matrix files, and the salvo buttons do not work. Nexus shows **License inactive — this file can't be opened until your license is active. Open Settings to check or activate your license.** or **License inactive — salvos unavailable. Open Settings to check or activate your license.**

Everything that is already running is designed to keep running until you quit: Multiview outputs, Virtual Destinations and routes, **QC NDI OUT** and the Test Generator. You can keep monitoring on **STREAMS** and activate a license in **SETTINGS**. If you are on a locked tab when this happens, Nexus switches to **SETTINGS**. Click **SETTINGS** in the banner to go straight to **LICENSE STATUS**.

After a restart, Nexus shows **License Required**.

> **NOTE** **FRESH START** never removes your license, so you do not need to enter the key again after a fresh start.

CHAPTER 12

Troubleshooting

This chapter collects common problems and their fixes. Find the symptom in the table, work through the checks in order, then contact Invictus support if the problem remains.

Before you change anything

During an incident, note the current state first. It speeds up the fix, and support will ask for it:

1. The NDI adapter selected under **NDI NETWORK** and its displayed IP address.
2. The Discovery Server address, if used, and its **STATUS**.
3. The **LICENSE STATUS** status and type.
4. Whether any Multiview output is on air.
5. The last change made before the problem started.

Sources and discovery

Symptom	Check	Fix
STREAMS or **DEVICES** is empty	**NDI NETWORK ADAPTER NOT SET** shown, or status chip shows **OFFLINE** or **DISCOVERY LOCKED**	Select the NDI adapter and click **APPLY** (Chapter 3).
	Wrong adapter selected, or the address is wrong	Select the adapter connected to the NDI network. Fix addressing in macOS System Settings, then **APPLY**.
	Local Network permission	Open System Settings → Privacy & Security → Local Network, turn on Nexus, quit Nexus and open it again from Applications.
	Discovery Server required but not connected	Turn on **USE DISCOVERY SERVER**, enter this site's address and click **CONNECT** (Chapter 4).
	License Required window open	Activate a license (Chapter 11).
Alert: **Local Network permission blocked for this app**	Nexus is running from a copy outside Applications, or access was denied	Click **Open Local Network Settings**, turn on Nexus, and always open Nexus from the Applications folder.
A source appears in another NDI viewer but not in Nexus	Same adapter and network? Same Discovery Server?	Match the adapter and Discovery Server address; click **REFRESH**; check that **FILTER STREAMS** is empty.
Nexus's own outputs are missing from **STREAMS**	**VIEW LOCAL STREAMS** is off	Turn on **VIEW LOCAL STREAMS**.
Cannot **APPLY** the adapter you want for NDI	The same adapter is set as the management adapter	Choose a different management adapter, then apply the NDI adapter.

Discovery Server

Symptom	Check	Fix
STATUS is **ENTER SERVER IP**	The address is empty or 0.0.0.0	Enter this site's address.
STATUS stays **DISCONNECTED**	Address correct for this site? NDI adapter on a network that can reach the server?	Correct the address and click **CONNECT** once. Test reachability with your usual network tools. Ask your network engineer whether the server is running and reachable.
CONNECTED, but sources or decoders are missing	Are they registered with this Discovery Server?	Check the source or decoder's own Discovery Server setting.
Discovery Server turned off after loading a show	The file contained no Discovery Server	Enter the address and click **CONNECT**, then save the show file again.

Routing

Symptom	Check	Fix
A cell will not take	Destination lock, Matrix lock (**LOCKED**), or a VD-to-VD route	Unlock the destination or the Matrix. Routes from one VD to another are not allowed.
A show file, Matrix file or salvo is refused with **Matrix locked**	The Matrix shows **LOCKED**	Unlock the Matrix, then try again (Chapter 6).
Route taken, but no picture on the decoder	Event Log shows **UNCONFIRMED**? Decoder on and connected? Source still present?	Take the route again once. Check the decoder and its network. Check the source on **STREAMS**.
Network decoder missing from **MATRIX**	Discovery Server **CONNECTED**? Decoder registered with it? Filters or scope chips?	Connect to the Discovery Server; clear filters and click `ALL`.
Event Log shows a mismatch	The decoder shows a different source from the Matrix	Take the route again on **MATRIX** and confirm on the decoder.
Event Log shows **RE-ROUTE NOT CONFIRMED** or **RE-ROUTE SKIPPED**	The decoder came back after dropping off, and the automatic re-send did not work or was not allowed	Check the decoder and the source, then take the route again on **MATRIX**.
A framesync crosspoint drops frames	**In use** line in the **Framesync** panel at or past its limit?	Reduce framesyncs or Multiview outputs, or use a lighter conversion (for example avoid Blend or 4K). Nexus does not refuse the take for this.
A take is refused with a message that starts with **Framesync** and ends with **Route not changed.**	Is the source still on the network? Is the Mac under heavy load?	Check the source on **STREAMS**, then take the route again. If it keeps happening, set **Resolution** to **Plain (no change)** for that crosspoint and contact Invictus support.
A Matrix file shows **This Nexus file could not be opened.**, or a show file shows a **Framesync** message, and its routes do not load	The file's framesync settings could not be restored	Current routes are unchanged. Contact Invictus support and include the file.
Event Log shows **DEVICE NOT RESPONDING**	The decoder stopped answering	Check the decoder's power and network. A **DEVICE RESPONDING** line follows when it answers again.

Symptom	Check	Fix
Routes did not appear after switching tabs		Click **REFRESH** in the Matrix header.
WIRE VERIFY ABORTED after loading routes		Check important destinations by hand and take any missing routes again.
A salvo takes nothing	The salvo is empty	Store routes in the salvo first.

Pictures and Multiview outputs

Symptom	Check	Fix
Picture is black or **STALE**	Is the source still present? Is it visible in another NDI viewer?	Select the source again; click **REFRESH**. If it persists, check the source device and network.
Multiview output not seen downstream	Is the layout's **NDI** switch on? Does it appear on **STREAMS** as **LOCAL**?	Turn on the output; check the receiving device's source selection.
Window shows **NOT AVAILABLE** or **NO SOURCE**	Source present? Window assigned? Is the source one of Nexus's own outputs?	Reassign the window, or restore the source. Nexus's own outputs cannot be shown in a window (Chapter 7).
Window shows **NO ROUTE**	The window's destination has no route	Take a route to that destination on **MATRIX**.
Window shows **ROUTED**	The destination's route comes from a Nexus output, such as the Test Generator	Expected. Check that output on **STREAMS** or on a downstream receiver instead.
Editing canvas updates slowly while the output is fine		Expected while the output is on air (Chapter 7). Judge the output on a monitor.
Mac critical — Nexus under heavy load	**MACHINE** in the sidebar; number of Full-res windows, framesyncs and running outputs	Switch windows to **Proxy**, stop unused outputs or framesyncs, or click **Reset to hardware default** in **SETTINGS → MULTIVIEW**.
QC NDI OUT not seen downstream	Is the switch on? Is the license active?	Turn on **QC NDI OUT**; see Chapter 11.

Session and licensing

Symptom	Check	Fix
LOCK asks you to set a passcode	No passcode set	Set a passcode in **SETTINGS → SECURITY**, then click **LOCK** again.
Cannot quit or save	Nexus is locked	Unlock first.
Forgot the passcode		Click **Use Mac Login…** in the unlock window.
Activation fails	Internet access? Key complete, with no extra spaces? Key field locked?	Paste the full key; click **Deactivate this Mac** first if a different key is locked in; check the date and time; contact support.
Couldn't save license to Keychain — Retry appears after **Activate**	Nexus could not store the license on this Mac	Click **Activate** again. If the message stays, contact Invictus support.

Symptom	Check	Fix
Couldn't save when you quit	The show file could not be written	Click **Retry** and choose another name or location. **Quit without saving** quits without a file; **Cancel** keeps Nexus running.
GRACE or **BLOCKED**	Can the Mac reach the internet? Nexus could not complete a license check	Connect to the internet. Nexus checks again on its own, or click **Refresh**.
MATRIX, **MULTIVIEWS** and **DEVICES** locked	License status	Activate or renew (Chapter 11). Live outputs are designed to keep running.
Companion buttons do nothing	Management adapter set? **Enable Bitfocus Companion OSC** on? Port matches?	Set the management adapter, enable OSC, and test with `/ping`. Check `/nack` reasons.
Companion buttons stopped working after **FRESH START**	Companion short names were removed	Re-enter the **Companion name (short)** values in **Destination settings** and **Source settings** (Chapter 6).
Companion route, disconnect, clear or salvo commands are refused with **matrix-locked**	The Matrix shows **LOCKED**	Unlock the Matrix, or turn on **Allow Companion routing while locked** for the destination and the salvo's Companion setting (Chapter 6). For other `/nack` reasons, check destination locks, the walk-away lock and the license.
A show file, Matrix file or salvo is refused with **License inactive**	License status	Activate or renew (Chapter 11).

Contact support

Contact Invictus support at **support@invictusent.com** or **www.invictusent.com**, or click **Support...** in **LICENSE STATUS**, when:

- activation fails with a key Invictus issued
- the Discovery Server stays disconnected after your network engineer has confirmed the address and network
- routing or a Multiview output fails while another viewer on the same network shows the source as healthy
- Nexus repeatedly quits unexpectedly or loses data

Include:

1. A description of the problem and the time it happened, with time zone.
2. A screenshot of the problem.
3. Screenshots of **LICENSE STATUS**, **NDI NETWORK** and **NDI DISCOVERY SERVER**.
4. The version shown in **About Nexus**, the macOS version and the Mac model.
5. The last change before the problem started, and whether a Multiview output was on air.
6. The text of the Event Log, if the problem involves routing or decoders.

APPENDIX A

On-Screen Label Reference

This appendix lists the main on-screen labels by location, with the chapter that describes each one.

Location	Label	Purpose	Ch.
Launch	**FRESH START** / **LOAD FROM FILE**	Start clean or restore a show file	2
Launch	**Choose NDI NETWORK Adapter**	Choose the NDI adapter after a fresh start	2
Launch	**License Required**	Activate when no license is active	11
Quit	**Do you wish to save before exiting?** / **Couldn't save**	Save on quit	2
Top bar	**SAVE** / **SAVE AS...** / **OPEN...**	Show files	9
Top bar	**LOCK**	Walk-away lock	9
Top bar	**RECEIVING** / **READY** / **DISCOVERY LOCKED** / **STALE** / **OFFLINE**	NDI receive status (**OFFLINE** = no NDI adapter set)	2
Sidebar	**SYSTEM STATUS**	Machine, network, latency, outputs, time source, notes	9
Sidebar	**LIVE OUTS**: **MV OUT**, **TEST GEN**, **FRAMESYNCS**	Counts of running outputs	9
Sidebar	**ENGINEERING NOTES**	Show notes, exportable to RTF	9
STREAMS	**NDI STREAMS**	Source list	5
STREAMS	**REFRESH** / **AUTO-REFRESH** / **VIEW LOCAL STREAMS** / **FILTER STREAMS**	List controls	5
STREAMS	**STATUS** · **STREAM NAME** · **HOST / IP** · **REACHABLE** · **IN USE**	List columns	5
STREAMS	**MONITOR** / **ROUTED**	IN USE values	5
STREAMS	**Rename...** / **EDIT STREAM NAME**	Display name for a source	5
STREAMS	**STATISTICS** (**CATEGORY** / **DETAILS**)	Details of the selected source	5
STREAMS	**INSIGHT** (**PICTURE**, **MEANING**, **CHECK NEXT**, **ANE**)	Advisory reading	5
STREAMS	**LIVE** / **STALE** / **EXTERNAL DISPLAY**	Selected Stream Video states	5
STREAMS	**SSV shows 8-bit 4:2:2**	Preview format reminder	5
STREAMS	**QC NDI OUT**	Send the selected source as Nexus QC Out	5
STREAMS	**MUTE** / **UNMUTE**	Audio monitoring	5
STREAMS	**LUMA WAVEFORM** / **RGB WAVEFORM** / **VECTORSCOPE** / **RGB PARADE** / **HISTOGRAM**	Scopes	5
STREAMS	**EVENT LOG**	Routing and device events	9

Location	Label	Purpose	Ch.
MATRIX	**NDI MATRIX ROUTER**	Matrix header	6
MATRIX	**LOCKED** / **UNLOCKED**	Matrix lock	6
MATRIX	**REFRESH** / **SAVE** / **LOAD**	Reload table; Matrix files	6
MATRIX	`ALL` / **CONNECTED** / **VDs** / **NETWORK**	Destination scope	6
MATRIX	**FILTER SOURCES** / **FILTER DESTINATIONS**	Text filters	6
MATRIX	**VIRTUAL DESTINATIONS**: **ADD VD** / **RENAME** / **DELETE**	Manage VDs	6
MATRIX	**Destination settings** / **Source settings**	Companion name, Companion routing while locked, re-entry	6
MATRIX	**Framesync** panel: **Resolution**, **Plain (no change)**, **Frame rate**, **Frame rate change**, **Drop / repeat**, **Blend**, **Mute sound**, **Channels** (**All** / **None**), **Cancel**, **Apply**	Per-crosspoint conversion (corner mark)	6
MATRIX	**SALVOS**: **+ Add Salvo**, **STORE**, **EDIT**, **TAKE**, **DELETE**, **Salvo settings**	Salvos	6
MATRIX	**PICK** / **PREVIEW**	Salvo rail modes	6
MATRIX	**CHECKING ROUTES...** / **VERIFYING WIRE...** / **WIRE VERIFY ABORTED**	Load progress	6
MULTIVIEWS	**Canvases:** / **Live Outs:**	Header counts	7
MULTIVIEWS	**CREATE NEW** / **RESOLUTION**	New layout	7
MULTIVIEWS	**MULTIVIEW LAYOUTS**: pencil / **EDIT** / **DELETE** / **NDI**	Manage layouts and outputs	7
MULTIVIEWS	**LAYOUT PRESETS**	Starting layouts	7
MULTIVIEWS	**LIVE EDIT -** *name*	Editing canvas	7
MULTIVIEWS	**NEW WINDOW**, **DUPLICATE**, **COPY**, **PASTE**, **DELETE**, **METERS ON**, **METERS OFF**, **SNAP TO GRID**, **SAFE**, **25%–100%**, **TEXT BOX**, **NEW CLOCK**	Canvas tools	7
MULTIVIEWS	**SOURCES** / **DESTINATIONS**, **ADD SOURCE** / **ADD DESTINATION**	Assign windows	7
MULTIVIEWS	**CLEAR UMD** / **CLEAR ASSIGN**	Bulk actions	7
MULTIVIEWS	**SELECTED WINDOW SETTINGS** (**WINDOW SIZE**, **UMD TEXT**, **WINDOW BORDER**, **IP TALLY**)	Window inspector	7
MULTIVIEWS	**TILE RECEIVE**: **Full-res** / **Proxy**	Receive quality per window	7
MULTIVIEWS	**CLOCK CONFIG**	Clock settings	7
MULTIVIEWS	**NO SOURCE** / **NOT AVAILABLE** / **NO ROUTE** / **ROUTED** / **DESTINATION**	Window messages	7
MULTIVIEWS	**NDI OUTPUT LIVE**	Multiview output running	7
DEVICES	**ACTIVE DEVICES**	Device list	8
DEVICES	**TYPE** · **DEVICE NAME** · **IP ADDRESS** · **PATH** · **DISCOVERY** · **LINK HEALTH** · **ROLE** · **SOURCES** · **UPTIME**	Columns	8
DEVICES	**mDNS** / **mDNS+DS** / **DS** / **BOTH**	DISCOVERY values	8
DEVICES	**LAN** / **NETWORK**	PATH values	8

Location	Label	Purpose	Ch.
DEVICES	**TX only** / **RX only** / **LAN only** / **Has web IP**	Filter chips	8
DEVICES	**Open Web GUI** / **Copy IP** / **Copy Name** / **Rename…**	Context menu	8
SETTINGS	**LICENSE STATUS**	License	11
SETTINGS	**SECURITY**	Passcode for LOCK	9
SETTINGS	**MULTIVIEW** (**FULL budget**, **Full-res tile budget**, **Allow UHD tiles to use Full-res**, **Reset to hardware default**)	Full-res budget for this Mac	7
SETTINGS	**MANAGEMENT NETWORK** (**SELECT ADAPTER**)	Management adapter	3
SETTINGS	**Enable Bitfocus Companion OSC** / **OSC Port**	Companion control	10
SETTINGS	**NTP SERVER** / **SYSTEM TIMING**	Time source	10
SETTINGS	**NDI NETWORK** (**SELECT NDI NETWORK**, **AUTO DISCOVERY**)	NDI adapter	3
SETTINGS	**MULTICAST**	Multicast	3
SETTINGS	**NDI DISCOVERY SERVER** (**USE DISCOVERY SERVER**, **CONNECT**, **DISCONNECT**)	Discovery Server	4
SETTINGS	**NDI STATUS** (**NIC: LOCKED** / **NOT FOUND** / `ANY`)	NDI health summary	3
SETTINGS	**NEXUS TEST GENERATOR**	Test source	10
SETTINGS	**STREAM INSIGHT**	Optional Neural Engine analysis	5
SETTINGS	**IP TALLY**	Tally inputs	10
Menus	**About Nexus** (**OK**, **License Agreement…**, **ndi.video**, **Support…**), **Help → License Agreement…**, **Help → NDI® on the Web…**	Version, license agreement, NDI website, support	2

APPENDIX B

Glossary

Bitfocus Companion. Button-panel software for live production. Nexus can be controlled from Companion over OSC.

Crosspoint. A cell in the Matrix grid. Taking a crosspoint routes a source to a destination.

Destination. A row on the Matrix: a Virtual Destination or a network destination.

Device check-in. Nexus's comparison of what each network decoder reports with the route on the Matrix. Results appear in the Event Log.

Discovery Server. An NDI service that keeps a central list of NDI senders and receivers. Needed across subnets and for routing to network decoders.

Encoder / decoder. An encoder sends video onto the network as NDI; a decoder receives NDI and outputs it, for example to a display.

Framesync. A per-crosspoint conversion on the Matrix. Opens from the corner mark on a crosspoint square. Publishes a converted NDI stream with a name in the form `FS1 - NEXUS - …` while the Matrix still shows the original source. The stream keeps its name when the setting is saved and loaded with a show file or Matrix file.

FULL budget. The maximum number of Multiview windows on your Mac that can receive Full-res at once, based on its hardware and set in **SETTINGS → MULTIVIEW**. Windows beyond the budget receive **Proxy**.

Full-res / Proxy. The two ways a Multiview window can receive its source: full quality, or a lower-bandwidth version.

IP tally. Program and preview information from a switcher, received over the network and shown in Nexus.

Management adapter. The network adapter assigned to **MANAGEMENT NETWORK**, used for control traffic such as Companion.

Multiview output. A Multiview layout published to the network as an NDI source, started with the layout's **NDI** switch.

NDI®. A technology for sending video, audio and metadata over IP networks. NDI® is a registered trademark of Vizrt NDI AB.

NDI adapter. The network adapter assigned to **NDI NETWORK**, used for NDI media and discovery.

OSC. Open Sound Control, a network protocol for control messages, used by Nexus for Companion control.

QC NDI OUT. The output that sends the source selected on **STREAMS** to the network as Nexus QC Out.

Salvo. A stored set of routes that you take in one step.

Selected Stream Video. The picture of the source selected on **STREAMS**.

Show file. A `.ndc` file that stores any combination of Engineering Notes, mute state, Matrix, Multiviews, device and stream names, and settings.

STALE. A state in which Nexus has lost the live picture and may be holding the last frame.

TSL UMD. A protocol used by switchers to send source labels and tally. Nexus accepts versions 3.1 and 5.0.

UMD. Under-monitor display: the source label shown in a Multiview window.

Virtual Destination (VD). A routing output created on the Matrix. It appears on the network as an NDI source carrying whatever is routed to it.

Walk-away lock. The passcode lock started with **LOCK**. The interface is frozen while outputs and routes keep running.