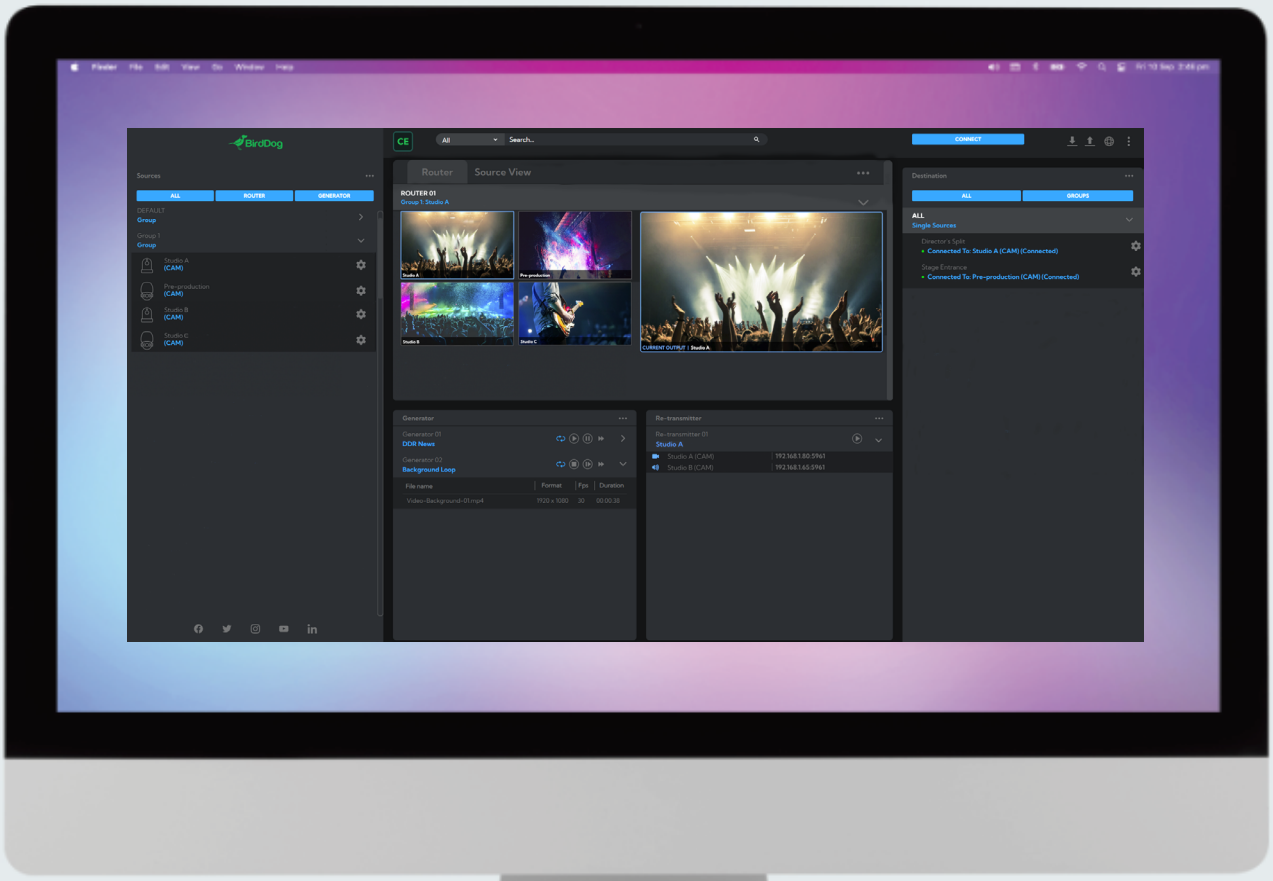
CENTRAL 2.0

USER GUIDE



NDI

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IMPORTANT INFORMATION

Legal Notice

The contents of this document are subject to change without prior notice. Updates will be added to the new version of this manual. We will readily improve or update the products or procedures described in the manual.

Best effort has been made to verify the integrity and correctness of the contents in this document, but no statement, information, or recommendation in this manual shall constitute formal guarantee of any kind, expressed or implied. We shall not be held responsible for any technical or typographical errors in this manual.

The product appearance shown in this manual is for reference only and may be different from the actual appearance of your device.

Due to uncertainties such as physical environment, discrepancy may exist between the actual values and reference values provided in this manual.

Use of this document and the subsequent results shall be entirely on the user's own responsibility.

Welcome to BirdDog

Thank you for using Central 2.0. We hope you enjoy the elegant and powerful control this software offers.

Using This Guide

Central 2.0 is sophisticated software, so please read this guide before use and retain for future reference.

We're Invested In Your Success

We pride ourselves on being approachable and easily contactable. We'd love to hear from you.

Dan Miall

Co-Founder and CEO
dan@bird-dog.tv

Eamon Drew

Co-Founder and CMO
eamon@bird-dog.tv

Welcome to the Future

What is NDI®?

NDI® (Network Device Interface) is a high-quality, low-latency, frame-accurate standard that enables compatible devices to communicate, deliver, and receive high definition video over your existing Gigabit Ethernet network.

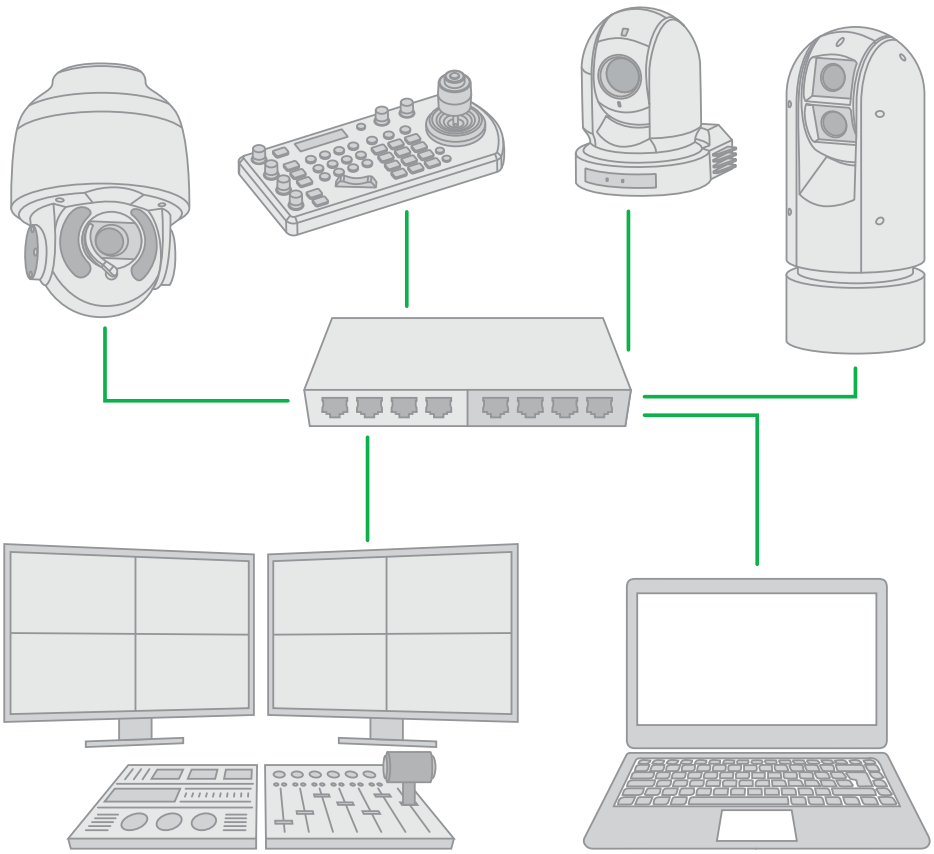
Operating bi-directionally, NDI devices can be auto-detected, powered and controlled over the same Ethernet cable used to send the video and audio. If you have a Gigabit network, you have the potential for a streamlined, interconnected, video production environment.

With the introduction of NDI 5, you can now securely share network sources between remote sites anywhere in the world - on a single network port. Even a smartphone can be a NDI source.

Transitioning to NDI® can also occur gradually. Existing SDI or HDMI signals can easily be converted to an NDI® stream and piped where required on your network and then converted back only at the necessary endpoints.

BirdDog has been on the NDI® journey since the very beginning, and Dyno is just one of our products designed to take advantage of the features and potential of NDI®.

For more information on NDI®, please refer to this page on our website.



BirdDog Central 2.0 Pro Features

NDI® Distribution Made Easy

BirdDog Central 2.0 is a software platform that allows you to easily and efficiently drive content to displays. By teaming up Central 2.0 with any NDI® source, you can now drive your NDI® streams to any BirdDog Studio NDI or Mini to decode NDI® back to SDI or HDMI.

Destination Groups

Organizing your BirdDog NDI® Decoders into Groups allows you to efficiently drive content to multiple screens. Gang multiple receivers and push the NDI® content to your Group with just a few clicks. Creating Destination Groups is as simple as selecting any of the BirdDog receivers in your destination window and assigning them to a Group.

Any NDI® source

Central 2.0 will work with any full NDI® source on your network, whether it is a feed from a live BirdDog PTZ Camera, a BirdDog Encoder, a file playing off a computer, or the output from an NDI® compatible switcher.

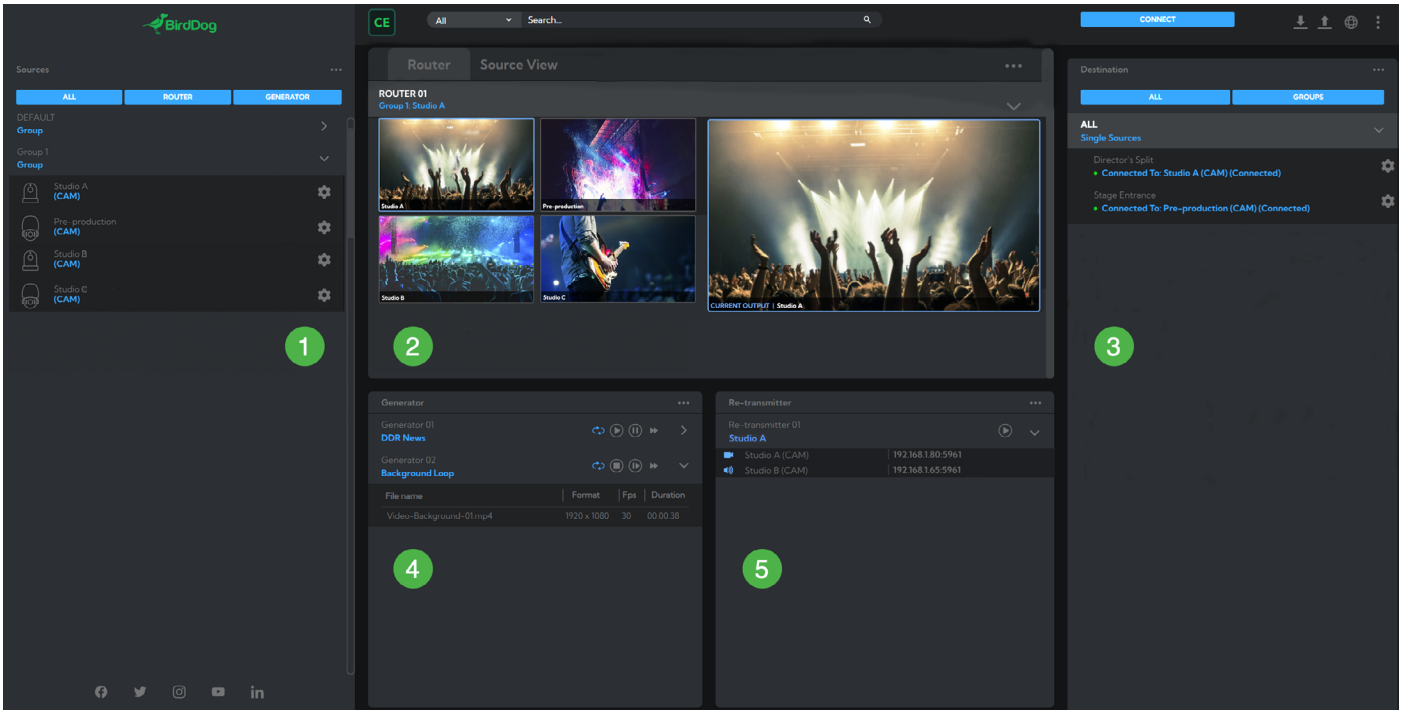
Windows 10 tablet compatible

Using a Windows 10 Pro touchscreen tablet gives you fingertip control of your production.

System Requirements

- Network connected BirdDog compatible NDI Source(s).
- Network connected BirdDog compatible NDI Decoder(s).
- Host machine running at least Windows 10.
- Intel Core i5 series processor and above recommended.
- Touch enabled device recommended.

Central 2.0 Pro Interface Overview



The Pro edition interface is organized into five main sections.

1. **Sources**

   Here you can view your NDI® Sources information. Each listed Source displays the NDI® host name and format of the source. Sources are organized into Groups.

2. **Router/Source View**

   This window is tabbed, allowing you to choose between:

   - **Router**: Allows real time preview and switching of Sources with very low latency.
   - **Source View**: Shows a large, real time preview of the selected Source video.

3. **Destination**

   The NDI® destination, often decode devices, to which the source signal(s) is sent via the Router.

4. **Generator**

   The Generator allows you to create NDI® Sources from media files, which can then be organized into convenient playlists. A Generator Source is displayed and selectable in the Sources list.

5. **Re-transmitter**

   The Re-transmitter allows creation of new NDI® Sources by combining the *video* of an NDI® source with the *audio* of another NDI® source. A created Re-transmitter Source is displayed and selectable in the Sources list.

Central 2.0 Edition Features

Central 2.0 is currently available in two editions with the Pro edition having a more comprehensive feature set. The differences in the editions are as follows.

Features	Lite	Pro	Enterprise
User Login	No	No	Yes
Source Groups	No	Yes	Yes
Destination Groups	No	Yes	Yes
Destination Group Routing	No	Yes	Yes
Router	No	4	4
Media Player / Generator	1	Yes	Yes
Re-transmitter	No	Yes	Yes
SSO	No	No	Yes

Installation

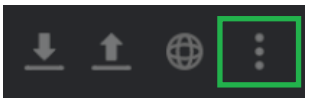
1. Central 2.0 is currently available in two editions – Lite and Pro. Whether you intend to use the Lite or Pro edition, begin by downloading the Central 2.0 Lite edition installer from here.
2. Double click the downloaded installer file and follow the installation prompts.

NOTE
Only a single instance of Central 2.0 can be run per machine. Administrator rights is required to install the software.

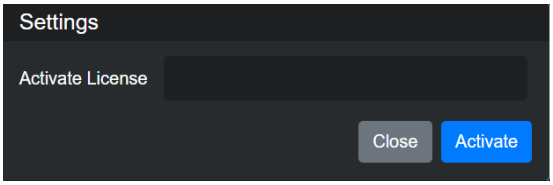
Pro Edition License Activation/Deactivation

If you have purchased a license for the Pro edition:

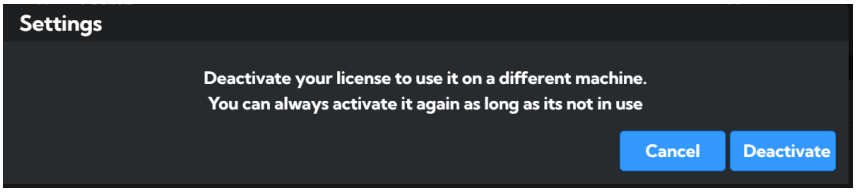
1. Click the More icon.



2. Enter your purchased license number and click the *Activate* button. Pro edition features will now be available.

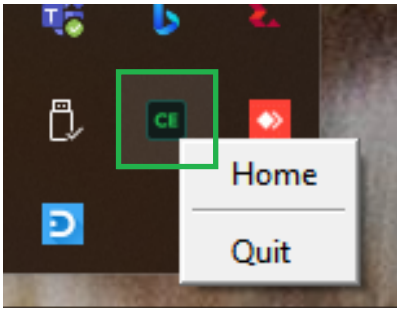


3. The same icon is also used for Deactivation of your license for the current machine. For Deactivation of your license, click the icon and then click the *Deactivate* button.



Using Central 2.0

Once Central 2.0 is installed on the host PC, it's icon will be displayed in the System Tray.



Right click on the icon and select:

- **Home** to open Central 2.0
- **Quit** to close Central 2.0

Remote Access

The address of the host PC is displayed in the browser address bar for remote log in use. This is displayed in the following format:

http://<IP address of the installed PC>:<port>

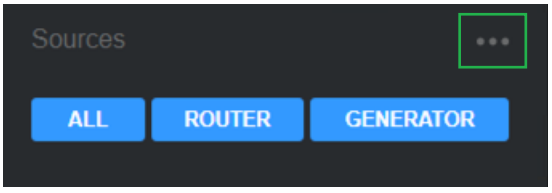
To remotely access Central 2.0, type this address into the browser Address Bar of a PC connected on the same subnet as the host PC.

Sources

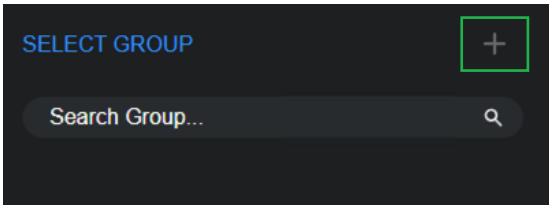
Each listed NDI® Source displays the host name and stream name. Sources are organized into Groups and, initially, Sources reside in the DEFAULT Group. However, you can easily create your own Groups to organize your Sources.

Creating a Source Group

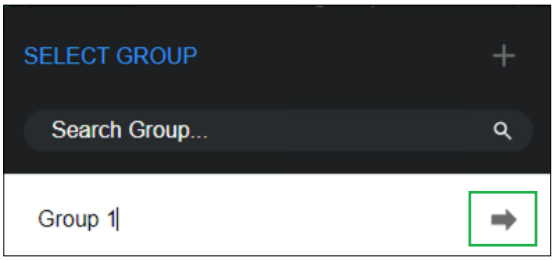
1. Click the Sources More icon to open the creation window.



2. Create a new Group by selecting the (+) icon.

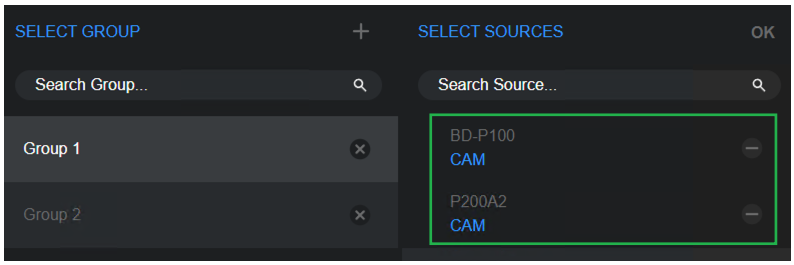


3. Type the new Group name in the text box and click the arrow icon. The created Group (here named Group 1), is now listed under SELECT GROUP.

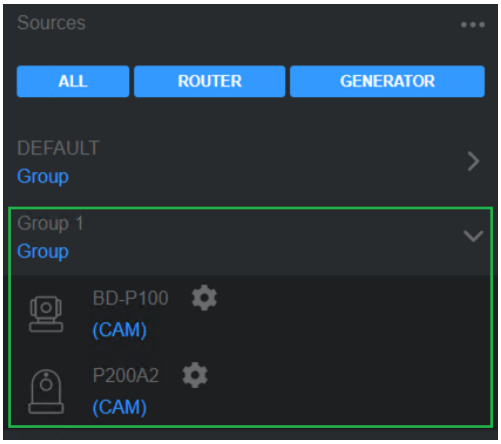


Adding Sources to a Group

1. Click the Sources More icon to open the selection window.
2. Click on the desired Group to select it.
3. Add one or more Sources to the selected Group by clicking the (+) icon adjacent to each desired Source. Upon selection, the (+) icon next to the selected Sources will change to a (-) icon indicated that it has been added. Here, we have selected the BD-P100 and P200A2 cameras.

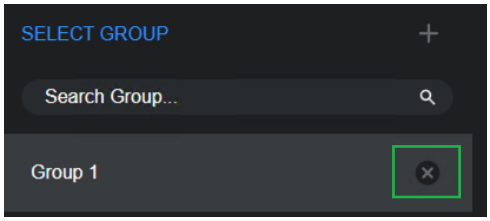


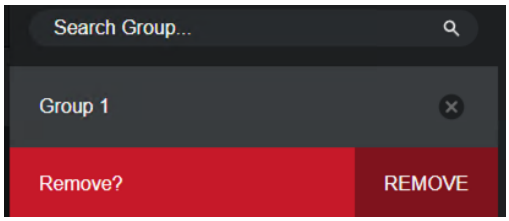
4. Clicking the dropdown icon adjacent to Group 1 now reveals its two associated Sources.



Removing a Group

1. Proceed as if creating a new Group.
2. Click the (x) icon adjacent to the desired Group. Click the *Remove* button when prompted.





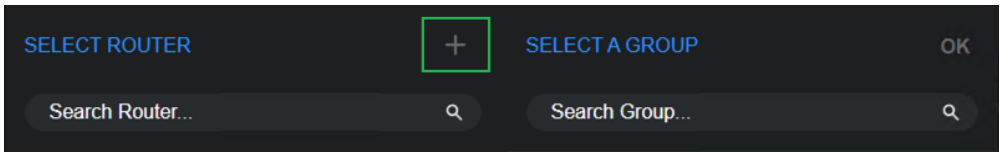
Router

The Router allows real time preview and switching of Sources with very low latency. Each router is always associated with a Group. As with Sources, a newly created Router resides in the DEFAULT Group. A new Router is created in the same way as new Groups.

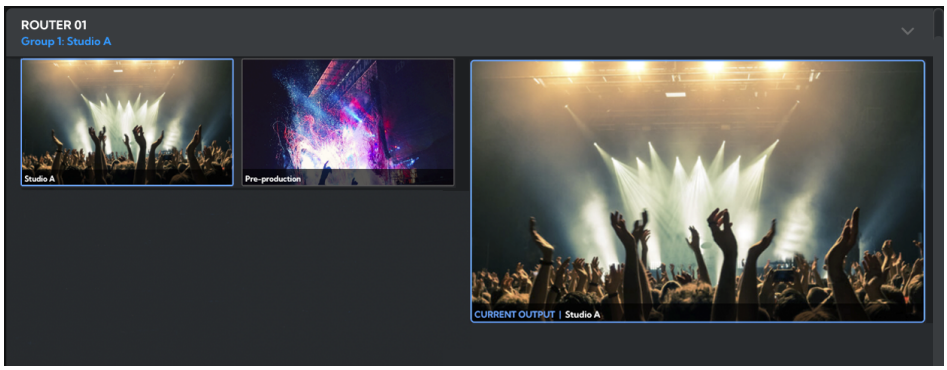
To create a new Router:

1. Click the Router More icon to open the creation window.

2. Create a new Router by selecting the (+) icon.



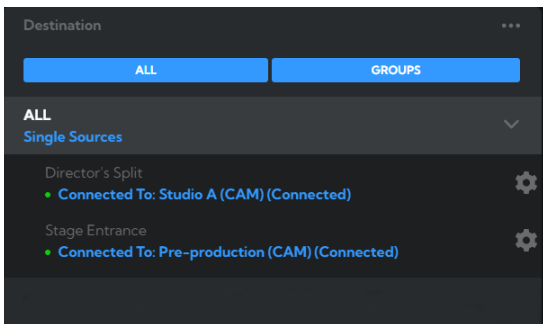
3. Type in the new Router name in the text box and click the arrow icon. The created Router is displayed under SELECT ROUTER.
4. Since Routers are always associated with a Group, add a Router to a Group by clicking the (+) icon adjacent to the desired Group in the SELECT A GROUP column.
5. The Sources in the Group to which the Router is associated are now displayed and can be instantly switched. Click on a left side preview image to direct this Source to the current output. Only the first four Sources in a Group list can be previewed in the Router panel. In order to preview all Sources you may need to subdivide a large group into smaller sub groups.



Destination

Sources are directed, via the Router, to Destinations, which are often decode devices. You can easily drive a source to multiple destinations by creating Destination groups in the usual manner.

1. Select on a destination or destination group and click the *Connect* button. Source signals will flow to the Destination device(s) via the Router.



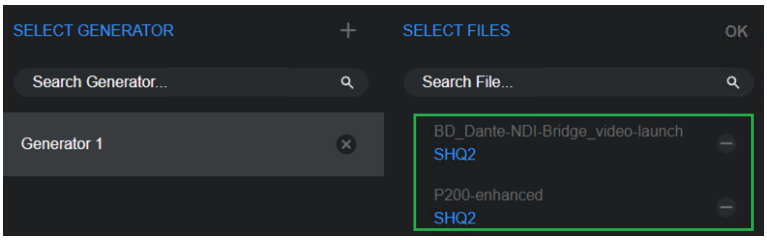
Generator

You can use Generator to create NDI® Sources from other types of media files. A created Generator Source is also displayed, and selectable, in the Sources list. Multiple playlists can be displayed in the Generator panel.

NOTE: The practical number of Generator streams is limited by the processing capability of your system. If you encounter dropped frames in Generator output, please reduce the number of actively playing files.

Creating a Generator

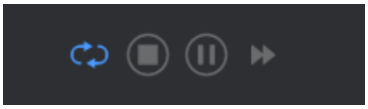
1. In the Generator window, you can create a new Generator playlist in the same way as previously described for a new Group.
2. Select the newly created Generator playlist and click on the (+) icon adjacent to the desired file(s) in the SELECT FILES column to add them to the Generator. Here, we have added two media files.



3. Click on the dropdown arrow to display the media files in that playlist. Key information: File name, Format and Frame rate (Fps) and Duration is shown for each media file. Click on the Transport controls to start, stop, pause and loop Generator playback.

Transport Controls

Generator files can be played back using common transport controls.



Loop

Plays the file or playlist continuously.

Stop

Stops the playback of Generator.

Pause

Pauses the playback of Generator.

Skip

Skips playback to the next file in the playlist.

Creating Generator Media Files

Your media files need to be converted into NDI files using the separate **Media Converter** application which is installed as part of the Central 2.0 installation. Please refer to here for more information.

Re-transmitter

Re-transmitter can combine any *video* NDI® source, with any *audio* NDI® source, and make the combination available as a new, single NDI® source.

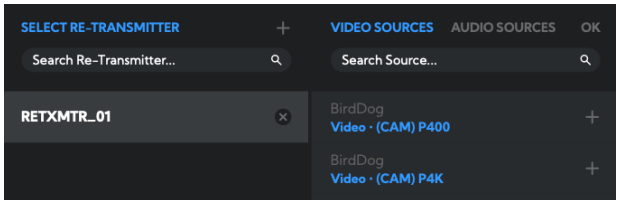
NOTE: The practical number of Re-transmitter streams is limited by the processing capability of your system. If you encounter dropped frames in Re-transmitter output, please reduce the number of actively playing files.

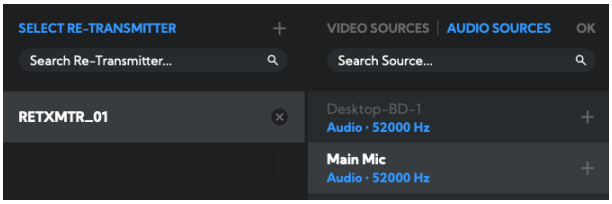
To create a new Re-transmitter:

1. Click the Re-transmitter More icon to open the creation window.
2. Create a new Router by selecting the (+) icon.
3. Type in the new Re-transmitter name in the text box. The created Re-transmitter is displayed under SELECT RE-TRANSMITTER.

To add video and audio Sources:

1. Select either the VIDEO SOURCES or AUDIO SOURCES tab.
2. Add a Source to the Re-transmitter by clicking the (+) icon adjacent to the Source. Available Sources are identified by a (+) icon, while already assigned Sources are identified by a (-) icon.





3. A created Re-transmitter is displayed, and selectable, in the Sources list.

Configuration

1. Click the Globe icon on the upper right of the window. The NDI Network Settings and Access Manager Configuration panel is displayed.

NDI Network Settings

Central 2.0 operates with the latest NDI® libraries. There are several options to configure the software behaviour in an NDI® network. Although each configuration has its benefits, it is recommended to use the default TCP transmit method unless you have reason to change.

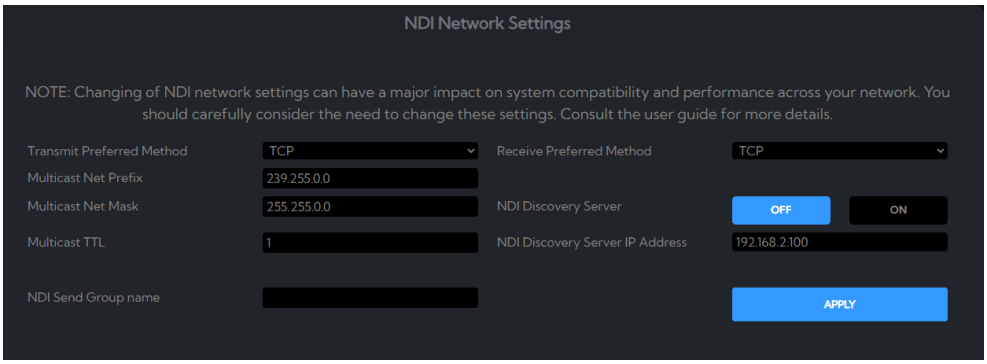
Preferred Transmit / Receive Method

TCP

TCP is the default transmission method for NDI®, it operates well within local networks with predictable latency and limited jitter. BirdDog recommends that TCP be used for typical applications, with alternative transports used only for specific reasons.

UDP

UDP is recommended for networks where there is extended latency. The nature of UDP allows dropped packets and doesn't establish handshaking dialogues to confirm each received packet – which can improve performance. UDP can have some consequences if there are other issues on the network, such as jitter or packet loss, as lost packets will not be re-sent.



R-UDP (Reliable UDP)

Reduces overall network load (allowing more NDI® streams) by not requiring every packet to be 'acknowledged' by every receiver – has error correction built in for smoothness and reliability.

Multicast

Multicast is especially useful for use-cases that require a single source to be received on multiple receivers simultaneously. Utilizing Multicast offloads the distribution of the NDI® A/V packets from the camera to the network infrastructure. You should take care to ensure your network is specifically configured to support Multicast as using it on an ill-prepared network can create unintended network problems.

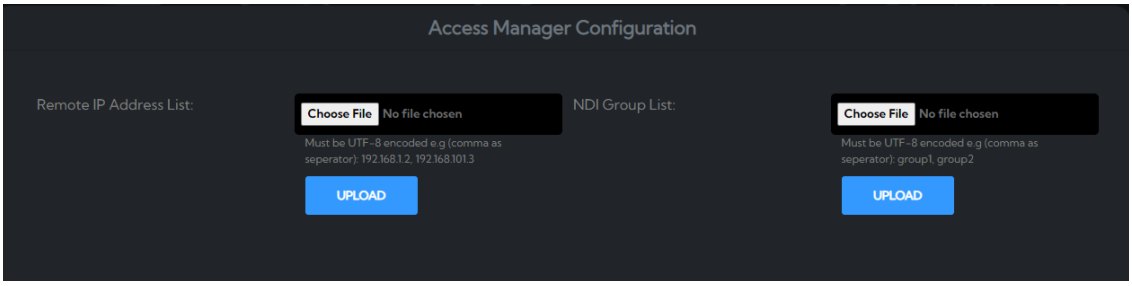
NDI Discovery

If you choose to use a NDI® Discovery Server, you can configure it in this tab. By default, NDI® utilizes mDNS (multicast Domain Name System) to create the zero configuration environment for discovery. Unless the network is specifically configured to not allow mDNS, NDI® sources will be discovered.

The NDI® discovery service is designed to replace the automatic discovery NDI® uses, with a server that operates as an efficient centralized registry of NDI® sources requiring much less bandwidth. Multiple servers can be specified for failover reduntancy. NDI® discovery server also helps with location of devices that reside on different subnets. The NDI Discovery Server is available as part of the NDI 5.5 installation of the free NDI Tools (C:\Program Files\NDI\NDI 5 Tools\Discovery\ NDI Discovery Service.exe).

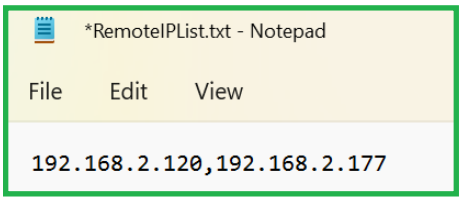
1. If you are using one or more NDI® Discovery Servers, click the *On* button.
2. Enter a comma delimited list of the IP address(es) of your NDI® Discovery Server(s).
3. Click the *Apply* button to save your changes.

Access Manager Configuration



Remote IP List

By default, NDI® devices are visible to each other only when they're on the same VLAN. If you want visibility or control of a device on a different VLAN, you need to add it's address manually as a Remote IP. You can upload, and download Remote IP Lists for sharing with other cameras.

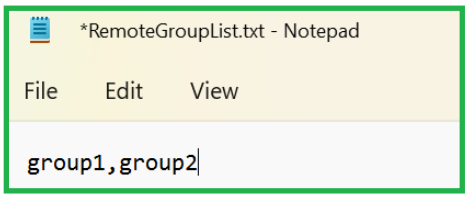


To upload a list:

1. Click the *Choose File* button to load your Remote IP List in CSV UTF-8 encoded string format.
2. Click the *Upload* button. Do not upload a blank list.

NDI Group List

Set the NDI group list. NDI® groups allow you to restrict communication to only devices that belong to the same NDI® group. NDI® Groups can be very useful in larger environments to control visibility and access amongst various groups. You can upload and download group lists for sharing with other cameras. Groups also need setting up in NDI® Access Manager, available in NDI® Tools.

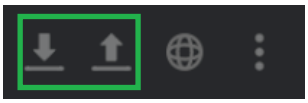


To upload a list:

1. Click the *Choose File* button to load your NDI® Group List in CSV UTF-8 encoded string format.
2. Click the *Upload* button. Do not upload a blank list.

Importing and Exporting Configuration Files

You can share configuration files between different sessions or installations of Central 2.0.



1. Click the left side button to import and the right side button to export a configuration file.
2. The file will be saved to the Windows Downloads folder in the format:

   BDCentral_Config_<YYMMDD_HHMMSS>.

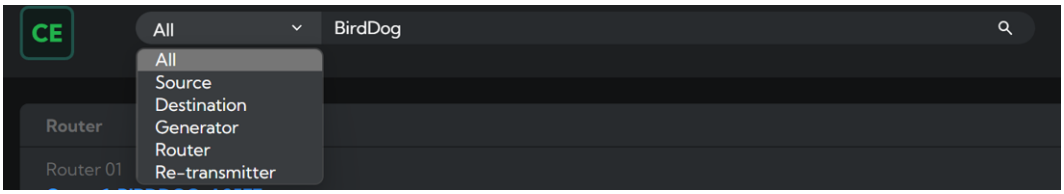
   Settings saved are: Network Settings and Access Manager Configuration, Group names and Generator play-lists.

   NOTE: Central 2.0 must be restarted for imported configuration files to take effect.

Search

In large installations with many connections, it may be more efficient to search for connected devices.

1. If you wish to refine the target type of your search, click the dropdown to choose to the device type.
2. Enter the name of the device in the text field.
3. The selected category will be filtered according to your search term.

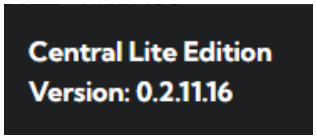


Central 2.0 Edition and Version

You can easily view the edition and version number of your Central 2.0 installation.

1. Click the CE logo at the top of the screen.

2. The edition and version number is displayed.

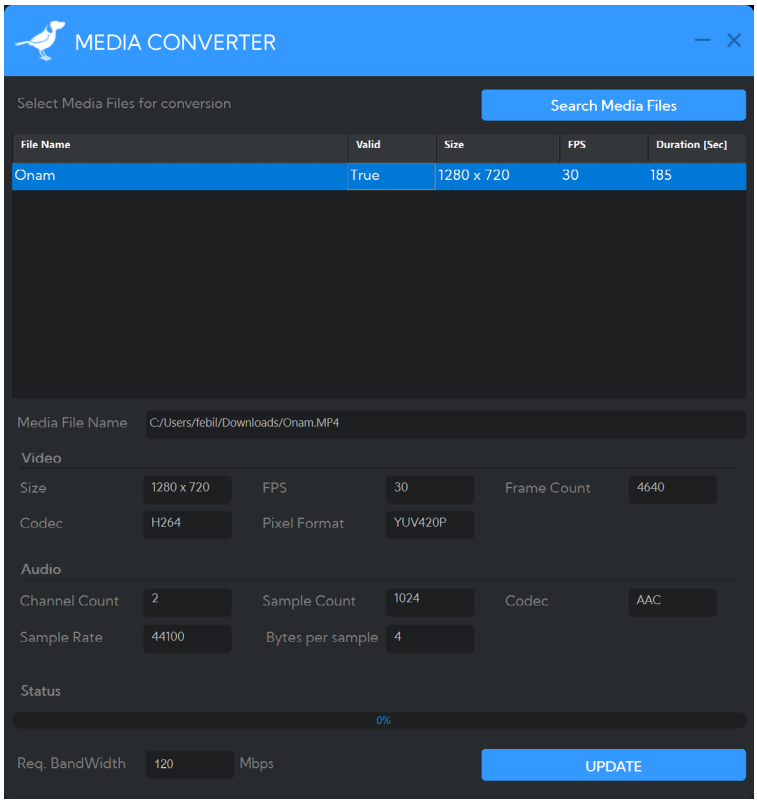


Media Converter

Your media files need to be converted to NDI® using the separate **Media Converter** application which is installed as part of the Central 2.0 installation.

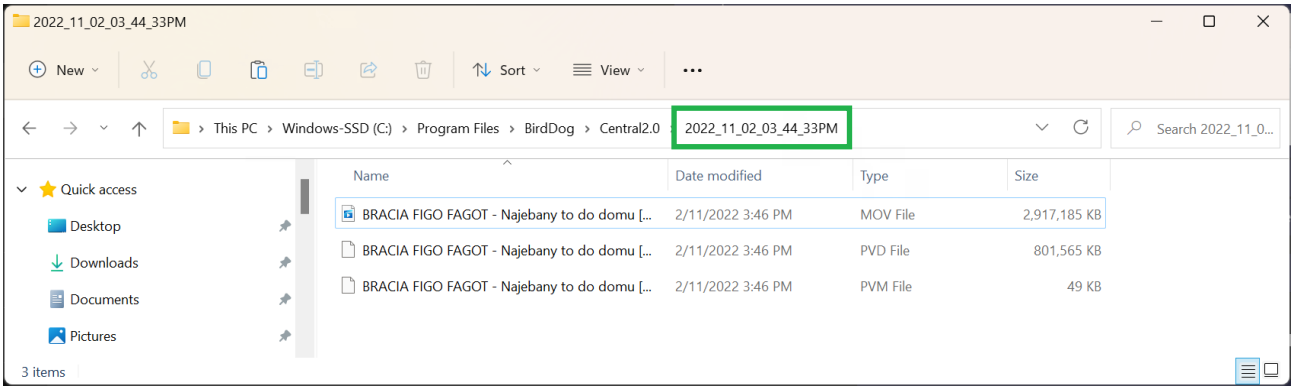
To generate an NDI® media file:

1. Click the *Search Media Files* button and navigate to the desired media file. If the selected file is valid, it will be displayed in the file list and the *Valid* column will show a value of True. The video and audio characteristics of the file is also displayed.
2. Select one or more of the files and click the *Update* button.



3. You can find the converted files in the Central 2.0 installation location in a new folder named in the timestamp format: YYYY_MM_DD_HH_MM_SS AM/PM.

   E.g. 2022_11_02_03_44_33PM (as in the image below).



4. These newly created media files need to be moved to the **videos** folder in the Central 2.0 installed location. Files in this folder will then be displayed in the **Generator** Source list. Note that all three of the files need to be moved and, if you wish to rename the file, all three files need to be named identically (except for the extensions).

Glossary

Domain

A domain contains a group of computers that can be accessed and administered with a common set of rules. Domain can also refer to the IP address of a website on the Internet.

DNS

DNS (Domain Name System) is a system used by the Internet and private networks to translate domain names into IP addresses.

mDNS

mDNS (Multicast DNS) refers to the use of IP multicast with DNS to translate domain names into IP addresses and provide service discovery in a network that does not have access to a DNS server.

Ethernet

Ethernet, standardized as IEEE 802.3, refers to a series of technologies used to connect computers and other devices to a LAN (Local Area Network) or wide area network (WAN).

Firmware

Firmware is a class of software held in non-volatile memory that provides the low-level control for a device's hardware.

Gigabit Ethernet (GigE)

An Ethernet capable of transmitting frames at a rate of a gigabit per second. A Gigabit capable Ethernet network is recommended for NDI® production workflows.

IP

IP (Internet Protocol) is the communications protocol for the Internet, many wide area networks (WANs), and most local area networks (LANs) that defines the rules, formats, and address scheme for exchanging datagrams or packets between a source computer or device and a destination computer or device.

LAN

LAN (Local Area Network) is a network that connects computers and devices in a room, building, or group of buildings. A system of LANs can also be connected to form a WAN (Wide Area Network).

Mbps

Mbps (Megabits per second) is a unit of measurement for data transfer speed, with one megabit equal to one million bits. Network transmissions are commonly measured in Mbps.

NDI®

NDI® (Network Device Interface) is a standard allowing for transmission of video using standard LAN networking. NDI® comes in two flavors, NDI® and NDI®|HX. NDI® is a variable bit rate, I-Frame codec that reaches rates of around 140Mbps at 1080p60 and is visually lossless. NDI®|HX is a compressed, long-GOP, H.264 variant that achieves rates around 12Mbps at 1080p60.

PELCO

PELCO is a camera control protocol used with PTZ cameras. See also VISCA.

PoE

Power over Ethernet

Port

A port is a communications channel for data transmission to and from a computer on a network. Each port is identified by a 16-bit number between 0 and 65535, with each process, application, or service using a specific port (or multiple ports) for data transmission. Port can also refer to a hardware socket used to physically connect a device or device cable to your computer or network.

PTZ

Pan, tilt and zoom.

RJ45

A form of standard interface commonly used to connect computers onto Ethernet-based local area networks (LAN).

RS422, RS485, RS232

Physical layer, serial communication protocols.

Subnet

A subnet or subnetwork is a segmented piece of a larger network.

Tally

A system that indicates the on-air status of video signals usually by the use of a red illuminated lamp.

TCP

TCP (Transmission Control Protocol) is a network communications protocol.

UDP

UDP (User Datagram Protocol) is an alternative protocol to TCP that is used when reliable delivery of data packets in not required.

VISCA

VISCA is a camera control protocol used with PTZ cameras. See also PELCO.

WAN

WAN (Wide Area Network) is a network that spans a relatively broad geographical area, such as a state, region, or nation.

White Balance

White balance (WB) is the process of ensuring that white objects and by extension, all color, in your video are rendered accurately. Without correct white balance, objects in your video display unrealistic color casts.

WELCOME TO THE FUTURE.